FEBRUARY 2017

Factsheet:
Cyber Security Specialists in the UK

This fact sheet provides an overview of demand/workforce trends for cyber security specialists in the UK using bespoke data from IT Jobs Watch together with supporting information from the Office of National Statistics (ONS) Quarterly Labour Force Survey (QLFS). The report focusses upon the five-year period from the third quarter of 2011 to the second quarter of 2016 with annual figures presented relating to the Q3-Q2 periods throughout.

Contents

Key findings

- On average, there were just under 7,000 advertised positions for Cyber Security positions posted in the UK throughout the last year (Q3.15-Q2.16 inclusive) an increase of 18% on the previous year and 103% on the level five years earlier.

- Six in ten adverts (61%) for Cyber Security specialists placed over the past year were for jobs based in London or the South East of England.

- The most commonly advertised Cyber Security positions in the UK during the past year were Security Analysts (19%), Security Consultants (18%), Security Engineers (14%), Security Managers (12%) and Security Architects (11%).

- The process/methodological skills most often needed for Cyber Security positions are those relating to Information Security, Firewalls and Network Security.

- The 'tools' (specific applications, platforms, languages etc.) most often called for over the past year were Cisco, Windows, Linux and Checkpoint.

- A requirement for Certifications is much more common amongst advertisements for Cyber Security jobs than for other digital positions. The most commonly referenced over the past year were CISSP and ISO/IEC 27001.

- The advertised rates of pay for Cyber Security specialists tend to be higher than those for digital specialists more generally and in the past year the average levels of remuneration for Cyber Security posts were £57,100 pa for permanent positions and £480 per day for contract jobs.

- Figures derived from vacancy data combined with ONS employment estimates suggest that during the past year (Q3.15 and Q2.16) there were approximately 58,000 Cyber Security specialists working in the UK.

About the Tech Partnership

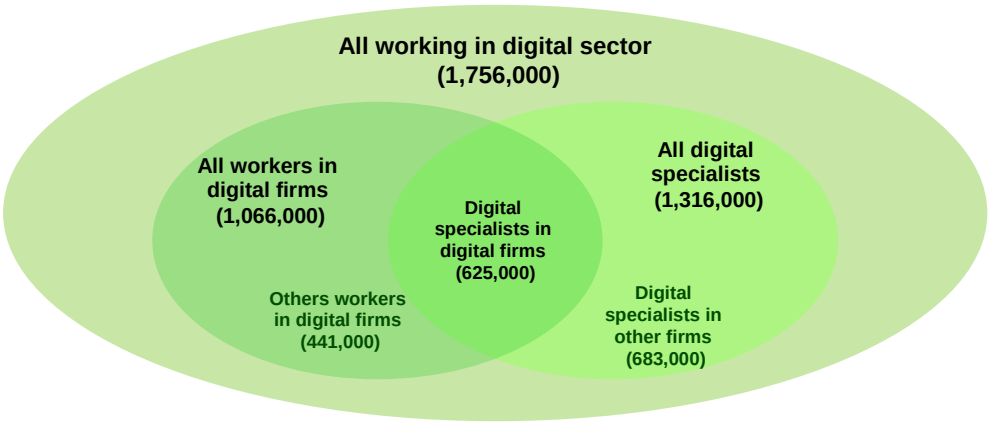
The Tech Partnership is the UK's network of employers collaborating to create the skills for the digital economy. It acts for the good of all by inspiring young people about technology, accelerating the flow of talented people of all backgrounds into digital careers, and helping companies to develop the digital skills they need for the future.

For further information, please visit www.thetechpartnership.com

1. Background: digital firms, digital specialists and the digital sector

Office for National Statistics (ONS) estimates show there were approximately 31m people working in the UK in 2015[1] of which 1.75m (6%) were working in the digital sector (i.e. working in firms in digital firms or working as digital specialists in other industries). Within this, there are 1.3m digital specialists, of which 625,000 (48%) work in the digital industry, and £683,000 (52%) work as digital specialists within other parts of the economy.

