Group Award Specification for:

HND Computing: Technical Support

Group Award Code: GG7F 16

Validation date: December 2012

Date of original publication: May 2013

Version: 11 (September 2016)

History of changes

It is anticipated that changes will take place during the life of the qualification and this section will record these changes. This document is the latest version and incorporates the changes summarised below. Centres are advised to check SQA's APS Navigator to confirm they are using the up to date qualification structure.

NOTE: Where a Unit is revised by another Unit:

- No new centres may be approved to offer the Unit which has been revised.
- Centres should only enter candidates for the Unit which has been revised where they are expected to complete the Unit before its finish date.

Version number	Description	Date
11	DH2R 34 Multimedia: Developing Multimedia Applications added into the framework as an optional unit.	23/09/16
10	**Revision of Units:** HG1K 34 Professional Career Development in the IT Industry into Options Group 1	31/08/16
09	**Revision of Units:** H17J 34 Developing Mobile Web Based Application: An Introduction has been replaced by HF4Y 34. F1VV 34 User Interface Design has been replaced by HF55 34. Both old units will finish 31/07/2019	12/07/16
08	**Addition of optional Unit:** Digital Skills H9DE 34 (Group 2)	27/08/15
07	**Addition of optional Unit:** Communication Practical Skills (D77G 34)-Group 2. **Revision of Unit:** D77G 34 Communication Practical Skills has been revised by H7MB 34 Communication Practical Skills and finishes on 31/07/2016.	13/07/15
06	**Revision of Unit:** DE1K 33 Workplace Communication in English has been revised by H8T2 33 and finishes on 31/07/2016.	19/05/15
05	**Addition of Optional Units:** D85F 34 Using Software Applications Packages (Group 2), D75X 34 Information Technology: Applications Software 1 (Group 2), DH35 34 Computing: Planning (Group 2), H8W8 34 Big Data (Group 1), H8W9 35 Data Science (Group 1), H8N5 35 Private Cloud Virtualisation (Group 1)	10/04/15
04	**Revised Unit**: DK2K 34 Getting Started in Business has been revised by H7V4 34 Preparing to Start a Business and will finish on 31/07/2016.	22/01/15
03	Bring Your Device (BYOD): Introduction (H6D0 34) added as an optional Unit to framework (Group 2).	09/06/14
02	Database Design and Programming in SQL (H4KJ 34) and Database Programming with PL/SQL (H4KP 35) have been added as optional Units to Group 3 of framework.	12/12/13

Acknowledgement

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

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1 Introduction

This document was previously known as the Arrangements document. The purpose of this document is to:

- assist centres to implement, deliver and manage the qualification
- provide a guide for new staff involved in offering the qualification
- inform Course managers, teaching staff, assessors, learners, employers and HEIs of the aims and purpose of the qualification
- provide details of the range of learners the qualification is suitable for and progression opportunities

1.1 Background

The current development began in June 2010 with a public consultation meeting, attended by 58 representatives, spanning 32 colleges.

The initial review phase commenced in June 2010 and involved extensive consultation and discussion with the sector.

One major finding during this phase was the sector's preference for a single development that encompassed Computing and Networking. HN Computing has previously been a family of awards consisting of: HNC *Computing*, HND *Computing: Software Development*, and HND *Computing: Technical Support*. The QDT, supported by Heads of Computing, wanted the review of these awards to embrace the review of HN *Computer Networking*, which was also due to commence (as a separate development). As a result, the 'HN Review', as it was known, encompassed five awards:

1 HNC *Computing*
2 HND *Computing: Technical Support*
3 HND *Computing: Software Development*
4 HNC *Computer Networking*
5 HND *Computer Networking & Internetworking Technology*

At this stage, it was agreed to combine the HNCs into a single award, and introduce a new HND award (HND Computing). The HN Review, therefore, sought to develop the following awards:

1 HNC *Computing* (based on HNC Computing and HNC *Computer Networking*)
2 HND *Computer Science* (new award)
3 HND *Computing: Technical Support* (based on existing award)
4 HND *Computing: Software Development* (based on existing award)
5 HND *Computing: Networking* (based on HND *Computer Internetworking*)

This document relates (only) to HND *Computing: Technical Support*. The HNC *Computing* award was validated in December 2011. The rationales for the other HNDs will be presented separately and, as such, are out with the scope of this document.

1.2 Rationale for Group Award

The SQA and its predecessor bodies have been offering Higher National awards in the Computing area since the early 1980s. The HND *Computing: Technical Support* award has been offered in unitised format since 1989, with major revisions in 1995, 2001 and 2004/5. Throughout this period surveys have shown the award to have been popular with candidates, colleges, employers, and as an articulation route onto university courses.

Up until the current review, HNC *Computer Networking* and HND *Computer Networking & Internetworking Technology* have been offered as alternative awards outside the family of HN Computing awards. There has been considerable crossover however between these awards and HND *Computing: Technical Support*, which led to suggestions that the current HN Review should lead to a single combined award encompassing the existing mentioned awards.

During the initial review phase the QDT examined the possibility of combining HND *Computing: Technical Support* and HND *Computing: Networking* into a single award. This option was rejected as there was strong support for their development as two separate awards. Percentages of respondents either agreeing or strongly agreeing that the individual awards should be developed were 92.1% for Technical Support and 87.1% for Networking (see Appendix 1).

In a recent survey of employers and IT professionals carried out by the SQA, HND *Computing: Technical Support* was identified as the most popular of the new proposed HND Computing awards. Support for HND *Computing: Technical Support* as a separate award was demonstrated by the survey evidence which showed amongst employers/industry 91.7% support for the development of an award with a Technical Support focus (see Appendix 2). Amongst college respondents, HND *Computing: Technical Support* was the joint favourite of the proposed new Group Awards with 73.7% supporting its development (see Appendix 3).

1.3 Title of Group Award

The title of the Group Award is HND *Computing: Technical Support*, one of five related but distinct HN *Computing* awards in the proposed new HN Computing framework, (see Section 1.1).

In the SQA online survey carried out in 2010 (see Appendix 1) an overwhelming 93.8% of respondents agreed with the title of the award. The reasons for the appropriateness of the award are listed below:

- It provides continuity with the existing award of the same title.
- It accurately describes the essential content of the award.
- It distinguishes the award from the other related HN Computing awards.
- Surveys have shown that the title of the award is popular with stakeholders.
- It provides prospective learners with accurate information about prospective job roles and employment opportunities which may be provided by achieving the award.

1.4 Target Client Groups

This HND Computing: Technical Support award is suitable for a range of learners including:

- School leavers or apprentices who wish to embark on a course which will lead to either higher education or IT industry employment.
- Employed or unemployed adults with appropriate NQGAs (NCs) or vocational skills wishing to train for a career in technical support.
- Learners completing the HNC Computing award vocational qualification with a view to progressing to university or employment as a technical support professional.

1.5 Employment Opportunities

HND *Computing: Technical Support* is expected to lead to employment opportunities at IT Support technician level. The award has been designed to include opportunities to achieve certification with various industry vendors, eg CompTIA (Computing Technology Industry Association), Microsoft, and LPI (Linux Professional Institute).

The UK Commissions recent ICT Sector Skills Assessment [1] listed the following occupations: IT operations technicians, computer installation and maintenance engineers, IT user support technicians, and Telecommunications engineers, as amongst the top nine occupational groups within the ICT sector in 2010. Together they accounted for 80,000 jobs or 10.5% of the sector total[2]. *Computing*: *Technical Support* will be seen as the HND of choice for learners aspiring to work in these important job areas.

The demand for skills relevant to the Group Award is expected to increase over the coming years. For example the report highlighted security and data protection skills as a high priority area of skills shortage recognised by employers and as a clear priority area for action. The report concluded that '*Technical support and IT Operations will all need to update and improve their security skills, implementing security measures and routinely protecting data and systems*'[3]. The new HND *Computing: Technical Support* Group Award has been designed to enhance employability by addressing these and other expected areas of ICT sector skills shortages.

