

SQA Advanced Unit specification: general information

Unit title: Managing a Web Server

Unit code: HR8E 47

Superclass: CB

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Unit purpose

This Unit is designed to introduce candidates to the topics required for successful installation, maintenance and management of a Web Server. The Unit is primarily targeted at candidates who expect to work in a technical support role. However, the Unit is relevant to candidates who will work in a web development role, as it will provide a better understanding and appreciation of the complexities of the web server. The candidates will develop practical skills in installing, configuring and managing a web server.

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

- 1 Analyse the requirements for setting up and maintaining a new Web Site.
- 2 Install and set up a web server for the new Web Site.

Recommended prior knowledge and skills

Access to this Unit will be at the discretion of the centre, however it would be beneficial if the candidate already possessed good written communication, information technology, critical thinking and analytical skills, either through workplace experience or training at an appropriate level.

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.*

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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.

This Unit is suitable for candidates undertaking any of the following Group Awards:

- SQA Advanced Certificate in Computing
- SQA Advanced Diploma in Computing
- SQA Advanced Diploma in Computing: Software Development
- SQA Advanced Diploma in Computing: Networking
- SQA Advanced Diploma in Computing: Technical Support.

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

Analyse the requirements for setting up and maintaining a new Web Site.

Knowledge and/or Skills

- ◆ Devise and organise the web server directory structure
- ◆ Analyse and specify the hardware requirements of server software
- ◆ Operating system to be used
- ◆ Features available in the web server
- ◆ Configuration options available for the selected server

Evidence Requirements

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

Produce a report of approximately 500 words. The candidate is required to analyse and specify all five knowledge and skills topics above. This may be based on a case study. A different case study must be used on each assessment occasion.

Outcome 2

Install and set up a web server for the new Web Site.

Knowledge and/or Skills

- ◆ Install the web server software
- ◆ Manage the web server
- ◆ Backup the web server
- ◆ Set up appropriate file/directory/container permissions
- ◆ Configure multiple user domains
- ◆ Configure the web server software

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Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can successfully complete the following requirements to install and set up a web server for the new website:

- ◆ Produce an observation checklist and listings/printouts/screenshots of any changes made to configuration scripts as appropriate.
- ◆ Install and configure web server software including:
 - 1 the server root directory
 - 2 the document root directory
 - 3 the script root directory
 - 4 the port address.
- ◆ Set appropriate file system permissions for webmasters of each site.
- ◆ Ensure the document tree structure has been created and organised appropriately and effectively.
- ◆ Web server management has been carried out effectively. The candidate must produce evidence showing:
 - 1 allowing/denying access to all or some of the directories, to web bots and unauthorised users.
 - 2 allowing for virtual web sites using IP aliasing, or adding virtual websites using name based aliasing.
 - 3 monitoring file sizes.
- ◆ Web server has been backed up on at least two occasions.
- ◆ Indication of any changes made to the server is given along with a brief explanation for making the changes.
- ◆ Multiple web sites or three virtual web sites have been implemented on at least one occasion.

Unit specification: support notes

Unit title: Managing a Web Server

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

This Unit has been devised with the aim of making the candidate aware of the issues that surround installing, configuring, and managing a web server. The idea of the Unit is to instil into the candidate that there are many choices and decisions to be made before embarking down the road of installing and running a web server.

The first Outcome should make the candidate aware that there is a plethora of web server software available covering the different operating systems platforms. Although most web servers today vary very little there are some key issues, which the web server software should accommodate.

The first Outcome also raises issues about IP based domains and Name based domains. The features and configuration options need to be understood in relation to the two types of hosting available.

The main emphasis in assessment should be directed to:

- ◆ Analysing the customer's requirements and designing an appropriate and scalable web server directory structure.
- ◆ Specifying the hardware requirements of server software include: processor, RAM, hard disk size, connection speed including ADSL, SDSL, ISDN, T1, T2 and T3.
- ◆ Discussing the issues with web servers and operating systems in general and with specific operating systems. Thus candidates should appreciate the issues faced by Windows systems, Linux/Unix systems, Mac Systems etc.
- ◆ Discussing the features available within the selected web server include: support for multiple sites with one IP, support for multiple IP's, the latest Internet standards and the programming/scripting environments supported.
- ◆ Discussing the configuration options including: local administration, remote administration and Web-based administration.

Outcome 2 requires the candidate to install and configure server software. Having done this, the candidate will then face the challenge of implementing their designed directory structure, and creating multiple user domains.

Web servers potentially host multiple sites therefore it is important that a sensible and robust document tree structure is devised and implemented, building on the theory aspects from Outcome 1. The structure must be capable of growing with the needs of the server as well as being easy to maintain. There are many aspects of a web site that need to be considered, such as where will all the graphics files be stored or where will the script files reside?