Figure 1: The digital sector and the digital workforce, Q3.15-Q2.16



Source: Analysis of data from the ONS Quarterly Labour Force Survey (QLFS) undertaken by The Tech Partnership

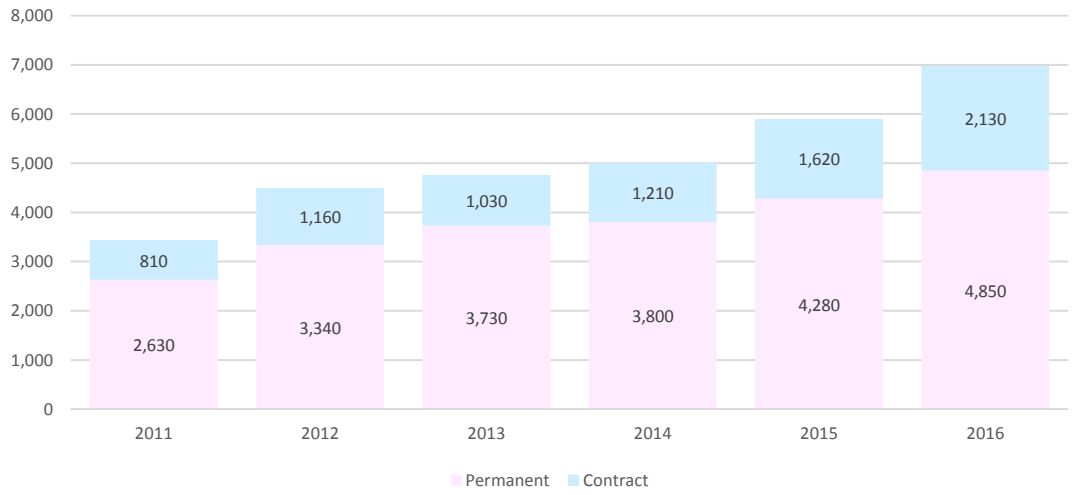
Employer/workforce characteristics and associated trends for the digital sector are explored in detail within a series of factsheets published by the Tech Partnership and this report seeks to build on this knowledge base by presenting an in depth analysis of demand trends for Cyber Security specialists in the UK using bespoke data from IT Jobs Watch together with supporting information taken from the Office of National Statistics (ONS) Quarterly Labour Force Survey (QLFS).

1 Workforce estimates in this publication supersede those presented within previous factsheets and may not be directly compatible due to the utilisation of different ONS datasets and weighting methods. Figures may not total due to rounding and non-response.

2. Overview of demand for cyber security specialists

Latest estimates from IT Jobswatch show there to have been 6,980 vacancies for Cyber Security specialists advertised across the UK on average during each quarter of the past year (Q3.15-Q2.16 inclusive) - an increase of 18% on the previous year and 103% on the level recorded five years earlier. By comparison demand for digital specialists as a whole was seen to have decreased by 5% and 11% respectively.

Figure 2: Demand for Cyber Security specialists by contractual status, 2011-16



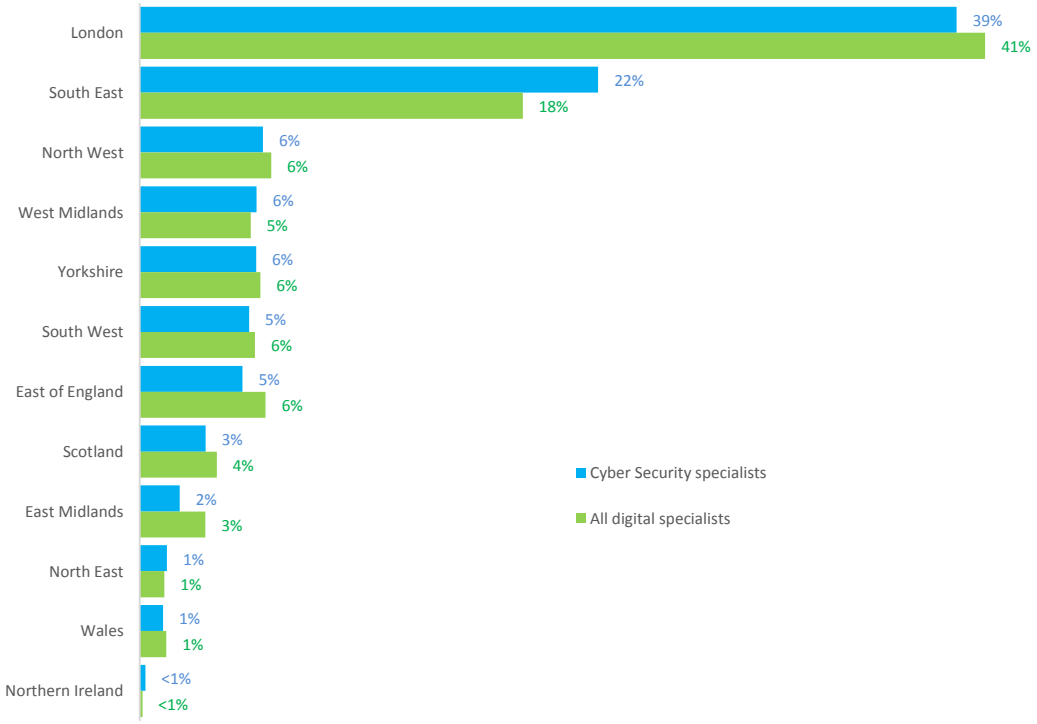
Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