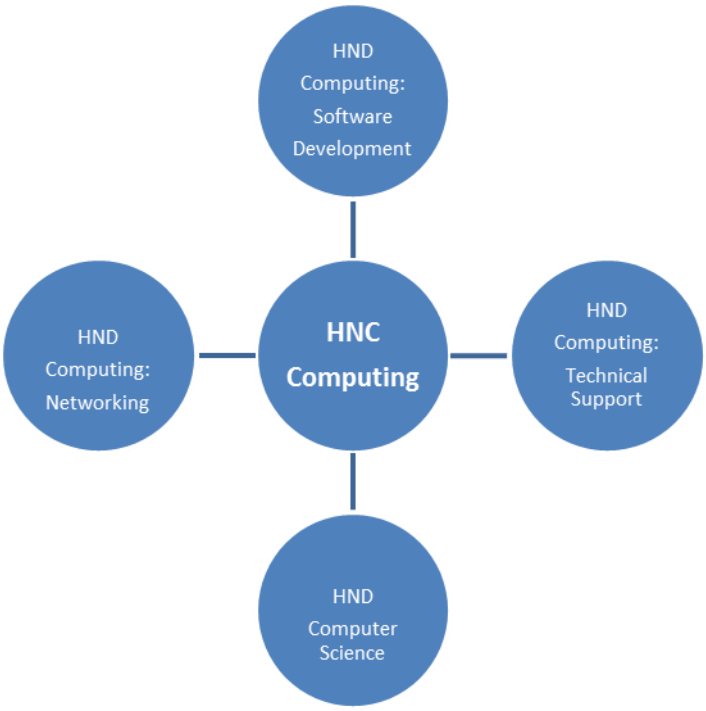
1.6 Articulation into HE programs

The award is expected to continue to develop upon the many existing arrangements that exist between FE colleges and Universities, for articulation into the 2nd or 3rd year of University degree programs. The lead developer is currently involved in direct consultations with colleagues at a small selection of universities including Edinburgh Napier University and Heriot Watt University. These consultations have indicated that it should be possible to maintain current articulation routes for 2nd and 3rd year direct entry to related degree courses providing centres include appropriate HND optional Units in their courses.

[1] UK Commission for Employment and Skills Information and Communication Technologies: Sector Skills Assessment 2012
[2] p39 of above
[3] p166 of above

1.7 Relationship with other awards

This award is part of a suite of new or revised HNDs awards, as explained in section 1.1. The relationship between the awards is illustrated in the diagram below.



The HNC award is embedded within all of the HNDs, and (largely) constitutes the first year of each programme. Each HND offers a particular specialism that reflects recognized vocational or academic progression paths (see sections 1.5, 1.6 and 6.2 for further information on vocational or academic progression). The awards have similar structures and equivalent demands (in terms of practical or cognitive competencies) but each seeks to provide different skills sets and underpinning knowledge.

2 Qualification structure

This Group Award is made up of 30 SQA Unit credits. It comprises of 240 SCQF credit points of which 64 are at SCQF level 8 in the mandatory section including a HNC *Computing* Graded Unit 1 of 8 SCQF credit points at SCQF level 7 and a HND *Computing: Technical Support* Graded Unit 2 of 16 SCQF credit points at SCQF level 8. A mapping of Core Skills development opportunities is available in section 5.3.

2.1 Structure

In order to achieve the HND *Computing: Technical Support* Group Award the candidate must achieve 14 mandatory credits and 16 optional credits from Groups 1, 2 and 3.

Please note if choosing Units from Group 2 only a maximum of 9 credits can be taken. If choosing from Group 3 only a maximum of 7 credits can be taken.

The mandatory section of this Group Award incorporates 64 SCQF credit points at SCQF level 8 which satisfies the design principles.

Mandatory Units – Total of 14 credits

Candidates must pass all of the following Units.

Unit title	Code	SCQF credit points	SCQF level	SQA credit value
Developing Software: Introduction	H173 34	8	7	1
Professionalism and Ethics in Computing	H1F7 34	8	7	1
Computer Systems Fundamentals	H175 34	8	7	1
Troubleshooting Computer Problems	H177 34	8	7	1
Team Working in Computing	H178 34	8	7	1
Computing: Graded Unit 1 (Exam)	H1J8 34	8	7	1
Network Server Operating Systems	H16T 35	16	8	2
Network Technology and Data Communications	H16V 35	16	8	2
Providing Technical Support to Users	H3LN 35	8	8	1
Open Source Operating Systems: Introduction to Command Line Administration	H18C 35	8	8	1
Computing: Technical Support: Graded Unit 2 (Project)	H48X 35	16	8	2

Optional Units — Total of 16 credits

Learners must select at least 16 credits selected from one or more of the following groups of optional Units.

Group 1: Specialist options (up to 16 credits)
Group 2: General options (up to 9 credits)
Group 3: Vendor Units (up to 7 credits)

These rules of combination ensure that the aims and objectives of the award are achieved, irrespective of the route through the award. For example, by limiting the general options to 9 credits, all candidates are required to complete at least 21 credits directly related to the subject area.

Group 1 specialist options should be seen as the non-mandatory credits which are fundamental to giving the Group Award its distinctive emphasis on software development. Group 2 general options give centres a degree of flexibility in course design, eg options to include mathematics, networking and hardware. Group 3 Units are dedicated vendor qualifications. See the following section for further information on vendor provision.

Note that a local option is included in Group 2 (general options). Up to 4 credits can be selected from any area, subject to the design rules and rules of combination defined above. This is consistent with the current awards and reflects the preferences of centres so that they can customize the awards to their local circumstances.

Unit title	Code	SCQF credit points	SCQF level	SQA credit value
Group 1 — Specialist Options (Up to 16 credits)				
Big Data*	H8W8 34	8	7	1
Data Science*	H8W9 35	16	8	2
Private Cloud Virtualisation*	H8N5 35	8	8	1
Client Operating Systems	H1EM 34	16	7	2
Cloud Computing	H179 34	8	7	1
Computer Hardware: Desktop Computer Troubleshooting	DM37 35	16	8	2
Computer Networks: Administering Network Systems	D75S 35	16	8	2
Computer Networks: Building Local Area Networks	H17C 34	16	7	2
Computer Operating Systems 2	DM2X 35	8	8	1
Convergence Technologies	H17G 35	16	8	2
Mail Server Management	H17N 34	8	7	1
Managing a Web Server	H17P 34	8	7	1
Managing a Web Server	H16S 35	16	8	2
Open Source Operating Systems: Basic Server Administration	H18E 35	8	8	1
Open Source Operating Systems: Advanced Server Administration	H18D 35	8	8	1
Open Source Operating Systems: Advanced Network Services Administration	H18F 35	8	8	1
Technical Support: Supporting Users: Hardware	H183 34	8	7	1
Technical Support: Supporting Users: Software	H184 34	8	7	1
Network Concepts	H17S 34	16	7	2
Security Concepts	H17V 34	16	7	2
Professional Career Development in the IT Industry	HG1K 34	8	7	1
Group 2 — General Options (Up to 9 credits)				
Using Software Applications Packages*	D85F 34	8	7	1
Information Technology: Applications Software 1*	D75X 34	8	7	1
Computing: Planning*	DH35 34	8	7	1
Building an e-Business	F6JJ 34	8	7	1
Computer Forensics Fundamentals	H1EN 34	8	7	1
Computer Hardware: Hardware Installation and Maintenance	H1FY 34	16	7	2
Computer Networking: Fundamentals	H17A 34	8	7	1
Computer Networking: Practical	H17B 34	8	7	1
Computing: Introduction to Project Management	H17D 34	8	7	1
Computing: PC Hardware and Operating System Essentials	H17E 34	8	7	1
Computing: PC Hardware and Operating System Support	H17F 34	8	7	1
Configuring a Desktop Operating System	FK89 34	16	7	2
Database Design Fundamentals	DV6E 34	8	7	1
Databases: Introduction	H17H 34	8	7	1
Developing Mobile Web Based Applications: An Introduction	HF4Y 34*	16	7	2
Digital Culture: Online Collaboration	F86V 35	8	8	1
Digital Culture: Online Communications	F86P 34	8	7	1
Digital Culture: Web 2.0 Applications	F86T 33	8	6	1
E-Commerce: Publishing Web Sites	DV6G 34	16	7	2
Entrepreneurship in the Creative Industries	DR0T 35	8	8	1
Ethical Hacking Fundamentals	H1EP 34	8	7	1

Preparing to Start a Business*	H7V4 34*	8	7	1
Handling Information as a Resource	H17K 34	8	7	1
Human Computer Interaction	H17L 34	8	7	1
Intrusion Prevention Systems	H17M 34	8	7	1
IT: Information Systems and Services	H1G0 34	8	7	1
IT: Information Systems and Services	H1G0 34	8	7	1
Mathematics for Computing	A5P0 35	8	8	1
Mathematics for Computing 1	D76E 34	8	7	1

