

apprenticeship FRAMEWORK

Higher Apprenticeship in Information Security - Level 4 (England)

IMPORTANT NOTIFICATION FOR ALL APPRENTICESHIP STARTS FROM 21 SEPTEMBER 2018

Modifications to SASE came into effect on 21 September 2018. Accordingly, SASE publication DFE-00236-2018 applies both to new Apprenticeship starts from 21 September 2018 and all Apprenticeships commenced before and not completed by 21 September 2018.

For more details of the changes please read the following preface page to the framework document.

Latest framework version?

Please use this link to see if this is the latest issued version of this framework:

afo.sscalliance.org/frameworkslibrary/index.cfm?id=FR04070

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CHANGES TO THE ENGLISH AND MATHS REGULAR MINIMUM REQUIREMENTS FOR APPRENTICESHIP STARTS FROM 21 SEPTEMBER 2018 AND APPRENTICESHIPS REMAINING INCOMPLETE ON 21 SEPTEMBER 2018.

Modifications to SASE came into effect on 21 September 2018. Accordingly, SASE publication DFE-00236-2018 applies both to new Apprenticeship starts from 21 September 2018 and all Apprenticeships commenced before this date and not completed by 21 September 2018.

The SASE modifications have further extended the list of qualifications that meet the minimum English and Maths requirements. This now allows for the acceptance of a wider range of UK-wide qualifications and also certain international qualifications, where these are supported by a suitable NARIC Statement of Comparability.

Full details relating to the exceptions eligibility criteria are contained in:

Section 5 of SASE for Intermediate Level Apprenticeships
Section 31 of SASE for Advanced Level Apprenticeships

Please note that some frameworks may have English and Maths grade/level requirements that are **above** the SASE **regular** minimum requirements. The exceptions relating to the use of British Sign Language or Entry Level 3 qualifications, detailed above, **do not apply** to **industry-specific** minimum entry requirements.

Please check specific framework documents to ascertain where this is the case and/or check directly with the Issuing Authority responsible for the framework.

Please note that the Transferable Skills tables within this document have not been updated to reflect the recent SASE changes and do not include the expanded range of acceptable qualifications. Refer to SASE for a full list of acceptable qualifications.

The updated version of SASE can be accessed here:

<https://www.gov.uk/government/publications/specification-of-apprenticeship-standards-for-england>

Higher Apprenticeship in Information Security - Level 4 (England)

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Framework summary

Higher Apprenticeship in Information Security - Level 4

Higher Apprenticeship in Information Security

This framework includes information on Personal Learning and Thinking Skills

Pathways for this framework at level 4 include:

Pathway 1: Information Security

Competence qualifications available to this pathway:

C1 - Level 4 Diploma in Information Security Professional Competence

Knowledge qualifications available to this pathway:

K1 - Level 4 -Diploma for ICT Professionals - Systems and Principles

K2 - Foundation Degree in Cyber Security

K3 - FdSc in Communications systems, security and computing

K4 - BTEC level 4 HNC Diploma in Computing and Systems Development

K5 - FdSc in Cyber Security

K6 - BSc Cyber Security

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Functional skills

Framework information

Information on the Issuing Authority for this framework:

Instructus

The Apprenticeship sector for occupations in air conditioning, building services engineering, business and administration, cleaning, customer service, digital/information technology, electro technical, electrical and electronic servicing, enterprise and business support, facilities management, heating and ventilating, housing, human resources and recruitment, industrial relations, leadership and management, marketing and sales (also includes contact centres and third sector), plumbing, property and refrigeration.

