

SQA Advanced Unit Specification

General information

Unit title: Mail Server Management

Unit code: HP30 47

Superclass: CD

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Unit purpose

The Unit is intended to introduce the candidate to contemporary e-mail technology, its installation, configuration and management. In particular, it will develop and consolidate the candidates' familiarity with mail server technologies, and enable the candidate to appreciate the security issues that mail servers encounter. Candidates will consolidate their theoretical knowledge by gaining practical skills in the installation, configuration and testing of a mail server.

On completion of the Unit the candidate should be able to:

- 1 Describe mail server technologies and common security issues.
- 2 Install, configure and test the e-mail server.

Recommended prior knowledge and skills

Access to this Unit will be at the discretion of the Centre. The candidates would benefit from knowledge of fundamentals of computer servers, as well as the basic concepts of computer networking, the internet and associated services.

The candidate would normally be expected to have attained one of the following, or equivalent:

- ◆ HP1P 48 *Server Administration*
- ◆ HR8G 47 *Network Concepts*

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Credit points and level

1 SQA Credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from National 1 to Doctorates.*

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Describe mail server technologies and common security issues.

Knowledge and/or Skills

- ◆ Describe mail server technologies
- ◆ Explain POP3, IMAP4, SMTP protocols
- ◆ E-mail client and web based clients
- ◆ Describe the characteristics of common e-mail attacks

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ Describe mail server technologies such as Webmail client, e-mail archiving, mobile device solutions, remote administration, spam filtering, virus protection, etc.
- ◆ Define the following protocols POP3, IMAP and SMTP and how they are used in receiving and sending mail from/to e-mail clients.
- ◆ Compare the difference between client based e-mail and web server based e-mail clients.
- ◆ Describe the characteristics of common e-mail attacks: and how to resolve them.

Outcome 1 can be assessed by using a case study where the candidate is give the role of presenting his/her finding to a group of company executives where the explore and explain mail server technologies.

Outcome 2

Install, configure and test the e-mail server.

Knowledge and/or Skills

- ◆ Install the mail server software onto the network server.
- ◆ Configure the mail server to a given specification.
- ◆ Install an appropriate e-mail client on an appropriate device.
- ◆ Test that the mail server and client operate correctly.

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ Install the mail server software onto a suitable network server.
- ◆ Configure the mail server from a given specification.
- ◆ Install an appropriate e-mail client onto an appropriate device and connect to the mail server.
- ◆ Test the e-mail server by connecting to a user account for receiving and sending of mail and attachments.

Outcome 2 is of a practical nature. The candidate needs to install, configure and test the mail server that they have installed. In terms of the specification, this can be produced as part of Outcome 1 or can be provided by the tutor. The choice of mail server should be determined by the local resources available at the point of delivery.

A comprehensive observation checklist, along with and printouts of the configuration, sending and receiving of e-mails with attachments will provide sufficient evidence to meet the Outcome.

Unit specification: support notes

Unit title: Mail Server Management

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

The content of this Unit is aimed at providing the candidate with a broad knowledge base in the essentials of mail server management along with an understanding of the elements of mail servers. There is also a practical emphasis with the candidate experiencing the installation of a mail server.

There are two Outcomes in this Unit each of which is designed to introduce the candidate to different aspects of mail servers.

The first Outcome introduces the candidate to the theoretical elements of mail servers, where they need to understand, technologies, protocols, different types of e-mail client and the types of common attacks performed on mail servers.

The second Outcome introduces the candidate to the practical elements of mail servers and their installation, configuration and management. The candidate will install, configure and configure the mail server to a given specification. For example the specification must be related to the work of Outcome 1 and could state: Provide e-mail accounts for three departments within the organisation, Sales, Purchases, Warehouse, ie **user1@sales.mydomain.co.uk**, with each department providing a separate mail domain for their users. In addition alias need to be set up for general enquiries to each of the departments where a common folder will be provided.

The working product will then be tested to ensure full functionality as defined by the specification.

Although the Unit is expressed in generic terms, it should be related to a real-world context that will be familiar to candidates. The resources available within the delivering institution we dictate the type of mail server available for installation. However the student needs to be aware of a number of different e-mail server types.

Guidance on the delivery of this Unit

During the delivery of this Unit it is important that every opportunity is taken to introduce real-world examples, opportunities for whole-class and group discussion and practical demonstrations wherever possible.

This Unit has a theoretical component. Outcome 1 will require the candidate to complete a significant amount of analysis, research and design before selecting the appropriate solution based on the customer needs.

Concepts and terminology should be presented in context throughout the Unit. Video presentations should be used where appropriate for providing an alternative explanation of a difficult topic, or as a focus for class discussion or group work. Wherever possible theoretical learning should be re-enforced using practical demonstrations, for example to demonstrate the use of particular applications and tools.