Unit title	Code	SCQF credit points	SCQF level	SQA credit value
Group 2 — General Options (Up to 9 credits)				
Mathematics for Computing 2	D76F 35	8	8	1
Mathematics for Interactive Computing: Essential Techniques	F20B 34	8	8	1
Mathematics: Calculus and Matrices for Computing	DP8F 34	8	7	1
Mobile Technology	H17R 35	8	8	1
Multimedia: Developing Multimedia Applications	DH2R 34	16	7	2
Multi User Operating Systems	DH3A 34	8	7	1
Personal Development Planning	DE3R 34	8	7	1
Project Management for IT	F1W0 34	8	7	1
Providing Support to Users	H17T 34	8	7	1
Software Development: Developing Small Standalone Applications	H17W 34	16	7	2
Systems Development: Introduction	H180 34	8	7	1
Software Development: Programming Foundations	H17X 34	8	7	1
Software Development: Systems Foundations	H17Y 34	16	7	2
SQL: Introduction	DH3J 34	8	7	1
Systems Development: Testing Software	H181 34	8	7	1
Systems Development: User Centred Design	H182 34	8	7	1
Troubleshooting a Desktop Operating System	FK8A 34	16	7	2
User Interface Design	HF55 34*	8	7	1
Work Role Effectiveness	DG6E 34	24	7	3
Work Role Effectiveness	DG6G 35	24	8	3
Working in IT	H185 35	16	8	2
Workplace Communication in English	H8T2 33*	8	6	1
Bring Your Own Device (BYOD): Introduction	H6D0 34*	8	7	1
Communication Practical Skills	H7MB 34*	8	7	1
Digital Skills	H9DE 34*	8	7	1
Group 3 — 'Vendor' Options (Up to 7 credits)				
Technical Specialist: Deploying and Maintaining Windows Vista Client and Microsoft 2007 Office Desktops	H1HK 34	7	15	1.5
Technical Specialist: Configuring Microsoft Windows Vista Client	H1HJ 34	7	15	1.5
Technical Specialist: Windows 7: Configuring	H1HR 35	8	24	3
Technical Specialist: Windows Server 2008: Network Infrastructure, Configuring	H1HF 34	7	30	3.5
Technical Specialist: Windows Server 2008: Applications Infrastructure, Configuring	H1HG 34	7	24	3
Technical Specialist: Windows Server 2008: Active Directory Configuring	H1HH 35	8	35	4
IT Professional: Windows Server 2008: Server Administrator	H1HL 36	9	15	1.5
IT Professional: Windows Server 2008: Enterprise Administrator	H1HM 36	9	40	5
Database Design and Programming in SQL	H4KJ 34	7	12	1.5
Database Programming with PL/SQL	H4KP 35	8	12	1.5
Local Option (Up to 4 credits permitted)				

*Refer to History of Changes for revision changes.

The structure of the award includes natural progression from SCQF level 7 to SCQF level 8 Units, for example:

- H183 34 *Technical Support: Supporting Users: Hardware* and H184 34 *Technical Support: Supporting Users: Software* to H3LN 35 *Providing Technical Support to Users.*
- H1EM 34 *Client Operating Systems* to H16T 35 *Network Server Operating Systems.*

The Group Award contains two mandatory Graded Units as follows:

- HNC *Computing*: Graded Unit 1 (Examination) SCQF level 7 — 1 credit
- HND *Computing: Technical Support* Graded Unit 2 (Project) SCQF level 8 — 2 credits

The Group Award has been designed to allow opportunities to follow vendor approved courses and work towards vendor certification as detailed in the following table[4]:

VENDOR	CERTIFICATION	UNITS
Microsoft	♦ MCSA ♦ MCTS (Win 7 Desktop Admin) ♦ MCITP (Win 7 Enterprise Admin) ♦ MCDST	See Group 3 'vendor options'
CompTIA	♦ A+ ♦ Network+ ♦ Security+	H17E 34 Computing: PC Hardware and Operating System Essentials H17F 34 Computing: PC Hardware and Operating System Support H17S 34 Network Concepts H17V 34 Security Concepts
Linux	♦ Linux Professional Institute, LPI1 and LPI2	H18C 35 Open Source Operating Systems: Introduction to Command Line Administration H18E 35 Open Source Operating Systems: Basic Server Administration H18D 35 Open Source Operating Systems: Advanced Server Administration H18F 35 Open Source Operating Systems: Advanced Network Services Administration

[4] Note that completion of the units doesn't automatically give certification: candidates would still need to sit external vendor tests outwith their HN Computing course to achieve the vendor certifications.

2.2 Inclusion of vendor qualifications within HND Computing: Technical Support

SQA has agreed to participate in a pilot project to evaluate the feasibility of directly accrediting vendor qualifications within this award. This pilot has the approval of SQA's Qualification Committee, chaired by the Director for Qualifications.

Previously, vendor qualifications were accredited through credit transfer, whereby shadow Units were created, based on vendor curricula, and candidates were awarded these [SQA] Units on the basis of their vendor achievements. However, this system placed the onus on SQA to revise these shadow Units whenever vendors changed their certifications.

The pilot programme places the responsibility for recognition on to the vendors. Vendors are required to credit and level their qualifications using SCQF, and then propose these awards for inclusion in this framework. Their inclusion, or otherwise, will be decided by the appropriate Qualifications Support Team.[5] Figure 2 illustrates the process of vendor accreditation.

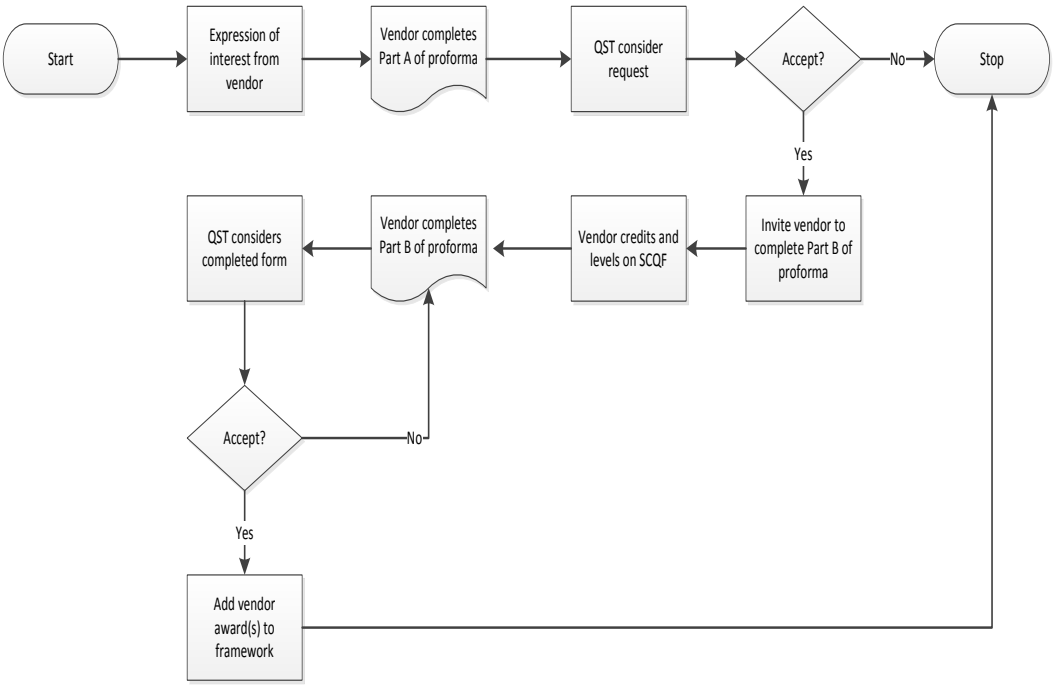


Figure 1: Vendor accreditation process

The Qualifications Committee imposed a cap on the contribution of vendor awards to national qualifications. The cap is 25% (seven credits for an HND). This limit applies to all vocational qualifications with direct recognition of third party awards, based on SCQF. This rule will be reviewed when the pilot is evaluated.

It is the responsibility of each vendor to accredit their awards on SCQF. This may be done by any one of the SCQF-accreditation bodies in Scotland.

[5] During the development phase, the QDT will decide on the inclusion of specific vendor qualifications. This task will be taken over by the QST once the award is operationalised.

Grouping 3 within the qualification structure shows the accredited vendor qualifications at the time of writing this document. It is anticipated that more vendor awards will be added as and when they are accredited through this process. When a specific vendor award is accredited but found to be similar to an existing (generic) HN Unit, these Units (the vendor Unit and the HN Unit) will be grouped into an excluded combination to ensure that candidates cannot double count their knowledge or skills.

All decisions regarding the accreditation of vendor Units (for inclusion in this framework) and excluded combinations will be made by the Qualifications Support Team for HN awards.

This pilot programme will be evaluated in summer 2013, when final decisions will be made regarding its continuation.

3 Aims of the qualification

The principal aim of the award is to prepare the candidates for employment in IT technical support.

The title of the award is HND *Computing: Technical Support*. This title was chosen for several reasons including:

- Continuity with newly validated HNC Computing award.
- Continuity with the existing award of the same title.
- Accurately describes the essential content of the award.
- Distinguishes the award from the other related HN Computing awards.
- Title of the award is popular with stakeholders.
- Provides prospective learners with accurate information about prospective job roles and employment opportunities which may be provided by achieving the award.

'HNC Computing' has been offered by SQA since 1978 and has, therefore, established a considerable reputation during that time. The revised HNC was designed to combine the competences of two existing HNCs (HNC *Computing* and HNC *Computer Networking*) and, as such, covers a broad range of computer-related knowledge and skills.