Issue number: 13	This framework includes: Level 4 This framework is for use in: England
Framework ID: FR04070	
Date this framework is to be reviewed by: 31/12/2017	

Short description

This Apprenticeship framework provides the skills and knowledge to become a professional in the field of Information Security (which includes Cyber Security). This level 4 framework covers jobs in areas such as:

- Junior ProMon/Network (Security) Engine
- Junior IA & Cyber Research Scientist/Engineer (may include, for example, Vulnerability Testing)
- Junior Security Engineer (e.g. s/w development)
- Junior Network Security Officer
- Junior Governance Officer (IA Consultant)

The Apprenticeship programme combine skills and knowledge development with employment in an Information Security role, meaning that apprentices are paid throughout the programme. Apprentices will apply and improve their skills in the workplace to build on instructor-led

learning.

Contact information

Proposer of this framework

Development of this framework has been driven by employers who have identified an urgent need to increase the supply of suitably qualified people into Information Security roles. According to research undertaken by Frost and Sullivan on behalf of (ISC)² published in 2011 (the 2011 (ISC)² Global Information Security Workforce Study), there was an estimated 2.28 million IS Professionals globally, with an estimated requirement by 2015 of 4.2 million, therefore estimating a global shortfall of 54%.

Employers specifically supporting the development of this framework include:

- Atos
- BBC
- BP
- BT
- Cassidian
- CGI
- IBM UK
- QinetiQ
- Serco
- Thales

In addition development is supported by

- The Institute for Information Security Professionals (IISP)
- Council of Registered Ethical Security Testers (CREST)

Developer of this framework

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Revising a framework

Contact details

Who is making this revision: Damian Brown
Your organisation: Instructus
Your email address: apprenticeships@instructus.org

Why this framework is being revised

Updating contact details

Summary of changes made to this framework

Updated Contact Name and Email

Qualifications removed

nil

Qualifications added

nil

Qualifications that have been extended

nil

Purpose of this framework

Summary of the purpose of the framework

Information (including Cyber) security is one of the most pressing issues of our time. The government has assessed the cost of cyber crime to the UK economy as £27bn a year ("Cost of Cyber Crime": A Detica Report in partnership with the Cabinet Office, February 2011). The National Security Council Strategy October 2010 highlighted attacks on computer networks as among the biggest emerging security threats to the UK, along with international terrorism and international military crises.

Information Security is a business survival issue for every company in every sector, and employers of IT professionals highlight 'IT security and data protection' as the most critical priority for the sector, in terms of both impact and urgency. Companies in every sector face increasing business risk through lack of the necessary security skills. The PWC 'Global State of Information Security Survey' shows that across Europe, the majority of businesses have detected cyber security incidents in the last year (93% of large companies and 76% of SMEs), with nearly 1 in 5 having detected 50 or more breaches. (Cyber Security M&A, PriceWaterhouseCoopers, November 2011) These attacks resulted in financial loss, intellectual property theft, loss of shareholder value and loss of customers. The suspected sources ranged from employees and competitors to criminals and terrorists.

What is an Apprenticeship

An Apprenticeship is a job with an accompanying skills development programme designed by employers in the sector. It allows the apprentice to gain technical knowledge and real practical experience, along with functional and personal skills, required for their immediate job and future career. These are acquired through a mix of learning in the workplace, formal off the job training and the opportunity to practice and embed new skills in a real work context. This broader mix differentiates the Apprenticeship experience from training delivered to meet narrowly focused job needs.

On completion of the Apprenticeship the apprentice must be able to undertake the full range of duties, in the range of circumstances appropriate to the job, confidently and competently to the standard set by the industry

This Apprenticeship programme is designed for new entrants to a role in the Information Security sector, and to provide progression and re-skilling routes for existing IT (and other) Professionals.

Apprentices can work in areas such as:

- Network Security
- Information Assurance
- Penetration Testing

- Secure System Development

What is included in this Apprenticeship?

The apprenticeship is made up of qualifications and learning that will provide apprentices with the skills and knowledge required to become competent in their chosen job role.

The framework includes a balance of content in technical, business and interpersonal areas, designed to ensure apprentices have an appropriate set of skills to operate in today's Information Security job roles.