Given the theoretical nature of Outcome one of this Unit, it is intended that a proportionate amount of time will be made available as a central part of the course for revision, tutorials and formative assessment exercises. Candidates should be strongly encouraged to undertake further reading, opportunities for individual or group research should be provided.

Outcome 2 is practical and will require the candidate to install, configure and test the mail server. For practical purposes candidates should be exposed to up-to-date mail servers, client based e-mail programs and web based client programs. Devices can range from a PC based e-mail client to a Smartphone e-mail client.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours. A suggested allocation of time is:

Analysis and research	10 hours
Report or Presentation	5 hours
Installation and configuration of mail server	15 hours
Testing	5 hours
Finalising/ remediation	5 hours

Guidance on the assessment of this Unit

Outcome 1

Describe mail server technologies and common security issues.

The candidate is asked to describe mail server technologies. The following technologies should be discussed and described:

- ◆ Internet or Network Transportation
- ◆ User groups, domain maps, accounts and virus protection

The POP3, IMAP and SMTP protocols should be discussed and the candidate should define all three and how they are used in receiving and sending mail from/to e-mail clients. This may also be an appropriate point to raise MIME encoding and other encoding strategies.

The candidate needs to be exposed to client based e-mail systems and also web based e-mail clients so that the differences between them can be explored. Finally the candidate needs to understand and appreciate the common types of e-mail attack faced by mail servers. For assessment purposes they should describe and give examples of **any two** of the following e-mail attacks:

- ◆ bombing, spamming, spoofing, eavesdropping

Outcome 1 can be assessed by using a case study where the candidate is given the role of presenting his/her finding to a group of company executives where they explore and explain the mail server technologies. This could be carried out by a report of around 800 words.

Outcome 2

Install, configure and test the e-mail server

The candidate is asked to install the e-mail server software onto a suitable network server and configure the mail server from a given specification.

The specification must include as a minimum three items from six of the following bullet points:

- ◆ Users, Trusted users, Virtual users
- ◆ Two or more mail aliases
- ◆ Create and set permissions on shared folders
- ◆ Configure and set up Local Domains, Domain mapping or Domain routing as required
- ◆ Configure spam control
- ◆ Configure or check the relay state of the e-mail server

Install an appropriate e-mail client on an appropriate device and connect to the mail server. Test the e-mail server by connecting to a user account for receiving and sending of mail from either a device based system, or alternatively carries out the sending and receiving of e-mail and attachments from the server using a web based client.

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Outcome 2 is of a practical nature. The candidate needs to install, configure and test the mail server that they have installed. In terms of the specification, this can be produced as part of Outcome 1 or can be provided by the tutor. The choice of mail server should be determined by the local resources available at the point of delivery.

A comprehensive observation checklist, along with and printouts of the configuration, sending and receiving of e-mails with attachments will provide sufficient evidence to meet the Outcome.

Online and Distance Learning

It is perfectly feasible to develop a range of blended learning material to deliver this Unit by online and distance learning means. Support for distance learners could be provided by both synchronous and asynchronous communication technologies. For the practical elements this may be carried out by utilising a virtual server, which the candidate may use for the installation, configuration and maintenance aspects of Outcome 2.

Care would need to be taken to ensure the authenticity of the assessments undertaken by online or distance learners.

Opportunities for developing Core Skills

Although there is no automatic certification of Core Skills or Core Skill components in this Unit, there are opportunities for developing the Core Skills of *Information and Communication Technology (ICT)* and *Problem Solving* at SCQF 6 throughout the Unit.

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

History of changes to Unit

Version	Description of change	Date

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SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of SQA Advanced Qualifications.

FURTHER INFORMATION: Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000. Alternatively, complete our [Centre Feedback Form](#).

General information for candidates

Unit title: Mail Server Management

The content of this Unit is aimed at providing you with a broad knowledge base in the essentials of mail server installation, configuration and management along with conceptual understanding of the elements associated with e-mail servers.

During the Unit you will learn about mail technologies that are available, what mail protocols are and how they are utilised. You will also understand the process of e-mail delivery from a client through the mail servers to the recipient client. You will also understand the common attacks carried out on mail servers.

Practical elements will involve you in installing, configuring and testing an e-mail server. On completion of the Unit you will be able to:

- 1 Describe mail server technologies and common security issues.
- 2 Install, configure and test the e-mail server.

Outcome 1 of the Unit covers the theoretical information required for you to make an informed selection based on the hardware, features and requirements of the customer.

You will, for example, evaluate the mail server elements, protocols, e-mail clients and common attacks carried out on mail servers.

Outcome 2 will introduce you to the skills required for installing, configuring, organising and maintaining the mail server software. You will also learn how to maintain the mail server based on the needs of the user and security issues. You will also be required to test the mail server.

To meet the assessment requirements of this Unit you will write a short report for Outcome 1 consisting of 800 words. Outcome 2 will be assessed by production of configuration printouts and test e-mails with attachments along with a completed observation checklist.