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It is very important that folders and directories residing on the server are themselves properly secured through the use of file permissions. This has major repercussions for the structure of the document tree. Depending on the operating system, file permissions operate on an inheritance basis, so careful planning is required before implementing.

Candidates will also have to back up their web server and thought needs to be given on the appropriate method of achieving this on a defined schedule basis.

NOTE: The choice and selection of the Operating system may be specified by the candidate or may be dictated by the facilities available. However, the candidate needs to understand that there are different issues depending upon the selected Operating system.

Guidance on the delivery of this Unit

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.

Outcome 2 is practical and will require the candidate to install, configure, test etc. the appropriate solution produced from Outcome 1.

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:

Analysing customer requirements	5 hours
Designing web structure	5 hours
Production of report	5 hours
Installation and configuration of web server	15 hours
Testing, backup etc	5 hours
Finalising documentation	5 hours

Guidance on the assessment of this Unit

Outcome 1

Analyse the requirements for setting up and maintaining a new Web Site.

It is envisaged that Outcome 1 will be carried out first, giving the candidate a solid foundation to work from before tackling the practical assessments for Outcomes 2. It is intended that the candidate uses Outcome 1 to research the software, hardware, security and performance issues involved when setting up a web server. The lecturer should direct the candidate to research various areas but with the minimum of intervention. The material should provide plenty of scope for group or classroom discussion. This Outcome can be assessed by means of a report of approximately 500 words. This may be based on a case study. A different case study must be used on each assessment occasion.

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Outcome 2

Install and set up a web server for the new Web Site.

For Outcome 2 it would be desirable for the candidate to get an extended run of time in which to monitor, and configure his/her web server.

Two individual assessments could be used to assess this Unit, however, careful planning could facilitate the production of one assessment similar to the example given below that would cover the entire Unit. This may be based around a scenario whereby the candidate takes on a consultancy role for a company wishing to set up a web server and a number of sites for their various subsidiaries. This would involve using Outcome 1 as a consultation document that would be used to explain to the company by answering the sampled topics, the various issues involved in setting up such a venture. Outcomes 2 would be a natural progression to the implementation, configuration and maintenance stages.

Belmont Media Centres (BMC) wish to have a presence on the web. They require a web site for the parent company DMG and two further web sites for their subsidiary companies. Stornoway Media, that specialise in the production of local newspapers, and DVD Rewind, who specialise in the production and resale of CD's and DVD's. The sites will be hosted on the same server but accessed by the use of different URL's. Another subsidiary, dealing with technical support may also be looking at their own web site which would be some a public blog/FAQ facility. As a knowledgeable individual in this field you have been hired to perform the following tasks:

- ◆ *Specify the hardware and software required. Taking into account the needs of the organisation, their web connection and also allowing for remote web configuration and maintenance access.*
- ◆ *Install the web server software, configuring the software as appropriate.*
- ◆ *Secure the server and directory structures as appropriate from the risk of attack, accidental damage and human error.*

You have been retained for 6 months, until the company and subsidiary staff have become familiar with the server software, to perform regular maintenance of the server. Your tasks will include:

- ◆ *Backup the server and maintain a backlog.*
- ◆ *Devise and implement the document tree structure based on the parent company and its two subsidiaries.*

This partial example is given to illustrate the type of assessment that may be conducted and is offered only as an example not as an exemplar.

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 the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*.

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 *ICT* and *Problem Solving* Core Skills 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.

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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: Managing a Web Server

This Unit is primarily targeted at those of you who expect to work in a support role, but it is also relevant to those who will work in a web development role. This Unit should provide you with an understanding and appreciation of the complexities of a web server/site. You will develop skills in installing, configuring, organising and maintaining a web server and will gain knowledge about the theory of web server management.

During the Unit you will learn how to specify and identify the equipment and resources required for setting up and maintaining a web server/site. You should also be provided with a good grounding in how to analyse the requirements of a customer and subsequently, how to specify the hardware and software required to meet the customers' needs.

On completion of the Unit you should be able to:

- 1 Analyse the requirements for setting up and maintaining a new Web Site.
- 2 Install and set up a web server for the new Web Site.

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

You will, for example, evaluate the hardware and software options, investigate web server/site features and deal with specification of the server and layout of the directory structures. You will also need to consider access and remote access for maintenance of the server and the subsidiary sites.

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

To meet the assessment requirements of this Unit you will write a short report for Outcome 1 of approximately 500 words and produce evidence from printouts, listings and screenshots for Outcome 2

Your assessor will produce an observation checklist to show that you have completed the required elements of Outcome 1 and 2.