The technical content includes units for Secure System Development (Software & Web), Information Assurance and Governance, IS Risk Assessment & Management and IS Testing (including Penetration Testing).

Aims and objectives of this framework (England)

The importance of the sector

Information and Cyber security is an area of significant growth potential globally, with the UK having particular expertise. PWC's assessment is that the market for cyber security products and services will grow close to 10% a year . The need for the government to help develop the UK cyber sector has been highlighted as an important growth area for the economy . According to research undertaken by Frost and Sullivan on behalf of (ISC)² published in 2011 , there was an estimated 2.28 million IS Professionals globally, with an estimated requirement by 2015 of 4.2 million, therefore estimating a global shortfall of 54%.

The prime objective of this framework is to increase the flow of suitably qualified persons into Information Security roles.

How is an apprenticeship delivered?

An Apprenticeship programme is fundamentally designed to be a work-based programme, whereby instructor-led learning can be immediately applied by apprentices in a real work context.

The qualification contained in the framework reflect the overall design of an apprenticeship. Those units designates as competence units must be assessed in the workplace, and wherever possible, it is recommended that knowledge units should be assessed in the context of the apprentice's job role.

Knowledge units will generally be taught in an off-the-job setting, and assessed using assignments or tests, in order to ensure the apprentice has gained the underpinning theory and principles required for the role.

Entry conditions for this framework

Candidates wishing to enter a Higher Apprenticeship will need to have achieved one of the following:

- A Levels, or equivalent educational attainment
- International Baccalaureate or a relevant Level 3 Technical Certificate
- An Advanced Apprenticeship (Level 3)
- Employment within the technology/telecommunications industry for a number of years and demonstrated to their employer that they have a reasonable expectation of achieving the required outcomes of the Higher Apprenticeship. This can be supported by the demonstration or evidence of prior achievement or performance in the role prior to starting the Higher Apprenticeship.

Potential apprentices should bear in mind that a Higher Apprenticeship combines the challenges of higher-level education with full-time employment, and should be prepared for the greater volume and level of study than in the Advanced Apprenticeship or another Level 3 qualification.

The majority of apprenticeship roles within the Information Security sector require:

- Individuals to be proactive, fast learners; able to work both in a team and sometimes alone
- The ability to focus on assisting customers and colleagues find solutions to problems
- The ability to work logically and methodically, often under pressure to set deadlines
- Good attention to detail and the ability to deliver what is required, when it is required
- Individuals to be open to change and focus on the requirements of the business at all times

Roles in areas, such as Secure Systems Development would suit individuals who:

- Have an interest in design and creativity, with good attention to detail
- Have a mathematical or analytical mind
- Have good logical reasoning and problem solving skills

Roles in Testing would suit those who:

- Are able to analyse and solve problems
- Have an interest in both hardware and software
- Enjoy working to deadlines and under pressure

Roles in Information Assurance would suit individuals who:

- Have a broad knowledge of technology
- Have excellent interpersonal skills and are comfortable presenting to others

Level 4

Title for this framework at level 4

Higher Apprenticeship in Information Security

Pathways for this framework at level 4

Pathway 1: Information Security

Level 4, Pathway 1: Information Security

Description of this pathway

This pathway covers all roles in Information and Cyber Security.

A minimum of 198 credits is required.

Entry requirements for this pathway in addition to the framework entry requirements

There are no additional requirements other than the general entry conditions

Job title(s)	Job role(s)
Junior (Level 4) ProMon/Network (Security) Engineer	performing analysis of network security needs and contributes to design, integration, and installation of hardware and software.
Junior (Level 4) IA & Cyber Research Scientist/Engineer	may include, for example, Vulnerability Testing
Junior (Level 4) Security Engineer	e.g. software development
Junior (Level 4) Network Security Officer	upgrading and monitoring security measures for the protection of computer networks and information
Junior (Level 4) Governance Officer (IA Consultant)	