Amongst those positions advertised for Cyber Security specialists over the past 12 months, the majority - 70% were for permanent positions - a slightly higher proportion than that recorded amongst adverts for digital specialists as a whole (65%). This said, the ratio of permanent to contract positions has been on the decline in recent years within the Cyber Security jobs market, and in 2011 almost three quarters (74%) of positions advertised were for permanent as opposed to contract posts. By comparison, the proportion of all digital specialist jobs that were permanent posts was much the same at 64% of the total.

3. Demand by nation/region

As with digital specialists as a whole, demand for Cyber Security specialists is seen to be heavily concentrated within the areas of London and the South East of England, these two regions accounting for 61% of Cyber adverts over the past year (59% for all digital specialist positions). The proportion of Cyber vacancies arising in the South East was however notably higher than that for digital specialists as a whole with comparison figures of 22% and 18% respectively. Aside from the South East region though the distribution of Cyber Security job vacancies across the UK closely matches that for digital specialists as a whole - the difference in each case being 1 percentage point or less over the Q3.15-Q2.16 period.

Figure 3: Demand distribution for Cyber Security/digital specialists by nation/region, Q2.15-16



Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

Though associated with the largest volumes of Cyber Security positions on offer, London/the South East were not synonymous with particularly high levels of related demand growth compared with other areas of the UK. Instead the South West, West Midlands and North East of England registered the highest growth rates over the previous year (35%, 28% and 27% respectively), whilst on a five-year term growth was highest in Wales and the East Midlands (335% and 237% respectively).

4. Core roles for cyber security specialists

The most commonly advertised Cyber Security roles in the UK during the past year were Security Analysts (19%), Security Consultants (18%), Security Engineers (14%), Security Managers (12%) and Security Architects (11%) - together positions of this nature accounting for three quarters (75%) of all Cyber Security jobs posted. The picture was much the same within the permanent and contract markets and in both cases these types of positions have accounted for the majority of employer demand for Cyber specialists throughout the past five years.

Figure 4: Demand for Cyber Security specialists by top level role group, 2011-16

Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

As illustrated in the chart above, demand for each of these top level groups has increased significantly in recent years with positions for Security Architects and Managers up by the largest amount over the 2015-16 period (46% and 31% respectively) and Security Engineers demonstrating the largest long term rise (154% between 2011 and 2016). Looking at the demand patterns for each of these groups in more detail:

4.1 Security Analysts

The most common type of Cyber Security Analyst positions required by employers over the past year has been Information Security Analysts and in total there were an estimated 310 openings for this type of Cyber specialist in each of the past four quarters (23% of the total). Demand for Information (Security) Analysts has increased substantially since 2011 (up 295%) but the greatest increase in demand amongst this group of Cyber Security specialists over the past five years is associated with SOC (Security Operations Centre) Analyst positions which have grown in number by over 1500%.

Table 1: Demand for Cyber Security Analysts, 2011-16

	2011	2012	2013	2014	2015	2016	Change (5 year)
Information (Security) Analyst	80	90	120	170	270	310	295%
Network Security Analyst	70	110	110	90	140	120	79%
SOC Analyst	10	20	20	40	70	90	1528%
Security Operations Analyst	20	30	50	50	70	90	480%
Business Analyst	40	50	40	60	70	60	53%
Risk Analyst	60	40	50	70	50	60	7%
Support Analyst	40	50	40	50	50	50	35%

Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

4.2 Security Consultants

The two most common types of Security Consultant positions advertised during the year Q3.15-Q2.16 were Information Security Consultants (200 openings each quarter) and Network Security Consultants (90 openings) which were both associated with substantial demand growth over the past 5 years (52% and 120% respectively).

