

Level 3 Award in Mobile and Operating Systems (9628-07)

Version (2.0) April 2018

Qualification Handbook

Qualification at a glance

Industry area	IT Professional
City & Guilds number	9628
Age group	16+
Assessment	Online multiple choice test
Approvals	Approval application required. Please see www.cityandguilds.com for details.
Registration and certification	Registration and certification of this qualification is through the Walled Garden, and is subject to end dates.

Title and level	GLH	TQT	City & Guilds qualification number	Ofqual accreditation number
Level 3 Award in Mobile and Operating Systems	24	120	9628-07	603/0619/1

Version and date	Change detail	Section
2.0 April 2018	Test specification detail added	Assessment

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1 Introduction

This document tells you what you need to do to deliver the qualification:

Area	Description
Who is the qualification for?	This qualification is designed to support learners to develop a full range of underpinning knowledge that can be used in a variety of businesses and industries that demonstrate confidence and transferability in a Digital Technology Environment.
What does the qualification cover?	The primary role of an Infrastructure Technician is to provide support to internal and external customers, helping them to be productive when using technology to do their own jobs, by using tools to problem solve and troubleshoot non-routine problems. This qualification covers current operating systems and secure deployment of remote mobile devices.
What opportunities for progression are there?	<p>This qualification is part of the Digital Industries Apprenticeship programme and are not offered as standalone products.</p> <p>On achieving this qualification the learner will have completed a section of the knowledge element as part of their apprenticeship journey.</p>
Who did we develop the qualification with?	It was developed in collaboration with employers, sector experts and training providers using the Standard as the baseline. The Standards have been created by The Tech Partnership and their Employer Groups for the specific areas. The qualification embodies the required learning for an apprentice to have the opportunity to successfully gain the relevant knowledge for their chosen career path in a Digital Technology environment.
Is it part of an apprenticeship framework or initiative?	Yes – 9648 Infrastructure Technician

Structure

Learners must complete the single unit 307 to gain this qualification.

Total Qualification Time

Total Qualification Time (TQT) is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT is comprised of the following two elements:

- The number of hours which an awarding organisation has assigned to a qualification for Guided Learning, and
- an estimate of the number of hours a Learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by - but, unlike Guided Learning, not under the Immediate Guidance or Supervision of - a lecturer, supervisor, tutor or other, appropriate provider of education or training.

Title and level	GLH	TQT
Level 3 Award in Mobile and Operating Systems	24	120

2 Centre requirements

Approval

Fast Track Approval is offered to existing City & Guilds Centres offering the SASE framework for the Apprenticeship, Advanced Apprenticeship and/or Higher Apprenticeship for IT, Software, Web and Telecoms through City & Guilds. See the separate document on our website that provides details of the Fast Track Process and actions to be taken. Please note the Fast Track form will list the Apprenticeship package under 9648 which relates to the Apprenticeship Standards. The form will automatically approve centres to this qualification and the other knowledge qualifications that sit in the Apprenticeship Standard.

City & Guilds is offering the opportunity for existing City & Guilds centres delivering SASE framework for the Advanced and/or Higher Level Apprenticeship for IT, Software, Web and Telecoms with other Awarding Organisations to gain approval for these Apprenticeship Standards through the Common Approval Framework. See the separate document at www.cityandguilds.com which provides details of the New Programme Process and actions to be taken.

Centres that are not currently with City & Guilds will need to complete a Customer Application Form for the parent package 9648-03 and once accepted they will be asked to complete the Centre Approval Process. Please note that approval to the 9648 package will automatically approve you to this qualification and the other knowledge qualifications in this package - centres will not need to register onto the individual knowledge qualifications and therefore do not need direct approval. See the separate document on our website that provides details of the New Centre Approval Process and actions to be taken.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Resource requirements

Resources

Please see the individual unit information for any resources required.

Centre staffing

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the areas for which they are delivering training and/or have experience of providing training. This knowledge must be to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

While the Assessor/Verifier (A/V) units/TAQA are valued as qualifications for centre staff, they are not currently a requirement for these qualifications. However, City & Guilds encourage trainers and assessors to qualify to the current TAQA standard. Centre staff may undertake more than one role, eg tutor and assessor or internal verifier, but cannot internally verify their own assessments.

Continuing Professional Development (CPD)

Centres are expected to support their staff in ensuring that their knowledge and/or practice remains current. This includes currency within the occupational area and of best practice in delivery, mentoring, training, assessment and quality assurance. It should also take account of any national, international policy and legislative developments.

Internal quality assurance is key to ensuring that the assessment of evidence for units is of consistent and appropriate quality. They should:

- be occupationally competent or technically knowledgeable in the area for which they are internally quality assuring
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training
- have a CV available demonstrating relevant experience and any qualifications held.