The HND *Computing: Technical Support* award has been designed to update the previous award to reflect current technological developments and IT Industry practices, tackle known issues with the previous award and to ensure that the award still has the potential to articulate to a wide range of degree programmes.

3.1 General aims of the qualification

The general aims of this award are:

1. To develop candidates' knowledge and skills in planning, developing and evaluating.
2. To develop employment skills, particularly relating to the IT industry.
3. To enable progression within the SCQF.
4. To develop study and research skills.
5. To develop learning and transferable skills (including Core Skills).

6 To provide academic stimulus.

7 To support candidates' continuing professional development.
8 To update the contents of the award to reflect current professional practices and technologies.
9 To update the contents of the award to incorporate best practice in assessment, including a reduction in time spent on assessment and maximising the use of e-assessment.
10 To maximise flexibility (while maintaining coherence) in qualification design to permit centres to customise the award to their local needs.
11 To reduce the academic level of the award (in terms of SCQF levels).
12 To produce Units that are able to embrace external changes without regular updates.

3.2 Specific aims of the qualification

The specific aims of the award are:

1 To provide learners with the underpinning knowledge that is compatible with a wide range of vendors.
2 To prepare learners for employment in an IT or Computing post at technician or professional level in a technical support role.
3 To equip learners with a range of specialist technical support skills and knowledge in the use and support of computer systems.
4 To prepare learners for progression to further study on HE Computing courses.
5 To develop in learners an awareness of professional IT issues such as legal and ethical considerations.

In a recent survey of employers and IT professionals carried out by the SQA, HND *Computing: Technical Support* was identified as the most popular of the new HND Computing awards. The new HND *Computing Technical Support* award should be a good option for learners seeking to enter directly into employment without undertaking further study at degree level.

3.3 Graded Unit

The Group Award contains two mandatory Graded Units as follows:

- HNC *Computing*: Graded Unit 1 (Examination) SCQF level 7 — 1 credit
- HND *Computing: Technical Support* Graded Unit 2 (Project) SCQF level 8 — 2 credits

The Graded Unit at SCQF level 7 is a mandatory Unit for HNC *Computing* and all four of the proposed HND Computing courses. The Qualification Design Team chose to use an examination rather than a project for the SCQF level 7 Graded Unit for reasons detailed in the HNC Computing Arrangements document.

The preferred format chosen for the mandatory Graded Unit at SCQF level 8 was a 2 credit project.

This format was chosen for several reasons including:

- Continuity with the existing format.
- A project allows more effective integration of skills and knowledge from the SCQF level 8 Units in the second year of the HND.
- Candidates will have already completed a Graded Unit exam in first year so a project provides more balance towards practical assessment.
- A project provides greater opportunity for the development of skills in design, planning, communications and problem solving.
- A clear majority of the core and extended QDT favoured this format.
- HE articulation: a project facilitates progression to degree courses as it supports both scholarly activities and independent learning. It was also supported by HE in our consultations.
- Employer preference: employers expressed a preference for a project as it allows the learner to gain familiarity with scenarios simulating real-life experiences.

The SCQF level 8 Graded Unit is designed to evidence candidate's ability to plan, develop, implement and evaluate technical skills gained throughout their course. It does not ask the candidates to prove new skills. It will be project based and will allow the candidate the flexibility to select from a variety of different projects which are representative of the Technical Support Role, eg the practical implementation of a software deployment project, designing a network topology for a small to medium sized company, producing a report/feasibility study on the implementation of IT systems for an organisation, or setting up a Service Desk.

4 Recommended entry to the qualification

Entry to this qualification is at the discretion of the centre. The following information on prior knowledge, skills, experience or qualifications that provide suitable preparation for this qualification has been provided by the Qualification Design Team as guidance only.

Learners would benefit from having attained the skills, knowledge and understanding required by one or more of the following qualifications and/or experience.

- Passes in two relevant National Courses at SCQF level 6 (Higher) together with three relevant subjects at National 5.
- A related National Certificate at SCQF level 6.
- A relevant combination of vocational awards at appropriate levels.
- A mix of the above.

For example, a school leaver may be expected to possess two Higher Level passes, (such as Computer Science and English) together with three passes at National 5 (such as Mathematics, Business Administration and History).

A college entrant would be expected to have completed a relevant National Certificate programme such as Digital Media Computing at SCQF level 6 or Computer Games Development at SCQF level 6. A combination of level 6 and level 5 National Units would also be appropriate. For example, a college entrant may possess a National Certificate in Mobile Technology at SCQF level 5 together with individual Unit passes at SCQF level 6.

Given the range of vocational awards available to learners, applicants who possess a range of smaller vocational qualifications should also be considered. For example, possession of relevant National Progression Awards (such as PC Passport and Computer Games Development at SCQF level 6) may be considered appropriate for entry to this award.

Applicants with a mixture of the above should also be considered for entry. For example, a candidate who possessed a pass in Computer Science at SCQF level 6 (Higher) together with one or more relevant NPA awards at SCQF levels 5 or 6 would, most likely, have the necessary knowledge and skills to benefit from undertaking this award.

Equivalent qualifications from other awarding bodies may also be acceptable as would suitable vendor certifications.

Mature candidates with suitable work experience should also be considered subject to the Core Skill entry profile detailed in Section 4.1.

For direct entry into Year 2 of the HND *Computing: Technical Support* award learners should have successfully passed HNC *Computing* (2012 version), or qualify for credit transfer using the recognised SQA quality procedures to ensure that the learner is credited with the appropriate SCQF level 7 Units. While success at HNC C*omputing* necessitates passing only 12 credits including the mandatory Units, it's recommended that learners achieve 15 credits before moving onto Year 2 of the HND. The selection of the three additional credits should be done at a local level. Recommended optional SCQF level 7 Units which may be useful for advancing into the second year of HND *Computing: Technical Support* include the following:

H183 34	*Technical Support: Supporting Users: Hardware*
H184 34	*Technical Support: Supporting Users: Software*
H1EM 34	*Client Operating Systems*
H17E 34	*Computing: PC Hardware and Operating System Essentials*
H17F 34	*Computing: PC Hardware and Operating System Support*
H17T 34	*Providing Support to Users*
H17C 34	*Computer Networks: Building Local Area Networks*
H17A 34	*Computer Networking Fundamentals*
H179 34	*Cloud Computing*
H17P 34	*Managing a Web Server*
DH3A 34	*Multi User Operating Systems*
H1EN 34	*Computer Forensics Fundamentals*
H17S 34	*Network Concepts*
H17V 34	*Security Concepts*

4.1 Core Skills entry profile

The Core Skill entry profile provides a summary of the associated assessment activities that exemplify why a particular level has been recommended for this qualification. The information should be used to identify if additional learning support needs to be put in place for learners whose Core Skills profile is below the recommended entry level or whether learners should be encouraged to do an alternative level or learning programme.

The recommended Core Skill profile for entry to this award is the same as for HNC *Computing* which has already been validated.

It is recognised that some candidates, particularly adult returners, may not possess a specific Core Skills profile on entry, hence entry level is only recommended. In this case, it is recommended that centres carry out an appropriate evaluation of the learner's basic skills to ensure that they have the necessary prerequisites to benefit from undertaking this award.

Core Skill	**Recommended SCQF entry level**	**Associated assessment activities**	**SCQF exit level**
Communication	Intermediate 2 (SCQF 5)	The Core Skill of 'Communications' at SCQF level 6 can be developed comfortably and naturally within the mandatory Units Team Working in Computing and Professionalism and Ethics in Computing but have been signposted rather than embedded.	Higher (SCQF 6)
Numeracy	Intermediate 2 (SCQF 5)	The Qualification Design Team have embedded the Core Skill of 'Numeracy' at SCQF level 5 within the mandatory Unit Computer Systems Fundamentals. A selection of 'Mathematics' Units which have Numeracy embedded at SCQF level 6 are also included in the framework as optional Units for centres wishing to offer a higher Core Skill exit level (refer toend of section 4.1 for more information).	Intermediate 2 (SCQF 5)
Information and Communication Technology (ICT)	Intermediate 2 (SCQF 5)	The Core Skill of 'ICT' at SCQF level 6 is embedded in the mandatory Unit Team Working in Computing.	Higher (SCQF 6)
Problem Solving	Intermediate 2 (SCQF 5)	The Core Skill component of 'Critical Thinking' which is part of the Problem Solving Core Skill is embedded within the mandatory Unit of Developing Software: Introduction. The Core Skill of 'Problem Solving' at SCQF level 6 is embedded in the mandatory Unit Troubleshooting Computing Problems.	Higher (SCQF 6)
Working with Others	Intermediate 2 (SCQF 5)	The Core Skill of 'Working with Others' at SCQF level 6 is embedded in the mandatory Unit Team Working in Computing.	Higher (SCQF 6)

Core Skills can be embedded or signposted within Units**.** Embedded skills occur where the development of a Core Skill is incorporated into the Unit and where the Unit assessment also covers the requirements of Core Skill assessment at a particular level. Units that have embedded Core Skill(s) will be automatically certificated upon successful completion of the Unit assessments.