4.3 Security Engineers

Security Engineers comprise the third largest group of Cyber Security specialist jobs and amongst this group the role most often demanded by employers over the past year was Network (Security) Engineers (590 openings on average each quarter). The biggest growth area in recent years has however been in the more specific area of Infrastructure Engineers for which an increase in demand of 617% was recorded.

Table 2: Demand for Cyber Security Engineers, 2011-16

	2011	2012	2013	2014	2015	2016	Change (5 year)
Network (Security) Engineer	250	490	490	450	590	590	139%
Infrastructure Engineer	20	40	80	70	120	120	617%
Firewall Engineer	50	60	110	60	100	90	98%
Systems Engineer	40	30	40	60	60	50	29%

Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

4.4 Security Managers

The number of postings for Security Management jobs has increased by 138% over the past 5 years whilst even larger increases were recorded for related Project Managers in particular (231%). The jobs most often advertised were however for Information (Security) manager positions - 330 of which were placed each quarter on average throughout the past year.

Table 3: Demand for Cyber Security Managers, 2011-16

	2011	2012	2013	2014	2015	2016	Change (5 year)
Information (Security) Manager	120	130	120	170	240	330	164%
Project Manager	60	100	100	120	150	190	231%
Risk Manager	60	50	60	90	80	110	93%
Head of Security	30	50	40	60	80	80	144%
Compliance Manager	30	20	30	50	50	70	106%

Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

4.5 Security Architects

Of all Cyber Security Architects, those focussed upon Information Security were most in demand by employers over the past year and the associated increase in demand for such staff over the past 5 years is also noted for having outstripped that for Cyber Specialists as a whole by a substantial margin (i.e. 269% vs 103% over the period).

Table 4: Demand for Cyber Security Architects, 2011-16

	2011	2012	2013	2014	2015	2016	Change (5 year)
Information Security Architect	20	40	30	50	50	70	269%
Security Solutions Architect	40	50	50	60	50	60	59%
Network Security Architect	40	30	40	50	50	60	49%
IT Security Architect	30	30	30	20	40	60	116%
Enterprise Architect	20	20	40	40	50	50	137%

Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

4.6 Security Officers/Administrators

Looking at vacancies aimed more at the entry level, there were approximately 150 Information Security Officer positions advertised each quarter over the past year and 130 positions for Security Administrators -in the first instance representing an increase of 150% on the levels recorded 5 years earlier, but in the case of Security Administrators, down by 7% over the period.

4.7 Other Cyber Security specialists

Amongst the other sub-groups of Cyber Specialists demanded by employer, testing positions were featured most often over the past year and Penetration Testers in particular. Testing jobs along with Risk Consultants were also noted for a level of demand increase above that for Cyber Specialists over the past 5 years whilst Auditors was notable for being one of the few areas in which a decline in employer demand was registered.