In certain circumstances, City & Guilds will recognise non-accredited learning and experience as equivalent as follows:

- If the Internal Quality Assurer does not hold a qualification they must be able to demonstrate evidence of working to their own organisation's internal quality assurance standards which clearly link to V1/TAQA or other equivalent standards for internal quality assurance.

Learner entry requirements

City & Guilds does not set entry requirements for these qualifications. However, centres must ensure that learners have the potential and opportunity to gain the qualifications successfully and that they have the full engagement of the employers for the full programme.

Age restrictions

City & Guilds cannot accept any registrations for learners under 16 as these qualifications are not approved for learners under 16.

3 Delivering the qualification

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs
- support and guidance they may need when working towards their qualifications
- any units they have already completed, or credit they have accumulated which is relevant to the qualifications
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the learner fully understands the requirements of the qualification, their responsibilities as a learner, and the responsibilities of the centre. This information can be recorded on a learning contract.

Recording documents

Learners and centres may decide to use a paper-based or electronic method of recording evidence.

City & Guilds endorses several ePortfolio systems, including our own, Learning Assistant, an easy-to-use and secure online tool to support and evidence learners' progress towards achieving qualifications. Further details are available at: www.cityandguilds.com/eportfolios.

City & Guilds has developed a set of *Recording forms* including examples of completed forms, for new and existing centres to use as appropriate. Recording forms are available on the City & Guilds website.

Although new centres are expected to use these forms, centres may devise or customise alternative forms, which must be approved for use by the external verifier, before they are used by learners and assessors at the centre. Amendable (MS Word) versions of the forms are available on the City & Guilds website.

4 Assessment

Summary of assessment methods

Candidates must:

- successfully complete one assessment for the mandatory unit

Assessment Types

Unit	Title	Assessment method	Where to obtain assessment materials
307	Mobile and Operating Systems	Multiple Choice questions – online Evolve test.	www.cityandguilds.com

Assessment strategy

Test Specifications

The way the knowledge is covered by each test is laid out in the table below:

Assessment type: Multiple-choice online test

Assessment conditions: Invigilated examination conditions

Number of questions: 30

Duration: 1 hour

Pass mark: 21/30 (70%)

Grading: Pass/Fail

	Learning Outcome	Number of marks	%
Unit 307	1. Understand the benefits of current Operating Systems	19	63
	2. Understand remote operation, deployment and secure integration of mobile devices.	11	37
	Total	30	100

Recognition of prior learning (RPL)

Recognition of prior learning means using a person's previous experience, or qualifications which have already been achieved, to contribute to a new qualification.

For this qualification, RPL is not allowed.

5 Administration

Quality assurance

Internal quality assurance

Registered centres must have effective quality assurance systems to ensure optimum delivery and assessment of qualifications. Quality assurance includes initial centre registration by City & Guilds and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance.

Standards and rigorous quality assurance are maintained by the use of:

- internal quality assurance
- City & Guilds external moderation.

In order to carry out the quality assurance role, Internal Quality Assurers must have appropriate teaching and vocational knowledge and expertise.

Access arrangements

We can make arrangements so that learners with disabilities, special educational needs and temporary injuries can access the assessment. These arrangements must be made before the examination. For example, we can produce a Braille paper for a learner with visual impairment.

Language of examinations

We will provide this specification in English only.

Other issues

European Dimension

City & Guilds has taken account of the 1988 Resolution of the Council of the European Community in preparing this specification and associated specimen units.

Environmental Education

City & Guilds has taken account of the 1988 Resolution of the Council of the European Community and the Report Environmental Responsibility: An Agenda for Further and Higher Education 1993 in preparing this specification and associated specimen units.

Avoidance of bias

City & Guilds has taken great care in the preparation of this specification and specimen units to avoid bias of any kind.

6 Units

Availability of units

The unit information can be found in this document.

Structure of the units

These units each have the following:

- City & Guilds reference number
- Title
- Level
- Guided learning hours (GLH)
- Learning outcomes, which are comprised of a number of topics

Centres must deliver the full breadth of the range. Specialist equipment or commodities may not be available to all centres, so centres should ensure that their delivery covers their use.

Unit 307 Mobile and Operating Systems

LEVEL:	3
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GLH:	24
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What is this unit about?

This unit provides learners with an understanding of current operating systems and secure deployment of remote mobile devices.

The primary role of an Infrastructure Technician is to provide support to internal and external customers, helping them to be productive when using technology to do their own jobs, by using tools to problem solve and troubleshoot non-routine problems. The Infrastructure Technician sets people up on systems and provides support when they need it, rectifying issues to maintain the organisations productivity.

Upon completion, learners studying this unit will have gained the knowledge to support the competencies of an Infrastructure Technician. Specific competencies supported by this unit include being able to undertake the following tasks:

- Select the correct OS for a given task to a given specification.
- Securely configure and test a device for business use.
- Implement the correct authentication for a user of a configured device.
- Configure a mobile device to meet business specifications.
- Maintain a mobile device by providing remote support.