Signposted means identifying opportunities within the Unit for developing Core Skills other than those that can be summatively assessed and certificated. This allows the development of the Core Skills through teaching and learning to be utilised and these opportunities are highlighted within the Unit support notes to those delivering and managing the Units.

Additional opportunities to attain the Core Skill of Numeracy at a higher SCQF level exist in the following Units:

DP8F 34	*Mathematics: Calculus and Matrices for Computing* (embedded — SCQF level 6)
D76E 34	*Mathematics for Computing* 1 (Using Number embedded — SCQF level 6, Using Graphical Information embedded — SCQF level 5)
F20B 34	*Mathematics for Interactive Computing*: Essential Techniques (signposted — SCQF level 6)

4.2 Relationship with Curriculum for Excellence

The award was developed during the *Curriculum for Excellence (CfE)* programme, which is on-going at the time of writing. However, the development was able to encompass the principles of CfE, particularly the principles relating to breadth, progression, choice and relevance.

The award naturally encompasses the technology curriculum responsibilities and some of the language, mathematics and science curriculum responsibilities outlined in the CfE factfile. The underlying development of programming skills also helps to develop an understanding of the syntax and semantics of languages. The development of problem solving skills alongside the programming skills also helps to tackle some of the issues raised in the STEM initiative.

The award also meets some of the major aims of CfE for responsibilities across all practitioners as detailed below:

- To develop health and well being — specifically social well being in the team working activities and in the study of computer ethics.
- To develop literacy skills (listening and talking, reading and writing) — the development of academic study skills and Core Skills are embodied in the general aims of the award.
- To develop numeracy across learning — The award embeds the level 5 *Numeracy* Core Skill and encourages the uptake of a range of Mathematics Units which would allow learners to obtain the level 6 *Numeracy* Core Skill.

A member of the QDT was given special responsibility for ensuring the QDT's work was compatible with CfE. The SQA manager with special responsibility for the new Computing Science arrangements was consulted throughout this development.

5 Additional benefits of the qualification in meeting employer needs

This qualification was designed to meet a specific purpose and what follows are details on how that purpose has been met through mapping of the Units to the aims of the qualification. Through meeting the aims, additional value has been achieved by linking the Unit standards with those defined in National Occupational Standards and/or trade/professional body requirements. In addition, significant opportunities exist for learners to develop the more generic skills, known as Core Skills through doing this qualification.

Please note that only the mandatory Units have been mapped to the aims of the Group Award as the mandatory Units cover all the aims of the award.

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5.1 Mapping of qualification aims to Units

To ensure that the aims of the national qualification are met, the QDT have ensured that all specific aims are covered by the core Units defined in the award. Optional Units will however play pivotal roles in the extending the learner's depth of understanding with reference to specific aims.

1 To develop candidates' knowledge and skills in planning, developing and evaluating.
2 To develop employment skills, particularly relating to the IT industry.
3 To enable progression within the SCQF.
4 To develop study and research skills.
5 To develop learning and transferable skills (including Core Skills).
6 To provide academic stimulus.
7 To support candidates' continuing professional development.
8 To update the contents of the award to reflect current professional practices and technologies.
9 To update the contents of the award to incorporate best practice in assessment, including a reduction in time spent on assessment and maximising the use of e-assessment.
10 To maximise flexibility (while maintaining coherence) in qualification design to permit centres to customise the award to their local needs.
11 To reduce the academic level of the award (in terms of SCQF levels).
12 To produce Units that are able to embrace external changes without regular updates.
13 To provide learners with the underpinning knowledge that is compatible with a wide range of vendors.
14 To prepare learners for employment in an IT or Computing post at technician or professional level in a technical support role.
15 To equip learners with a range of specialist technical support skills and knowledge in the use and support of computer systems.
16 To prepare learners for progression to further study on HE Computing courses.
17 To develop in learners an awareness of professional IT issues such as legal and ethical considerations.

Unit title and code	Aims																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Developing Software: Introduction (H173 34)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓					✓	✓	
Professionalism and Ethics in Computing (H1F7 34)	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓	✓
Computer Systems Fundamentals (H175 34)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	
Troubleshooting Computer Problems (H177 34)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	
Team Working in Computing (H178 34)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
Computing: Graded Unit 1: Exam (H1J8 34)				✓	✓		✓		✓				✓				✓	
Network Server Operating Systems (H16V 35)	✓		✓	✓	✓		✓	✓	✓	✓			✓		✓	✓	✓	
Network Technology and Data Communications (H16V 35)	✓		✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	
Providing Technical Support to Users (H3LN 35)	✓		✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓		✓
Open Source Operating Systems: Introduction to Command Line Administration (H18C 35)	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	✓	✓	
Computing: Technical Support: Graded Unit 2: Project (H48X 35)	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓

5.2 Mapping of National Occupational Standards (NOS) and/or trade body standards

IT and Telecoms Professional National Occupational Standards (NOS) have been developed in parallel with and as part of the IT Professional Competency Model — e-skills Procom. E-skills Procom is being established as the industry recognised, internationally relevant training framework for organising courses and qualifications. It defines knowledge, understanding, and competencies for seven broad disciplines.

The disciplines are:

1 Sales and marketing
2 Business change
3 Programme and project management
4 Solutions architecture
5 Solution development and implementation
6 Information management and security
7 IT service management and delivery

The content of disciplines 1–3, while important to the IT&T sectors, do not fall within the scope of e-skills UK for NOS. Consequently these will not formally be recognised as NOS as is the case for disciplines 4–7. To maintain the relationship these NOS have been numbered to reflect the relationship to e-skills Procom. Within each discipline there exist a number of sub-disciplines. Within each sub-discipline the competences relating to a particular role have been defined.

This is an example of a structure and as there are many more optional Units available then this is not an exhaustive list.

4.1 Systems Architecture
4.2 Data Analysis
4.3 Human Needs Analysis
4.4 Systems Analysis
4.5 Data Design
4.6 Human Computer Interaction/Interface design
4.7 Systems Design
4.8 IT/Technology Infrastructure Design and Planning

5.1 Systems Development
5.2 Software Development
5.3 IT/Technology Solution testing
5.4 Systems Integration
5.5 IT/Technology systems installation, implementation and handover
6.1 Information management
6.2 IT Security management
6.3 IT Disaster Recovery

Unit title and code	National Occupational Standards															
	4.1	**4.2**	**4.3**	**4.4**	**4.5**	**4.6**	**4.7**	**4.8**	**5.1**	**5.2**	**5.3**	**5.4**	**5.5**	**6.1**	**6.2**	**6.3**
Developing Software: Introduction (H173 34)		✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Professionalism and Ethics in Computing (H1F7 34)														✓	✓	
Computer Systems Fundamentals (H175 34)	✓					✓			✓		✓		✓			
Troubleshooting Computer Problems (H177 34)	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Team Working in Computing (H178 34)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Computing: Graded Unit 1 H1J8 34	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Network Server Operating Systems (H16V 35)								✓			✓	✓	✓	✓	✓	✓
Network Technology and Data Communications (H16V 35)								✓		✓	✓	✓				
Providing Technical Support to Users (H3LN 35)			✓	✓	✓	✓	✓	✓			✓			✓	✓	✓
Open Source Operating Systems: Introduction to Command Line Administration (H18C 35)	✓														✓	✓
Computing: Technical Support: Graded Unit 2: Project (H48X 35)								✓			✓			✓		

5.3 Mapping of Core Skills development opportunities across the qualification

Unit code	Unit title	Communication		Numeracy		Information Communication Technology (ICT)		Problem Solving			Working with Others	
		Written	Oral	Using Number	Using Graphical Information	Accessing Information	Providing/ Creating information	Critical Thinking	Planning and Organising	Reviewing and Evaluating	Working Co-operatively with Others	Reviewing Co-operative Contribution
H173 34	Developing Software: Introduction							Embedded (SCQF 6)				
H178 34	Team Working in Computing	Signposted (SCQF 6)	Signposted (SCQF 6)			Embedded (SCQF 6)	Embedded (SCQF 6)				Embedded (SCQF 6)	Embedded (SCQF 6)
H177 34	Troubleshooting Computing Problems							Embedded (SCQF 6)	Embedded (SCQF 6)	Embedded (SCQF 6)		
H175 34	Computer Systems Fundamentals			Embedded (SCQF 5)	Embedded (SCQF 5)							
H1F7 34	Professionalism and Ethics in Computing	Signposted (SCQF 6)	Signposted (SCQF 6)			Signposted (SCQF 6)	Signposted (SCQF 6)					
H16T 35	Network Server Operating Systems											
H16V 35	Network Technology & Data Communications											
H3LN 35	Providing Technical Support to Users							Signposted (SCQF 6)	Signposted (SCQF 6)	Signposted (SCQF 6)		
H18C 35	Open Source Operating Systems: Introduction to Command Line Administration											
H48X 35	HND Computing: Technical Support Graded Unit 2: Project							Embedded (SCQF 6)	Embedded (SCQF 6)	Embedded (SCQF 6)		