Table 5: Demand for other types of Cyber Security specialists, 2011-16

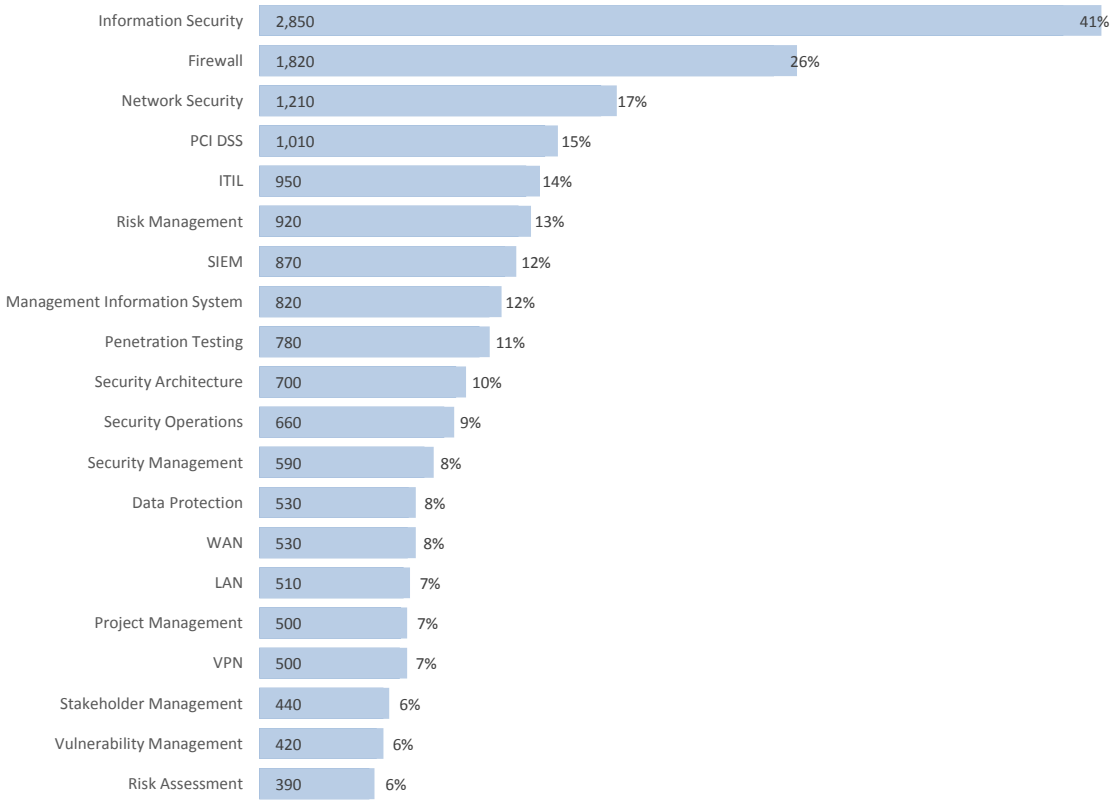
	2011	2012	2013	2014	2015	2016	Change (5 year)
Security Tester	90	100	110	150	150	210	120%
Penetration Tester	80	90	90	120	130	190	123%
Information Specialist	50	30	60	60	80	80	63%
Risk Consultant	40	40	60	50	50	80	121%
Auditor	100	90	60	70	50	60	-35%
Network Support	30	40	70	50	40	60	80%

Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

5. Demand by process/methodological skill

Excluding the generic requirement for 'cyber security skills', the process/methodological skills most often requested within adverts for Cyber Security positions are Information Security, Firewalls and Network Security and this is the case for both permanent and contract positions. In fact, nine of the top ten process/methodological skills requested within adverts for Cyber Security jobs were consistent across the two job markets during the past year.

Figure 5: Top twenty process/methodological skills needed for Cyber Security jobs, Q2.15-Q2.16 (citation incidence)



Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

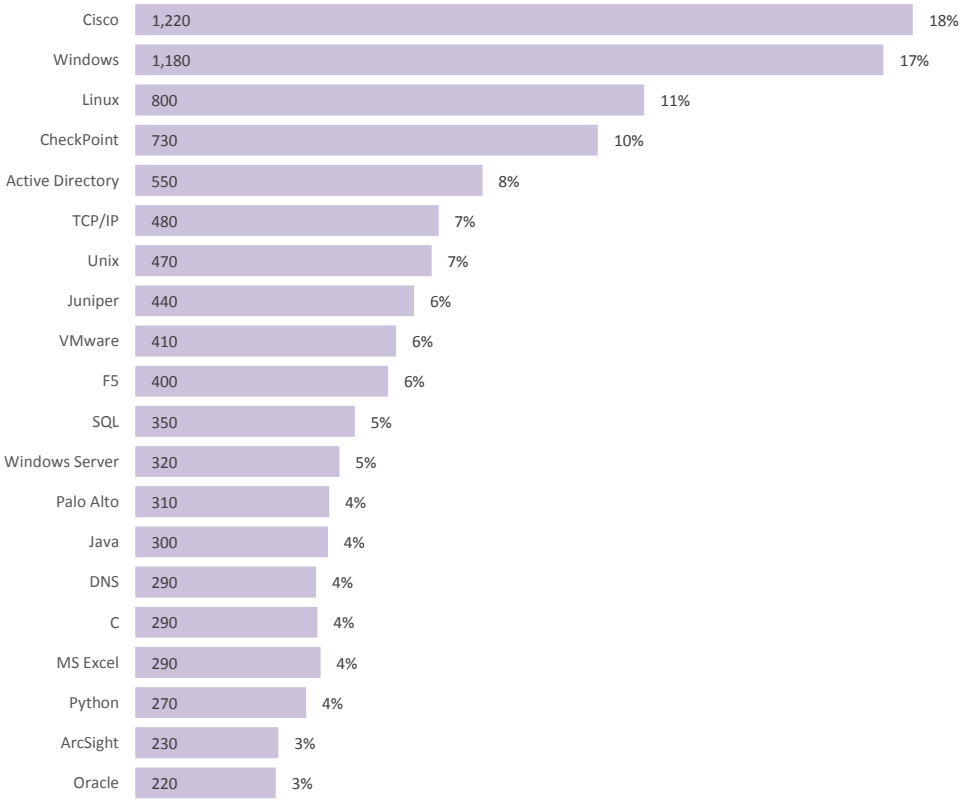
Though the 'core' process process/methodological skills have remained fairly constant year on year and have been associated with significant demand increases (all bar Firewall, Network Security, ITIL, WAN, LAN, VPN and Project Management were associated with increases above the average for Cyber Security positions as a whole) there are many areas in which employer demand has risen even more dramatically albeit, often from a lower base (number of vacancies).