Learning outcomes

In this unit, learners will be able to

1. Understand the benefits of current Operating Systems.
2. Understand remote operation, deployment and secure integration of mobile devices

Scope of content

This section gives details of the scope of content to be covered in the teaching of the unit to ensure that all the learning outcomes can be achieved.

Learning outcome

Understand the benefits of current Operating Systems.

Topics

- 1.1 Platforms
- 1.2 Device deployment
- 1.3 End-to-end testing
- 1.4 Built-in applications and tools
- 1.5 Security principles

In this learning outcome the learner will explore the fundamental benefits of current, available Operating Systems and the platforms on which they operate, including end-to-end testing, use of built in applications and tools, and security principles.

Topic 1.1

The learner will be able to provide an overview of platforms, and scenarios in which they are used:

- Server
- Desktop
- Mobile
- Virtualised

Topic 1.2

The learner will be able to describe the basic elements of computing devices (PCs, laptops, tablets, mobile phones, etc), and Health and Safety considerations for working with these devices:

- Hardware
 - Components
 - Firmware
- Software
 - OS (e.g. Windows, Mac OS, iOS, Android, Linux)
 - Applications
- Health & Safety considerations

Topic 1.3

The learner will be able to describe the process and considerations for end-to-end testing of configured platforms:

- Test selection
- Test plan
- Test execution
- Analyse results
- Corrective action

Topic 1.4

The learner will be able to describe the use of built-in applications and tools:

- System utilities
 - System configuration
 - Accessibility tools
 - Troubleshooting tools
 - Command prompt/terminal
- System applications
 - Browser
 - Editor

Topic 1.5

The learner will be able to describe the security principles of platforms and Operating Systems:

- Authentication/authorisation
 - Password and account security
 - Users and groups
 - Encryption
 - Policy enforcement
 - Permissions and rights
 - Auditing
- Security tools
 - Antivirus
 - Anti-malware
 - Software firewall
 - Device hardening

Learning outcome

2 Understand remote operation, deployment and secure integration of mobile devices

Topics

2.1 Deployment

2.2 Remote support

2.3 Remote management

In this learning outcome the learner will explore the fundamentals of remote operation, deployment and secure integration of mobile devices.

Topic 2.1

The learner will be able to describe the process for deploying remote mobile communications:

- Network setup
 - Wired
 - Wireless
 - Tethering
- Network access
 - Security
 - Encryption technology standards (e.g. WPA2)
 - Access methods
 - VPN
 - Other (proprietary)

Topic 2.2

The learner will be able to describe key access and security considerations for delivering remote support:

- Authentication
- Authorisation
- Remote wipe
- Remote desktop
- Managed BYOD

Topic 2.3

The learner will be able to describe the key elements of organisation policies when enabling remote management:

- Disaster recovery
- Acceptable use
- Remote access
- Data access

Guidance for delivery

Where the required knowledge may vary depending on company or organisation policy, this must be made clear to the learner, and they must understand that real world examples are not necessarily typical of all organisations. Equally, learners should be aware of knowledge that is generally applicable to most or all organisations.

Mentors/tutors should be aware that the unit content is not specific to PCs only and should consider options such as laptops, tablets and mobile devices.

This unit can be taught either within or outside of the workplace or as appropriate, providing the learner with paper based, or hands on practical exercises and case studies representative of the Infrastructure Technician competencies in operation.

Learners should be encouraged to explore and use as wide a range of hardware and software as possible, this should also include researching and utilising new and emerging technologies where available.

Equipment

Below is an indicative list, not an exhaustive list.

Mobile Devices (for demo only)

- Laptop
- Smart Phones
- Tablets

Desktop Virtualisation Software

- Oracle VirtualBox
- VMWare Player
- Hyper-V on Windows 8.1 Pro or Higher

ISO/binaries of Server Operating Systems

- Windows OS
- Ubuntu (or other versions of desktop Linux)
- Chromium

Employer engagement

Employer engagement is essential in order to maximise the value of learners' experience. A partnership approach should be adopted where possible with employers with whom the consortium has links, and with employers used for work experience placements.

It would be helpful for teachers to develop a method of maintaining contact with a range of employers in the sectors that may be able to help with keeping the examples of legislation, policies and codes of practice used in the taught content, up to date.