Qualifications

Competence qualifications available to this pathway

C1 - Level 4 Diploma in Information Security Professional Competence					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
C1a	601/1789/8	City & Guilds	78	280-380	NA
C1b	601/3783/6	Pearson	78	280-300	N/A

Knowledge qualifications available to this pathway

K1 - Level 4 -Diploma for ICT Professionals - Systems and Principles					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K1a	600/6124/8	City And Guilds	120	522-725	

K2 - Foundation Degree in Cyber Security					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K2a	nil	Worcester College of Technology	120	1200	

Knowledge qualifications available to this pathway (cont.)

K3 - FdSc in Communications systems, security and computing					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K3a	nil	De Montfort University	120	1250	

K4 - BTEC level 4 HNC Diploma in Computing and Systems Development					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K4a	500/8254/1	Pearson	120	480	

K5 - FdSc in Cyber Security					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K5a	nil	University of Gloucestershire	120	1200	N/A

K6 - BSc Cyber Security					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
K6a	nil	Edinburgh Napier University	120	2400	N/A

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

This pathway covers all job roles in the Information and Cyber Security sector. The framework is designed in

this way to provide maximum flexibility for employers and apprentices, due to the constantly changing job roles and technology requirements in the sector.

The Level 4 'Diploma in Professional Competence' contains a wide range of units that can be selected by employers, apprentices and training providers to match any of the job roles required in the sector.

The knowledge qualifications are designed to be suitable for all job roles, and should be selected based on the apprentice's job role. **Where a Foundation Degree or CertHE is used prior approval must be obtained from the Tech Partnership.**

Apprenticeship Certificates England (ACE) certificates are requested through the Tech Partnership and claimed via ACE.

For further information on this process please contact the Tech Partnership. 02079638920

Transferable skills (England)

Functional Skills / GCSE (with enhanced functional content) and Key Skills (England)

Apprentices must complete or have completed one of the English transferable skills qualifications and one of the Mathematical transferable skills qualifications listed below in order to successfully complete their Apprenticeship and this will carry the QCF five credit values. If they do not have these qualifications as part of their evidence an Apprenticeship certificate cannot be awarded.

English	Minimum level or grade	Credit value
Functional Skills qualification in English	N/A	
GCSE qualification in English (with enhanced functional content)	N/A	N/A

* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

** achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Mathematics	Minimum level or grade	Credit value
Functional Skills qualification in Mathematics	N/A	N/A
GCSE qualification (with enhanced functional content) in Mathematics	N/A	N/A

* achieved before September 2012 and within the 5 years immediately prior to starting an Apprenticeship.

** achieved before September 2012, otherwise at any time prior to starting the Apprenticeship.

Inclusion of Information and Communications Technology (ICT)

N/A

Progression routes into and from this pathway

Candidates wishing to enter this Higher Apprenticeship will need to have achieved one of the following:

- A Levels, or equivalent educational attainment
- International Baccalaureate or a relevant Level 3 Technical Certificate
- An Advanced Apprenticeship (Level 3)
- Employment within the technology/telecommunications industry for a number of years and demonstrated to their employer that they have a reasonable expectation of achieving the required outcomes of the Higher Apprenticeship. This can be supported by the demonstration or evidence of prior achievement or performance in the role prior to starting the Higher Apprenticeship.

Potential apprentices should bear in mind that a Higher Apprenticeship combines the challenges of higher-level education with full-time employment, and should be prepared for the greater volume and level of study than in the Advanced Apprenticeship or another Level 3 qualification.

Progression from this framework

Following the completion of the Level 4 Higher Apprenticeship framework, successful apprentices will be able to follow up on their Foundation Degree studies and continue on to complete a full Honours degree programme.