5.4 Assessment strategy for the qualification

Unit	Assessment			
	Outcome 1	Outcome 2	Outcome 3	Outcome 4
Network Server Operating Systems (H16T 35)	40 Question closed-book Multiple-Choice test — Maximum of 2 hours			
Network Technology and Data Communications (H16V 35)	Closed-book multi-choice or short-response questions		Extended response report requiring additional independent research, analysis and evaluation by candidates	
Providing Technical Support to Users (H3LN 35)	10 Question closed-book extended response test based upon case study — Maximum of 2 hours		Presentation and Q/A session with peers assessed by an observational checklist and/or video/audio evidence	
Open Source Operating Systems: Introduction to Command Line Administration (H18C 35)	60 Question closed-book Multiple-Choice/short response test — Maximum of 2 hours			
HND Computing: Technical Support: Graded Unit 2: Project (H48X 35)	The project is a complex task which consists of three stages: planning; developing; and evaluating			

6 Guidance on approaches to delivery and assessment

The contents of the revised HNC *Computing: Technical Support* award have been updated to reflect contemporary technologies and methodologies. Since the creation of the current award, in 2004, a number of technological developments have taken place, including:

- Virtualisation
- Growth of Web 2.0 technologies
- Increase in social media
- Increase in mobile technology
- Increased focus on software development

The revised award seeks to embrace these technological changes.

The award may be delivered full-time or part-time. It is hoped to develop online learning materials for some, or all, of the mandatory Units at a later date.

To allow centres as much freedom of choice in choosing from many optional Units there is no defined sequence of delivery, although Section 6.1 will illustrate an example of how the Units could be sequenced.

The reduction in time spent on assessment is an important aim of this review. Assessment in the HND *Computing: Technical Support* will cover a variety of knowledge and practical skills as well as the more intellectual skills of planning and evaluating. These together with the Core Skills mean that a large number of different methods are employed to ensure that a student 'can do what s/he is supposed to do' and 'knows what s/he is supposed to know'.

A large proportion of Units take a ‘project’ approach using the product of a previous assessment, as the foundation of the next and the purpose is to give the candidate a true reflection of how items being studied integrate and relate to industrial practice. Where this is practical, a holistic approach is encouraged to be taken by centres in assessing across a number of Outcomes within Units or across a number of Units.

The benefit of 'cross-assessment', if it goes well, is the achievement of several Outcomes on several Units with just one assessment instrument. A matching disadvantage is that a failure results in several Units not being achieved. It would be wise for centres to consider separating out the 'retake' assessments of students who have failed in their first attempt at a composite assessment instrument.

It may be possible to combine the delivery of Units in such a way as to create a thematic delivery of the component Units. The ways in which Units may be integrated is left to centres but thematic delivery, as opposed to discrete Unit delivery, may reduce assessment and improve coherence of content. The normal rules of re-assessment apply to this award. Candidates are normally permitted one re-assessment, or, in exceptional circumstances, two re-assessments at the discretion of the centre.

6.1 Sequencing/integration of Units

Providing the mandatory Units of the award are covered, centres are free to devise their own sequence for delivery of Units. It is recommended however that SCQF level 7 Units are undertaken in Year 1 with SCQF level 8 Units concentrated towards the end of Year 2.

Where possible, learners should complete a SCQF level 7 Unit before undertaking an associated SCQF level 8 Unit. For Example;

H17P 34 *Managing a Web Server* → H16S 35 *Managing a Web Server*
H1EM 34 *Client Operating Systems* → H16T 35 *Network Server Operating Systems*.

It is recommended that where possible assessments should be integrated to reduce the assessment load.

In selecting combinations of optional Units centres are also likely to consider issues such as:

- Articulation arrangements with universities
- Needs of employers
- Resources available to the centre

An example course schedule plan is suggested below, based upon a two year course with each year comprising of two semesters. Note that centres are free to devise their own alternative course plans:

Year 1

	Semester 1	level	credits		Semester 2	level	credits
CORE	Developing Software: Introduction (H173 34)	7	1		HNC Computing: Graded Unit 1: Exam (H1J8 34)	7	1
	Computer Systems Fundamentals (H175 34)	7	1		Cloud Computing (H179 34)	7	1
	Troubleshooting Computer Problems (H177 34)	7	1		Computer Forensics Fundamentals (H1EN 34)	7	1
	Professionalism and Ethics in Computing (H1F7 34)	7	1		Technical Support: Supporting Users: Hardware (H183 34)	7	1
	Team Working in Computing (H178 34)	7	1		Computing: PC Hardware and Operating System Support (H17F 34)	7	1
	Computing: PC Hardware and Operating System Essentials (H17E 34)	7	1				
	Client Operating Systems (H1EM 34)					7	2
	Computer Networks: Building Local Area Networks (H17C 34)					7	2

	Year 2						
	Semester 3	**level**	**credits**		**Semester 4**	**level**	**credits**
CORE	Open Source Operating Systems: Introduction to Command Line Administration (H18C 35)	8	1		Providing Technical Support to Users (H3LN 35)	8	1
	Computer Networks: Network Technology and Data Communications (H16V 35)					8	2
	HND Computing: Technical Support: Graded Unit 2 (Project) (H48X 35)					8	2
	Network Server Operating Systems (H16T 35)					8	2
	Managing a Web Server (H17P 34)	7	1		Managing a Web Server (H16S 35)	8	1
	Computing: Introduction to Project Management (H17D 34)	7	1		Mobile Technology (H17R 35)	8	1
	Mail Server Management (H17N 34)	7	1		Open Source Operating Systems: Basic Server Administration (H18E 35)	8	1
	Technical Support: Supporting Users: Software (H184 34)	7	1				

There are a number of Units within the framework that could be combined to both help reduce the assessment burden on candidates and provide a more holistic learning experience. Some examples where this approach might be appropriate include combining:

- H17P 34 Managing a Web Server and H17N 34 *Mail Server Management*
- H16S 35 *Managing a Web Server* and H18E 35 *Open Source Operating Systems: Basic Server Administration*

6.2 Recognition of Prior Learning

SQA recognises that learners gain knowledge and skills acquired through formal, non-formal and informal learning contexts.

In some instances, a full Group Award may be achieved through the recognition of prior learning. However, it is unlikely that a learner would have the appropriate prior learning and experience to meet all the requirements of a full Group Award.

The recognition of prior learning may **not** be used as a method of assessing in the following types of Units and assessments:

- HN Graded Units
- Course and/or external assessments
- Other integrative assessment Units (which may or not be graded)
- Certain types of assessment instruments where the standard may be compromised by not using the same assessment method outlined in the Unit
- Where there is an existing requirement for a licence to practice
- Where there are specific health and safety requirements
- Where there are regulatory, professional or other statutory requirements
- Where otherwise specified in an assessment strategy.

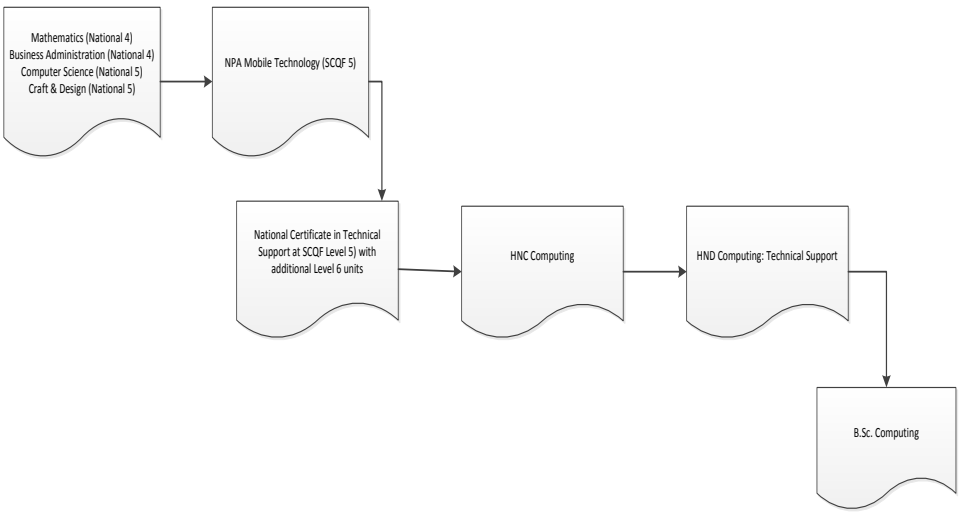
More information and guidance on the *Recognition of Prior Learning* (RPL) may be found on our website **www.sqa.org.uk**

The following sub-sections outline how existing SQA Unit(s) may contribute to this Group Award. Additionally, they also outline how this Group Award may be recognised for professional and articulation purposes.

