

## **SQA Advanced Unit specification**

### **General information**

**Unit title:** Network Server Operating Systems

**Unit code:** HP2W 48

**Superclass:** CB

**Publication date:** August 2017

**Source:** Scottish Qualifications Authority

**Version:** 01

### **Unit purpose**

This Unit is designed to introduce a candidate to the issues involved in installing, managing and maintaining a network server operating system. It is intended for candidates undertaking and SQA Advanced Certificate/Diploma in Computing, Computing: Networking, Computing: Technical Support or a related area that requires knowledge of the theory and practice of installing, configuring and maintaining a network server.

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

- 1 Install and upgrade a network operating system.
- 2 Manage and maintain physical and logical devices.
- 3 Manage users, computers, groups, files and folders.
- 4 Manage and maintain a physical server environment.

### **Recommended prior knowledge and skills**

Access to this Unit will be at the discretion of the centre. There are no specific requirements but candidates would benefit from knowledge of computer networks and operating systems. This may be demonstrated by the possession of SQA Advanced Units such as HP26 47 *Network Concepts* and HP27 47 *Client Operating System*.

## **SQA Advanced Unit Specification**

### **Credit points and level**

2 SQA Credits at SCQF level 8: (16 SCQF credit points at SCQF level 8\*)

*\*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.

The assessment exemplar for this Unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable instrument of assessment. Centres wishing to develop their own assessments should refer to the assessment exemplar to ensure a comparable standard. Assessment exemplars are available on SQA's secure website.

## **Unit specification: statement of standards**

**Unit title:** Network Server Operating Systems

**Unit code:** HP2W 48

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

Please refer to *Knowledge and/or Skills for the Unit* and *Evidence Requirements for the Unit* after the Outcomes.

### **Outcome 1**

Install and upgrade a network operating system.

#### **Knowledge and/or Skills**

- ◆ Install a network operating system from the manufacturer's installation media
- ◆ Install a network operating system from a network distribution point
- ◆ Upgrade a network operating system

### **Outcome 2**

Manage and maintain physical and logical devices.

#### **Knowledge and/or Skills**

- ◆ Manage physical hard disk subsystems
- ◆ Manage logical disks

### **Outcome 3**

Manage users, computers, groups, files and folders.

#### **Knowledge and/or Skills**

- ◆ Create and manage users computers and groups
- ◆ Assign appropriate file and folder permissions

### Outcome 4

Manage and maintain a physical server environment.

#### Knowledge and/or Skills

- ◆ Manage servers remotely
- ◆ Monitor file and print servers
- ◆ Monitor and optimise application performance
- ◆ Backup and restore data

#### Evidence Requirements for the Unit

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

Answer 40 multiple-choice questions under invigilated, closed-book examination conditions. The assessment should last no longer than 120 minutes. A candidate must answer 60% of the questions correctly to pass. This assessment may be administered on its own or as four subtests of 10 questions per Outcome each lasting no longer than 30 minutes.

A candidate should complete relevant practical work to reinforce the theory before sitting the theory test. A sample of each Outcome could be recorded as a log book, video or any other relevant method that captures the evidence required to prove that the practical work was completed.

## SQA Advanced Unit Specification

### Unit specification: support notes

#### Unit title: Network Server Operating Systems

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 80 hours.

#### Guidance on the content and context for this Unit

The suggested time allocation for each Outcome (including assessment) is as follows:

Outcome 1	20 hours
Outcome 2	20 hours
Outcome 3	20 hours
Outcome 4	20 hours

This Unit is intended to provide candidates with the basic skills to install, upgrade, configure and maintain a network server operating system in small to medium size enterprises. This Unit could be integrated with HP27 47 *Client Operating Systems* to provide an integrated view of a client operating systems networking architecture.

#### Guidance on the delivery of this Unit

This Unit is primarily designed to prepare candidates for a role in the management of a network server environment. This is a highly practical role and it is suggested that a practical approach is taken wherever possible to reinforce learning and to develop the practical skill necessary to build and maintain physical server environment. In addition, employees who build and maintain servers are typically members of a team and team working should be encouraged at all times.

As this Unit is mainly practical it should be delivered in a networking environment which allows candidates to work in teams to develop relevant skills in build various types of servers. For example, print, file etc. It is suggested that no fewer than three types of server are covered within this Unit.

The Unit is not vendor specific but it could be possible to use current vendor's materials if the delivering establishment feels this would be of benefit to the candidates.