Other industry recognised, role-specific qualifications - examples

Certified Information Systems Security Professional - CISSP

Certified Information Security Auditor - CISA

Certified Information Security Manager - CISM

Certified in Risk and Information Systems Control - CRISC

Some qualifications entitle membership of a professional organisation, offering networking and career advancement opportunities. For example, becoming a member of a professional organisation:

- The British Computer Society (BCS)
- The Institute of Engineering and Technology (IET)
- The Institute of Information Security Professionals (IISP)

UCAS points for this pathway:

(no information)

Employee rights and responsibilities

N/A

The remaining sections apply to all levels and pathways within this framework.

How equality and diversity will be met

Instructus Information Security Framework offers no barriers to entry and is intended to accommodate all learners regardless of gender, age, disability or ethnic origin.

The learning content required for the off-the-job learning can be delivered in a number of different learning styles to accommodate learner requirements.

This Apprenticeship framework is primarily designed to help new entrants into the Information Systems workforce, thereby ensuring fair access for all that apply for the programme.

Instructus expects employers and training providers to comply with the Equality Act 2010 to ensure that applicants are not discriminated against in terms of entry to, and progression within the sector, using the protected characteristics.

The following sections are included to identify current workforce demographics.

(Data refers to the whole of the IT & Telecoms sector of which Information Security is a part)

GENDER EQUALITY

Gender imbalance remains a significant issue for the IT & Telecoms sector. Considering IT & Telecoms professional job roles across all sectors, there has been a drop of female representation from 22% in 2001 to 18% in 2011. This compares to the overall UK workforce being 48% female.

As is the case in industry, gender imbalance is prevalent across IT-related courses, and this is worsening over time throughout the education system. 15% of applicants to Computing degree courses are female and the proportion of females who sat the 2013 Computing A-Level is 6.5%, 1.3 percentage points lower than in 2012.

This under-representation of women across the whole IT & Telecoms sector has a number of causes including:

- a lack of awareness (by both individuals and career advisors) of the broad range of career opportunities available
- confusion in school teaching of ICT between IT User and IT professional roles

Instructus has initiated or participated in a number of programmes to address this gender gap and encourage girls to consider a career in IT.

AGE OF WORKFORCE

Analysis of the period 2001-2011 shows a changing trend in the age profile of IT & Telecoms professionals. The proportion of people aged 16-29 has dropped from 33% in 2001 to 19% in 2011.

The average age of IT & Telecoms professionals working in the UK is estimated to be 39 years old, compared with 41 years old for workers more generally. Just under one half (47%) of IT & Telecoms professionals are aged 40 or above and less than one in five (19%) are in the 16-29 age bracket.

A key contributory factor to this changing dynamic in IT & Telecoms is the effect of globalisation. The maintenance of strong apprenticeship programmes in the sector will be vital to ensure that this trend can be halted or reversed in the coming years, thereby ensuring that the sector has the pipeline of skilled professionals that it requires to move into higher level job roles in 5-10 years time.

ETHNICITY AND DISABILITY

The Information and communication technologies industry is one of the most ethnically diverse industries in the UK, with 13 per cent of the workforce (an increase from 8% of the workforce in 2002) coming from Black, Asian and Minority Ethnic backgrounds compared to nine per cent across the whole economy.

There is significant provision for individuals with disabilities throughout the IT & Telecoms sector with many, varied opportunities for rewarding careers at all levels. This in turn means that apprenticeships are available in a wide range of areas for those with differing levels of disability.

On and off the job guided learning (England)

Total GLH for each pathway

GLH does not apply to Higher Apprenticeship frameworks

Minimum off-the-job guided learning hours

N/A

How this requirement will be met

N/A

Minimum on-the-job guided learning hours

N/A

How this requirement will be met

N/A

Personal learning and thinking skills assessment and recognition (England)

Summary of Personal Learning and Thinking Skills

N/A

Creative thinking

N/A

Independent enquiry

N/A

Reflective learning

N/A

Team working

N/A

Self management

N/A

Effective participation

N/A

Additional employer requirements

There are no additional employer requirements.

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