- 1 Local branches of BCS The Chartered Institute for IT can often provide access to local employers, since many members will be senior practitioners and leaders in organisations that employ IT professionals. The BCS has an extensive branch network of volunteers operating across the UK, Channels Islands and Isle of Man. <http://www.bcs.org/category/5897>
- 2 Invite local businesses to visit the delivery centre to talk about their experience in using Digital Technology for IT system support, especially in respect of their dealing with suppliers, customers, and remote and mobile employees. Ask the students to identify aspects of the IT support practices of local business that may be considered 'good practice'.
- 3 The Computing/IT faculty of every university will have links to employers in the local economy and their faculty staff may be willing to introduce delivery centres to major employers of IT skilled graduates and apprentices. Such links should be developed by FE colleges so as to better understand the skills needs and career options for IT practitioners at all levels from school leaver to graduate (i.e., think of how your learners can develop their career beyond the FE stage, and open their eyes to a full career).
- 4 Tech Partnership, the UK sector skills council for the IT/Telecoms industry, have an extensive list of small/medium sized employers of IT skilled apprentices and college leavers. They also provide a wealth of free resources for FE colleges to enable better engagement with local employers. <https://www.thetechpartnership.com/>
- 5 The Computing Technology Industry Association (CompTIA) is a non-profit, international trade association representing more than 2,000 members, 3,000 academic and training partners and tens of thousands of registered users spanning the entire information communications and technology (ICT) industry. Anyone can sign up to become a registered user and gain access to a vast library of resources that includes cutting edge research into technology trends from the UK and around the world.

Suggested learning resources

Books

Beginning Windows 10 Published by: Apress, 2015 ISBN: 978- 1484210864	Halsey, M
How Linux Works: What Every Superuser Should Know Published by: No Starch Press, 2014 ISBN: 978- 1593275679	Ward, B
CompTIA Mobility+ Certification All-in-One Exam Guide Published by: McGraw-Hill Education; 2014 ISBN: 978-0071825320	Rogers, B
Microsoft Windows Operating System Essentials	Carpenter, T

Published by: John Wiley & Sons, 2012
ISBN: : 978- 1118195529

Introducing Windows 10 for IT Professionals, Preview Edition Bott, E
Published by: Microsoft Press, 2015
ISBN: : 978-0-7356-9696-9

Journals and magazines

Websites

<https://certification.comptia.org/certifications/mobility>

<https://certification.comptia.org/certifications/security>

<https://www.microsoftvirtualacademy.com/en-US/training-courses/getting-started-with-windows-10-for-it-professionals-10629>

<https://technet.microsoft.com/en-us/virtuallabs/>

<http://windows.microsoft.com/en-gb/windows/support>

<https://wiki.ubuntu.com/>

<https://itpro.tv/course-library/mta-mobility-devices-fundamentals/mta-98368/>

<https://itpro.tv/course-library/mta/overview-mta/>

Appendix 1 Relationships to other qualifications

Links to other qualifications

Centres are responsible for checking the different requirements of all qualifications they are delivering and ensuring that candidates meet requirements of all units/qualifications.

Literacy, language, numeracy and ICT skills development

This qualification can develop skills that can be used in the following qualifications:

- Functional Skills (England) – see www.cityandguilds.com/functionalskills
- Essential Skills (Northern Ireland) – see www.cityandguilds.com/essentialskillsni
- Essential Skills Wales – see www.cityandguilds.com/esw

Appendix 2 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the Centres and Training Providers homepage on www.cityandguilds.com.

Centre Manual - Supporting Customer Excellence contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues.

Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Our Quality Assurance Requirements encompasses all of the relevant requirements of key regulatory documents such as:

- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information on such things as:

- **Walled Garden:** how to register and certificate candidates on line
- **Events:** dates and information on the latest Centre events
- **Online assessment:** how to register for e-assessments.

Centre Guide – Delivering International Qualifications contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification.

Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates

- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Appendix 3 Useful contacts

UK learners

General qualification information

E: learnersupport@cityandguilds.com

International learners

General qualification information

F: +44 (0)20 7294 2413

E: intcg@cityandguilds.com

Centres

Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results

F: +44 (0)20 7294 2413

E: centresupport@cityandguilds.com

Single subject qualifications

Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change

F: +44 (0)20 7294 2413

F: +44 (0)20 7294 2404 (BB forms)

E: singlesubjects@cityandguilds.com

International awards

Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports

F: +44 (0)20 7294 2413

E: intops@cityandguilds.com

Walled Garden

Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems

F: +44 (0)20 7294 2413

E: walledgarden@cityandguilds.com

Employer

Employer solutions, Mapping, Accreditation, Development Skills, Consultancy

T: +44 (0)121 503 8993

E: business@cityandguilds.com

Publications

Logbooks, Centre documents, Forms, Free literature

F: +44 (0)20 7294 2413

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City & Guilds Group

The City & Guilds Group is a leader in global skills development. Our purpose is to help people and organisations to develop their skills for personal and economic growth. Made up of City & Guilds, City & Guilds Kineo, The Oxford Group and ILM, we work with education providers, businesses and governments in over 100 countries.

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