Opportunities may be available to cross assess with other Units within the award. Centres should keep a note of any cross assessment carried out with other Units.

The environment could be virtualised to make better use of resources.

## **SQA Advanced Unit Specification**

### **Outcome 1**

Outcome one looks at the principles and practice of deploying network operating system software. On completion of this Outcome, a candidate should be able to deploy and operating system from the distribution media.

It may allow for a candidate to be capable of installing an operating system remotely using a pre-configured image or server-based distribution service.

A candidate should also be capable of upgrading from a previous version of an operating system to a current version and of patching an operating system in order to keep it current and secure.

### **Outcome 2**

Outcome two examines the principles of physical and logical disk management. On completion of this Outcome a candidate should be capable of initialising and partitioning a disk, viewing and updating disk properties, managing mounted drives, creating volumes on a disk and any other disk management function specific to the operating system of choice. Candidates should also know how to implement RAID solutions, SAN and NAS devices

### **Outcome 3**

Outcome 3 is about the creation and management of user, groups and the correct assignment of permissions to allow users and groups to securely access the minimum set of resources to allow them to properly do their jobs within an organisation.

Candidates should be able create and modify and troubleshoot user accounts. They should also be able to create, modify and troubleshoot user groups and resolve authentication issues.

Candidates should also be able to assign permissions to users and groups to provide secure access to networked resources such as files folder, printers and other resources. They should also be able to troubleshoot problems arising from unintentional conflicts that might arise when a user is a member of more than one group that have different access permissions to resources.

### **Outcome 4**

Outcome four is about the local and remote management of resources, and securely backing up and restoring data. Candidates should be able to manage servers remotely, monitor file, and print servers, monitor and optimise the performance of applications and securely backup and restore data.

### Guidance on the assessment of this Unit

Testing for the closed-book assessment can be done in either a machine-based or paper-based format and must be invigilated by a tutor or appropriate person. There must be no communication between candidates and communication with the invigilator must be restricted to matters relating to the administration of the test. Centres are recommended to create a coverage grid for each assessment attempt to highlight which questions cover which knowledge and skills bullet points and to assist in the assessment and re-assessment process.

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

### Online and Distance Learning

This Unit could be delivered by distance learning. In this instance centres would have to ensure the authenticity of candidate evidence by applying the same assessment conditions to open learning candidates.

### 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 e-checklists. 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)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

### 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](http://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: Network Server Operating Systems

This is a 2 credit Unit at SCQF Level 8 intended for candidates undertaking a Computing or IT-related qualification who require an understanding of Network Server Operating Systems. It is designed to develop an understanding of the issues involved in installing and administering a desktop operating system.

On completion of the Unit you should be able to:

- ◆ Install and upgrade a network operating system
- ◆ Manage and maintain physical and logical devices
- ◆ Manage users, computers, groups, files and folders
- ◆ Manage and maintain a physical server environment

The first section covers the principles and practice of deploying network operating system software. On completion of this Outcome, a candidate should be able to deploy and operating system from the distribution media. It may allow for a candidate to be capable of installing an operating system remotely using a pre-configured image or server-based distribution service. Candidates should also be capable of upgrading from a previous version of an operating system to a current version and of patching an operating system in order to keep it current and secure.

The second part of the course, you will study managing and maintaining physical and logical devices, including managing hard disk subsystems, monitoring server hardware, optimising server disk performance, installing and configuring server hardware devices

The third section covers managing users, computers and groups, including managing user profiles, creating and managing and troubleshooting user and computer accounts, and creating and managing groups. It also covers managing and maintaining access to resources, including configuring access to shared folders, troubleshooting terminal services and configuring file system permissions.

The final section covers managing and maintaining a server environment, including monitoring and analyse events and system performance, managing software updates and site licensing, managing servers remotely, monitoring file and print servers, monitoring and optimising application performance and managing a web server. It also covers managing and implementing disaster recovery, performing system recovery for a server, managing backup procedures, recovering from server hardware failure, restoring backup data and scheduling backup jobs.

There will be one or more closed-book restricted-response assessments covering all Outcomes. You will be presented with a total of 40 questions and expected to answer 60% of these correctly. You will also be expected to keep a logbook, video or other recordings providing evidence of the practical tasks you have carried out during the Unit. You must satisfy the requirements for these assessments in order to achieve the Unit.