The largest year on year increases in demand for process/methodological skills were: Cybercrime (264%), Big Data (202%), Information Governance (155%), DevOps (153%) and Paas (46%). Looking longer term (5 years), the biggest growth areas have been: SABSA (3582%), Waterfall (2888%), Private Cloud (2700%), Malware Detection/Protection (2622%), Mobile Apps (2286%) and Test Strategy (2210%).

6. Demand by digital ‘tools’

The ‘tools’ (specific applications, platforms, languages etc.) most often called for within adverts for Cyber Security specialists over the past year have been Cisco, Windows, Linux and Checkpoint.

Figure 6: Top twenty vendors/associated tools needed for Cyber Security jobs, Q2.15-Q2.16 (citation incidence)



Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

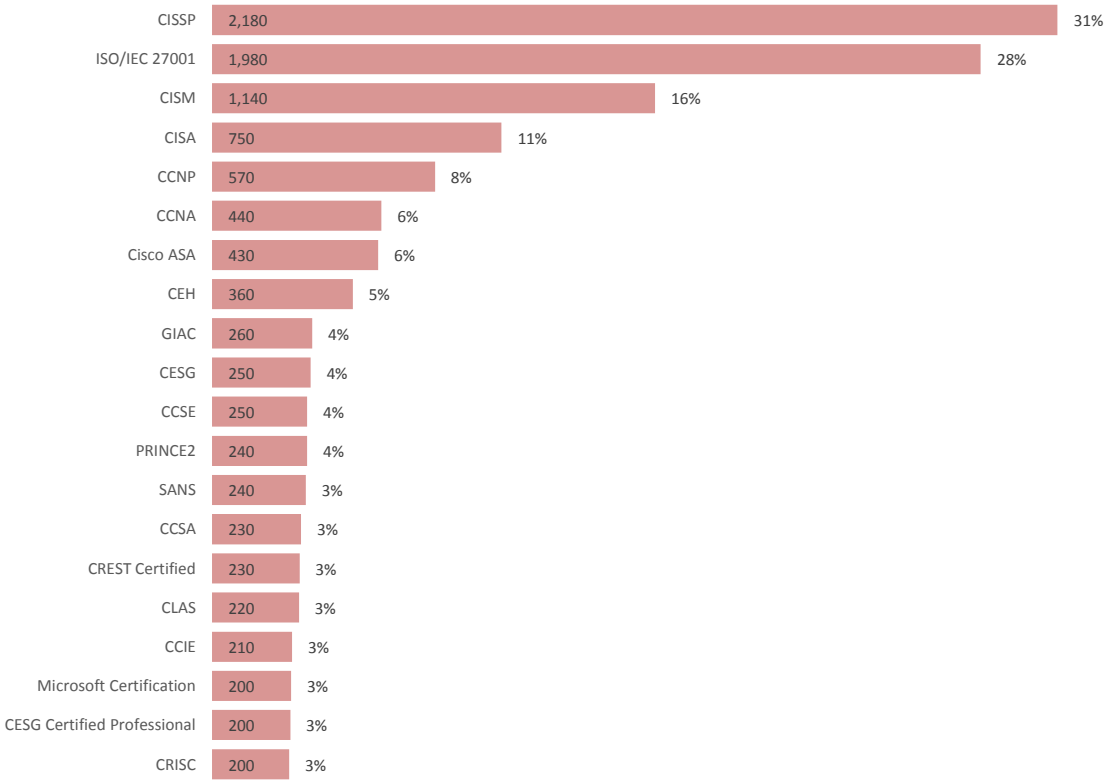
As with process/methodological skills, the core tools demanded for Cyber Security positions tended not to be associated with particularly high level of growth year on year - in fact of the top twenty only four - C, Palo Alto, Java and Linux were characterised by growth rates above that for Cyber Security specialists as a whole - whilst, amongst the remainder, nine vendors/tools were associated with an annual decrease in demand.