6.2.1 Articulation and/or progression

This award has been designed to allow centres to forge a range of articulation routes to a wide range of degree courses at universities throughout Scotland. Some articulation routes are likely to require centres to select specific Units from the optional lists. For example, articulation to the 2nd year of the more traditional Universities such as the University of Strathclyde and the University of Glasgow might well require candidates to have achieved a certain level of Mathematics. In a similar vein direct entry to some third year courses might require some exposure to database development which could be achieved by adopting the Relational Database Management Systems Unit.

The following diagram illustrates one particular progression path for this award.



The existing HND *Computing: Technical Support* award provides articulation onto a range of Computing and IT degree courses. Individual centres have their own articulation arrangements with Universities (an example of current arrangements between one college and two local universities is shown in the table below). Although at this stage no formal articulation agreements have been agreed for the new award it is anticipated that these and similar articulation arrangements will continue. These should allow successful learners to enter a wide range of degree courses subject to options chosen by centres and grades achieved by candidates.

Examples of Articulation Agreements

Napier University	BSc (Hons) Computer Systems & Networks BSc (Hons) Computer Security and Forensics BSc (Hons) Information Technology	Direct entry into Year 3 (based on Grade 'B' HND) Direct entry into Year 2 (based on Grade 'B' HND) Direct entry into Year 3 (based on Grade 'B' HND)
Heriot Watt University	BSc (Hons) Information Systems	Direct entry into Year 2 (based on Grade 'A' Year 2 Graded Unit)

These articulation agreements represent only those centres that were directly contacted by the lead developer of this qualification and were chosen to represent the possible geographic areas within Scotland who may adopt this award.

6.2.2 HN Enhancement Project

The most popular destination for graduates from this award is university.

SQA has recently received money from the *Scottish Funding Council* to improve articulation from college to university. It was agreed that a new project 'HN Enhancement' would commence where the primary aim would be to identify whether and what enhancements might be necessary to improve articulation between college HN programmes and university degree courses.

The project will explore four subject areas, one of which is Computing, to see how the existing awards can be improved to make the transition from college to university easier for students.

As part of the project, a Qualification Review Team (QRT) for the area of Computing has been formed consisting of college and university representation (including the Open University). Their role is to look at the structure, contents, assessment and supporting guidance to see if some or all of these can be improved to support articulation.

The project has six defined objectives. These are:

1 Undertake initial scoping work to:

- identify good practice and barriers to articulation in SQA HN qualifications.
- identify and consider the broader implications of enhancements across the sectors.
- identify and consider policy and guidance activity required to support the above.

2 Establish Qualification Review Teams to explore the above in the context of each subject pilot area.
3 Develop supporting guidance for any new approaches to HN development and/or assessement where required.
4 Consider alignment in relation to degree-level assessment structures.
5 Undertake restricted pilot activity over an agreed period of time.
6 Evaluate the impact of the changes and decide on roll-out to more or all SQA HN Qualifications.

This project is on-going. A QRT for Computing has been formed and the first meeting has taken place. At the time of writing, it is likely that additional assessments and guidance will be produced for this award to aid articulation between college and university.

Whatever enhancements are approved and developed, these will be piloted from August 2013.

6.2.3 Professional recognition

There are two professional bodies associated with this development:

1 E-Skills UK
2 British Computer Society

E-Skills UK is the Sector Skills Council with special responsibility for the IT sector. The Director of Qualifications (Chris Morrow) is a member of the Sector Panel for Computing and IT.[6] This development has been discussed at Sector Panel on several occasions. Separately from this, E-Skills has been kept abreast of developments on an on-going basis. The current draft proposals are with E-Skills for their comment.[7]

The validation panel includes an ex-member of E-Skills UK, who maintains links with that organisation.

The *British Computer Society* (also known as *The Chartered Institute for IT*) is the main professional body for the subject area. BCS also has representation on the Sector Panel. No formal accreditation between this award and BCS is proposed. However, an indication of that organisation's broad support for the award is currently being sought.

The Sector Panel for Computing and IT includes a wide range of professional representation (in additional to E-Skills and BCS), including:

- Scotland IS
- Skills Development Scotland
- Cisco
- Microsoft
- Oracle

This award has been considered by the Panel on several occasions during its inception and development, and the Panel has expressed its support for it on each occasion.

6.2.4 Transitional Arrangements

HN awards in Computing have a long tradition of providing detailed guidance on credit transfer between existing and new awards.[8] This is done, at the request of centres and External Verifiers, to ensure consistency between centres. Credit transfer tables have been provided in this subject area since 1995. However, final decisions relating to credit transfer lies with centres.

Section 6.2.5 has been populated with equivalent Units which have been approved by an External Verifier. The External Verifier uses specific criteria to determine when two Units are equivalent and one can provide credit for another. Many of the 'new' (2011/12) Units in this table are revisions of the 'old' (2004/5) Units, making credit transfer more credible and easier to identify.

[6] The Sector Panel is a long-standing SQA committee, which aims to capture external stakeholder input for planning and development purposes.
[7] E-Skills does not guarantee to provide feedback on qualification proposals to awarding bodies. This may or may not be provided based on available capacity.
[8] Standard SQA policy is to permit centres to decide on credit transfer.

Units within computing related frameworks prior to 2004 are not eligible for credit transfer into the new framework due to the importance of contemporary skills in this sector.

6.2.5 Credit transfer

HNC Computing was validated by SQA in December 2011 and HND Computing awards are due for validation in December 2012. These courses will replace a number of older Group Awards including:

G7GL 15	HNC *Computing*
G7DX 15	HNC *Computer Networking*
G7DY 16	HND *Computer Networking and Internet Technology*
G7TT 16	HND *Computing: Software Development*
G7TR 16	HND *Computing: Technical Support*

These Group Awards have been available since 2004/5 and themselves replaced older Group Awards, dating back to 2001. This section covers **full** credit transfer from Units in the 2004/5 Group Awards to Units in the 2012 Group Awards.

When new Group Awards are introduced, students often wish to transfer between the old and the new frameworks. For example, they may have started on an HNC under an older framework and wish to complete their HND on the new framework, or they may have completed Units some time ago and wish to use these as part of an HNC or HND under the new framework.

To assist in this process, SQA normally provides centres with guidance on Credit Transfer between the old and the new frameworks. SQA have clear criteria for deciding if two syllabuses are equivalent. All the following criteria must be satisfied if full credit transfer is to be recognised between both syllabuses:

1. The syllabuses have the same SCQF levels.
2. The syllabuses have the similar credit values (or equivalent).
3. The syllabuses are equivalent in terms of Core Skill coverage.
4. The syllabuses relate to the same subject area and the main topics are common to both.
5. The syllabuses present a similar level of cognitive demand.
6. The syllabuses encompass similar skill-sets.
7. The syllabuses are contemporary in terms of terminology, techniques and technology.
8. Employers, admission officers and other users would perceive both syllabuses as broadly equivalent.
9. The assessment demands are similar in terms of candidate activity and Performance Criteria, or candidates would be equally likely to pass both assessments.
10. Special conditions (where they exist) are applicable to both syllabuses.

This guidance is of an advisory nature. **The final decision on whether or not to grant credit transfer must be made by the centre and is subject to external moderation.** However, external moderators are unlikely to raise objections to any credit transfer based on the advice given here.