By comparison the biggest increase in demand for a specific vendors/tools was recorded for Hadoop - (up 439% year on year), followed by QRadar, Metasploit, C++ and Microsoft Azure. QRadar was also associated with one of the highest levels of demand growth over the past 5 years, in this case after Office 365, Android, Palo Alto, Splunk and LogRhythm.

7. Demand by certification

A degree is the most often requested qualification amongst adverts for digital specialists as a whole but even with such a generic award only 11% of adverts for digital positions contain such a requirement. By contrast, adverts for Cyber Security positions frequently reference/call for a range of related certifications, notably CISSP (Certified Information Systems Security Professional and ISO/IEC 27001 both of which featured in almost one third of adverts for jobs in this field over the past year.

Figure 7: Top twenty certifications cited within advertisements for Cyber Security jobs, Q2.15-Q2.16 (citation incidence)



Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

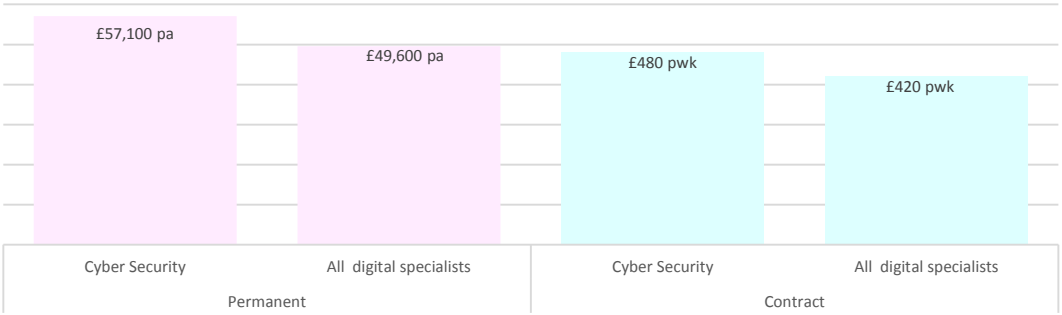
Amongst the top twenty Certifications cited in adverts for Cyber Security jobs, five (CCSE, CLAS, Cisco ASA, CCNP and PRINCE2) were associated with yearly demand falls and three (Microsoft Certification, CCIE and CCNA) with demand increases below the average for Cyber Security positions. The biggest gains instead were associated with Comptia's Security + certification, IISP, Qualys, CESG Certified Professionals and the Offensive Security Certified Professional (OSCP) certification.

CESG and OCSP certifications were also amongst the top five growth areas in Cyber Certification requirements over the past five years - in this case along with CRISC, GCIH and SANS awards/certification.

8. Demand by level of remuneration

The average advertised rate of pay for permanent Cyber Security positions over the past year was £57,100 per annum - 7% up on the previous year and 15% higher than the rate for permanent digital specialist positions as a whole. Contract positions for Cyber Security staff were also associated with above average rates - in this case 14% above the norm for digital contractors - the typical rate for Cyber contractors over the past year being £480 per day (compared with £420 for digital contractors as a whole).

Figure 8: Average advertised rates of pay by nature of employment, Q3.15-Q2.16



Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

9. Remuneration by role

As a broad group, Security Architects were associated with the highest advertised levels of remuneration over the past year - both with respect to permanent and contract positions. However the highest rates recorded overall were: for Heads of Security, Security Solutions Architects, Information Security Architects, Network Security Architects and TOGAF Architects in particular (all associated with rates of £70,000 or more) whilst for contract posts it was Head of Security, Information Security Architects, Security Penetration Testers, TOGAF Architects and Network Security Architects (all with day rates of £520 or more).