	2004/5 GROUP AWARD UNITS		2012 GROUP AWARD UNITS
Unit No	**Unit title**	**Unit No**	**Unit title**
DF9M 34	Client Operating System	H1EM 34	Client Operating Systems
DH2Y 34	Computer Hardware: Hardware Installation and Maintenance	H1FY 34	Computer Hardware: Hardware Installation and Maintenance
F1XA 34	Computing: PC Hardware and Operating System Essentials	H17E 34	Computing: PC Hardware and Operating Systems Essentials
F1X9 34	Computing: PC Hardware and Operating System Support	H17F 34	Computing: PC Hardware and Operating Systems Support
DH36 34	Computing: Graded Unit 1 (Exam)	H1J8 34	Computing: Graded Unit 1 (Exam)
DH37 34	Information Technology: Information Systems and Services	H1G0 34	IT: Information Systems & Services
DM30 35	Project Management 1	H17D 34	Computing: Introduction to Project Management
DH31 34	Computer Networks: Building Local Area Networks	H17C 34	Computer Networks: Building Local Area Networks
D75V 35	Computer Networks: Network Technology and Data Communications	H16V 35	Network Technology and Data Communications
DH32 35	Software Development: Developing for the World Wide Web	H1J9 35	Software Development: Developing Websites for Multiplatform Use
DH2X 34	Providing Support to Users	H17T 34	Providing Support to Users
DH3D 35/FE77 35	Software Development Relational Database Systems	H16W 35	Relational Database Management Systems
D76V 35	Software Development Object Oriented Programming	H171 35	Software Development: Object Oriented Programming
DH3F 34	Systems Development: Introduction	H180 34	Systems Development: Introduction
DN4N 35	Computing: Software Development: Graded Unit 2 (Project)	H48W 35	Computing: Software Development: Graded Unit 2 (Project)
DN4P 35	Computing: Technical Support: Graded Unit 2 (Project)	H48X 35	Computing: Technical Support: Graded Unit 2 (Project)
DG0H 35	Computer Networking and Internet Technology: Graded Unit 2 (Project)	H48V 35	HND Computing: Networking Graded Unit 2 (Project)
F0N0 35	Professional Issues in Computing	H1F7 34	Professionalism and Ethics in Computing
DH21 34 D75X 34	Working Within a Project Team **AND** Information Technology: Applications Software 1	H178 34	Team Working in Computing
DH2T 34 DH33 34	Computer Architecture 1 **AND** Computer Operating Systems 1	H175 34	Computer Systems Fundamentals
F6BV 35	Human Computer Interface	H17L 34	Human Computer Interaction

D59P 34	Network Concepts	H17S 34	Network Concepts
	2004/5 GROUP AWARD UNITS		**2012 GROUP AWARD UNITS**
Unit No	**Unit title**	**Unit No**	**Unit title**
DG02 34	Security Concepts	H17V 34	Security Concepts
DM3H 35	Systems Development: Object Oriented Design	H172 35	Systems Development: Object Oriented Analysis and Design
DG07 34	Mail Server Administration	H17N 34	Mail Server Management
D75V 35	Computer Networks: Network Technology and Data Communications	H17A 34	Computer Networking Fundamentals

6.3 Opportunities for e-assessment

It is recommended that where appropriate, centres should try to adopt ICT methods for assessment. This could include virtual learning environments such as Moodle, as well as use of Blogs, social media, and smart phones. Innovative methods such as the use of video, eg Screenhunter, or audio evidence should be used where appropriate.

As part of an assessment strategy, centres are encouraged to investigate the option of e-assessment to support the programme. E-assessment may take a number of forms, and while it may be feasible in the future to conduct all assessment in an on-line format, currently some formats are more amenable to e-assessment than others.

The most obvious format is that of objective tests, eg Multiple Choice or short response tests, and some SQA Units already have an Evidence Requirement mandating the use of this type of test. Centres could adopt tests supported by SOLAR (**www.sqasolar.org.uk**) where appropriate.

Below is a sample from within the core Units of the Group Award of where the possibility of e-assessment may exist:

Multiple-Choice/Short response e-assessment opportunities		
Unit title	**Code**	**Outcome**
Open Source Operating Systems: Introduction to Command Line Administration	H18C 35	1, 2, 3
Network Technology and Data Communications	H16V 35	1, 2
Network Server Operating Systems	H16T 35	1, 2, 3, 4
Providing Technical Support to Users	H3LN 35	1, 2

e-portfolio opportunities			
Unit title	**Code**	**Outcome**	**Type**
HND Computing Technical Support: Graded Unit (Project)	H48X 35	All	Project proposal Project Documentation
Providing Technical Support to Users	H3LN 35	3	Case study documentation
Managing a Web Server	H16S 35	1	Technical Report e-log
Network Technology and Data Communications	H16V 35	3	Report

6.4 Support materials

A range of Assessment Support Packs (ASPs) have been produced for a number of mandatory and optional Units in this Group Award. These packs are available on the SQA secure website and access can be sought through the SQA coordinator in each centre.

6.5 Resource requirements

Individual centres will require sufficient equipment, eg PCs on which learners have administration rights, Internet access, and hardware lab tools and facilities. Where lack of PC systems is an issue good use can be made of virtualization software, eg Microsoft virtual PC, VMware, or Oracle VM virtual box. Where lack of operating system software is an issue, centres can participate in programs such as Microsoft Academy which supplies low cost access to system software. Useful resources for information include social media sites, eg YouTube.

Staff may also require training and CPD to deliver the new Units and subject matter in the Group Award eg cloud computing, convergence technology, mobile technology, etc. For vendor based Units it's recommended that centres have staff trained up to the relevant CompTIA or Microsoft levels. For the delivery of the mandatory Unit *Open Source Operating Systems: Introduction to Command Line Administration* (H18C 35) it is recommended that centres have at least one person trained and qualified up to LPI (Linux Professional Institute) level 1.

7 General information for centres

Equality and inclusion

The Unit specifications making up this Group Award have been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners will 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**

Internal and external verification

All instruments of assessment used within this/these qualification(s) should be internally verified, using the appropriate policy within the centre and the guidelines set by SQA.

External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications.

Further information on internal and external verification can be found in *SQA's Guide to Assessment* **(www.sqa.org.uk/GuideToAssessment)**

8 Glossary of terms

Embedded Core Skills: is where the assessment evidence for the Unit also includes full evidence for complete Core Skill or Core Skill components. A learner successfully completing the Unit will be automatically certificated for the Core Skill. (This depends on the Unit having been successfully audited and validated for Core Skills certification.)

Finish date: The end of a Group Award's lapsing period is known as the finish date. After the finish date, the Group Award will no longer be live and the following applies:

- candidates may not be entered for the Group Award
- the Group Award will continue to exist only as an archive record on the Awards Processing System (APS)

Graded Unit: Graded Units assess learners' ability to integrate what they have learned while working towards the Units of the Group Award. Their purpose is to add value to the Group Award, making it more than the sum of its parts, and to encourage learners to retain and adapt their skills and knowledge.

Lapsing date: When a Group Award is entered into its lapsing period, the following will apply:

- The Group Award will be deleted from the relevant catalogue.
- The Group Award specification will remain until the qualification reaches its finish date at which point it will be removed from SQA's website and archived.
- No new centres may be approved to offer the Group Award.
- Centres should only enter candidates whom they expect to complete the Group Award during the defined lapsing period.

SQA Credit Value: The credit value allocated to a Unit gives an indication of the contribution the Unit makes to an SQA Group Award. An SQA credit value of 1 given to an SQA Unit represents approximately 40 hours of programmed learning, teaching and assessment.

SCQF: The Scottish Credit and Qualification Framework (SCQF) provides the national common framework for describing all relevant programmes of learning and qualifications in Scotland. SCQF terminology is used throughout this guide to refer to credits and levels. For further information on the SCQF visit the SCQF website at **www.scqf.org.uk**

SCQF credit points: SCQF credit points provide a means of describing and comparing the amount of learning that is required to complete a qualification at a given level of the Framework. One National Unit credit is equivalent to 6 SCQF credit points. One National Unit credit at Advanced Higher and one Higher National Unit credit (irrespective of level) is equivalent to 8 SCQF credit points.

SCQF levels: The level a qualification is assigned within the framework is an indication of how hard it is to achieve. The SCQF covers 12 levels of learning. HNCs and HNDs are available at SCQF levels 7 and 8 respectively. Higher National Units will normally be at levels 6–9 and Graded Units will be at level 7 and 8. National Qualification Group Awards are available at SCQF levels 2–6 and will normally be made up of National Units which are available from SCQF levels 2–7.

Subject Unit: Subject Units contain vocational/subject content and are designed to test a specific set of knowledge and skills.

Signposted Core Skills: refers to opportunities to develop Core Skills arise in learning and teaching but are not automatically certificated.

9 General information for learners

This section will help you decide whether this is the qualification for you by explaining what the qualification is about, what you should know or be able to do before you start, what you will need to do during the qualification and opportunities for further learning and employment.

This award is designed to offer you academic, technical and professional training leading to the skills necessary to work at a senior level in IT Support or manage Computing systems in a wide range of industries. The award has been designed to include opportunities to achieve certification with various industry vendors, eg CompTIA (Computing Technology Industry Association), Microsoft, and LPI (Linux Professional Institute).

This HND *Computing: Technical Support* is suitable for a range of learners including:

- School leavers who wish to embark on a course which will lead to either higher education or IT industry employment.
- Employed or unemployed adults wishing to retrain for a career in technical support.

By undertaking the award you are also expected to continue to benefit from the many existing arrangements that exist between FE colleges and Universities, for articulation into the 2nd or 3rd year of University degree programs.

At the discretion of a centre, you may be permitted to enter the award by waiving some of the entry requirements — based on your previous experience.

To achieve the award you will need to pass a minimum of 30 credits from the HND *Computing: Technical Support* award including all 14 of the mandatory Units. Units are assessed by a combination of exams, projects and logs/portfolios. Included within the mandatory Units are a *Computing* Graded Unit 1 (Examination) in Year 1 and a *Computing: Technical Support* Graded Unit 2 (Project) in Year 2.