Table 6: Average advertised rates of pay by nature of position/employment, Q3.15-Q2.16

	Permanent jobs		Contract jobs	
	Annual rate	Variance on overall average	Daily rate	Variance on overall average
Security Analyst	£47,500	-4%	£410	-2%
Security Consultant	£60,000	21%	£490	17%
Security Engineer	£51,600	4%	£440	5%
Security Manager	£59,400	20%	£490	17%
Security Architect	£71,300	44%	£550	31%
Security Officers/administrators	£49,600	-	£380	-10%
All Cyber Security positions	£57,100	15%	£480	14%
All digital specialist positions	£49,600	-	£420	-

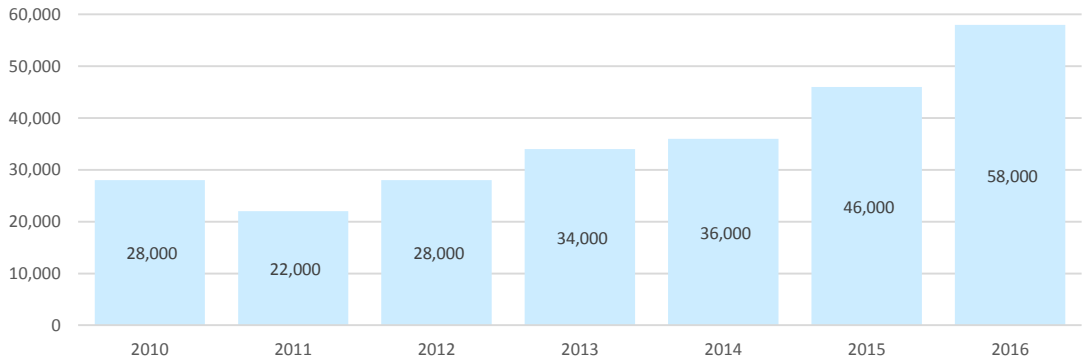
Source: Analysis of bespoke data from IT Jobs Watch undertaken by the Tech Partnership

10. Workforce estimates

There is no definitive source of data concerning the number of Cyber Security specialists in the UK however an approximation may be obtained by calculating the ratio of advertisements for digital specialists in the UK to the digital specialist workforce count (as measured by the ONS Labour Force Survey) and then applying this as a multiplier to the demand figures presented within this data sheet.

By carrying out this process we arrive at a figure of 58,000 for the number of Cyber Security specialists and a growth history as presented within the figure below:

Figure 9: Cyber Security workforce estimates, 2011-2016



Source: Analysis of bespoke data from IT Jobs Watch and the ONS Labour Force Survey undertaken by the Tech Partnership

Again, combining these figures with ONS data this would give approximations by industry as follows: digital industries - 28,000.00, banking /finance - 11,000, public sector - 7,000, manufacturing - 4,000, Construction - 2,000, Distribution, hotels and restaurants - 2,000, Transport and communication - 2,000, Agriculture/energy - 1,000 and 'other services' - 1,000.

Notes on data presentation

1. IT Jobs Watch totals may not always comply as not all advertisements contain job title/ skills/ remuneration or location data and figures have been rounded to the nearest 10.

   Detailed analysis is generally limited to instances in which 50 or more advertisements have been identified (on average per quarter) containing the measure in question (role/title /skill /region etc.). In certain cases, however (regional analysis/figures for Northern Ireland in particular) figures have been employed where a lower count of vacancies was recorded.

   The dataset of Cyber Security advertisements has been developed by analysing vacancy information to produce a dedicated listing of over 200 dedicated job titles and skills thought Cyber Security specific - further details are available on request.

2. QLFS figures presented in this datasheet have been rounded to the nearest 1,000 (workforce estimates). In some cases figures will not total due to rounding and non-response.

3. For QLFS estimates 'digital specialists' is the collective term given to occupations listed under the following ONS Standard Occupational Classification (SOC2010) codes:

   Digital Directors

   1136 - Information Technology and Telecommunications Directors

   Digital Professionals

   2133 - IT Specialist Managers

   2134 - IT Project & Programme Managers

   2135 - IT Business Analysts, Architects and Systems Designers

   2136 - Programmers & Software Development professionals

   2137 - Web Design & Development professionals

   2139 - Information Technology & Telecommunications professionals i.e.

   Digital Technicians

   3131 - IT Operations Technicians

   3132 - IT User Support Technicians

   Digital Engineers

   5242 - Telecommunications Engineers

   5245 - IT Engineers.

.

For further information, please contact:

The Tech Partnership | 1 Castle Lane | London | SW1E 6DR

+44 207 963 8920 | info@thetechpartnership.com

On behalf of the Tech Partnership, 1 Castle Lane, London SW1E 6DR
info@thetechpartnership.com / www.thetechpartnership.com

Proprietor: The Tech Partnership - A registered charity in England and Wales (1161311) - A company limited by guarantee, registered in England and Wales (4019051) - Registered office: Victoria House, 39 Winchester Street, Basingstoke, Hampshire RG21 7EQ - VAT no GB 830 3758 35