Colorado Springs
Air Force Cybersecurity Career Profiles
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Colorado Springs
CHAMBER & EDC™

simon everett
an analytic design firm

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About this document

In September 2017, the Colorado Springs Chamber of Commerce and Economic Development Corporation commissioned a team led by Simon Everett, Ltd., and its partner kglobal, LLC, to conduct a study of the cybersecurity workforce separating from the military in Colorado Springs. This document, which highlights the cybersecurity skills and qualifications of military personnel, is a component of that study.

This study was made possible by a grant awarded to Pikes Peak Community College (PPCC) by the Department of Defense (DoD) Office of Economic Adjustment (OEA). Thanks to grants like this one, OEA helps defense communities strengthen their supply chains, pursue new avenues for economic growth, and become more resilient.

About the Office of Economic Adjustment

OEA is the Department of Defense's field organization responsible for supporting state and local government's response to defense program changes, such as base closures, base restructuring or realignment, growth issues surrounding compatible land and air use for military base and community, and other issues that can impact the economy of a region.

About the Colorado Springs Chamber of Commerce & EDC

The Colorado Springs Chamber and Economic Development Corporation (Chamber & EDC) works to promote and maintain an economically diverse business climate that creates and retains high-paying jobs in the Colorado Springs region. Its mission is to enhance the quality of our community by serving the business development needs of our region so that economic growth exceeds population growth. The Chamber and EDC envisions an entrepreneurial culture of innovation that can achieve economic prosperity for the region and a high quality of life for its citizenry.

The Chamber & EDC team responsible for this effort includes:

- Vincent Persichetti // Cybersecurity Programs Director
- Eleanor Martinez // Cybersecurity Programs Administrative Assistant
- Dirk Draper // President & Chief Executive Officer
- Rich Burchfield // Chief Defense Development Officer
- Tammy Fields // Chief Economic Development Officer
- Patrice Lehermeier // Vice President, Communications
- Kathleen Johnson // Director, Market Research

About the study team

Simon Everett is an analytic design firm that conducts objective research and analysis to support strategic planning efforts on issues like defense diversification and cybersecurity. kglobal is a strategy and communications firm that works with public and private sector clients on a range of economic development programs. Together, we have supported five states and over 45 individual defense companies under OEA-supported initiatives to advance economic and workforce resilience.

The study team is comprised of the following individuals:

- Daniel Spector // Engagement Lead // Principal, Simon Everett
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Air Force cybersecurity career profiles

The military employs highly trained and qualified cybersecurity professionals whose skills and experience are invaluable to civilian employers. And yet, when these individuals transition into the private sector, it is often a challenge to translate their military experience into language that can be readily mapped or understood by a civilian hiring manager or recruiter. This report aims to bridge that translation gap for transitioning Airmen. We have identified the Air Force career fields that relate to cybersecurity, and – for each one – we provide a profile of their qualifications in civilian terms. When cybersecurity professionals transition into the civilian workforce from Peterson AFB, Schriever AFB, Cheyenne Mountain AFS, or the US Air Force Academy, Colorado Springs employers will be better positioned to understand their qualifications.

How we did it

The Air Force assigns every Airman an Air Force Specialty Code (AFSC) that represents that individual's career field (to include job function and level). The Air Force is particularly organized when it comes to the planning and categorization of career fields; unlike the occupational codes for other services, detailed descriptions of AFSCs are available publicly. For each AFSC, the Air Force publishes a Career Field Education and Training Plan (CFETP), a detailed document that covers education and training requirements, training support resources, and core tasks requirements. We also referred to the Air Force Enlisted Classification Directory and the Air Force Officer Classification Directory, which provide summaries and duties and responsibilities for every AFSC.

AFSCs have a set logic that can be deciphered to provide information about the position to which they refer. An AFSC typically has five (sometimes six) characters, the first of which relates to a career group, the second of which refers to a career field, the third of which refers to a career field subdivision, the fourth of which refers to a skill level, and the last of which denotes the specific position. Table 1 shows the structure for the 3D031 AFSC: Knowledge Operations Management Apprentice.

Table 1 // Example of an AFSC broken down

3	D	0	3	1
Group	**Field**	**Subdivision**	**Skill level**	**Position**
Support	Cyberspace Support	Cyberspace Operations	Apprentice	Knowledge Ops Management

We should note that when we refer to an AFSC with an "X" in the code, we are referring to a number of potential codes. For example, we will refer to all Knowledge Operations Management positions (at varying skill levels) as 3D0X1.

We reviewed each AFSC and then identified those that directly or indirectly relate to cybersecurity. Then, we turned to the CFETPs and other information sources to develop

profiles of each cybersecurity AFSC, placing an emphasis on job function and certifications. To identify certifications, we turned to the Department of Defense 8570.01-M Information Assurance Workforce Improvement Program (IAWIP), which details the approved certifications for information assurance in both technical and management capacities.[i]

Finally, we used each AFSC to determine the most analogous non-military job for which each position was best suited. To do this, we used the Occupational Information Network (O*NET), an online database of occupational definitions and skills requirements that was developed by the North Carolina Commerce Department via a US Department of Labor grant. The O*NET database includes the ability to crosswalk MOC or SOC codes to its own data, which is how we were able to see which occupations are most analogous to cybersecurity AFSCs.

Air Force cybersecurity career fields

Table 2 includes all identified AFSCs related to cybersecurity.

Table 2 // Air Force Cybersecurity Career Fields

1B Series
1B4X1 Cyberspace Warfare Operations
1N Series
1N4X1A Fusion Analyst, Digital Network Analyst
3D Series
3D0X1 Knowledge Management
3D0X2 Cyber Systems Operations
3D0X3 Cyber Surety
3D0X4 Computer Systems Programming
3D1X1 Client Systems
3D1X2 Cyber Transport Systems
17C Series
17C0 Cyberspace Operations Commander
17D Series
17DXA Network Operations, Cyberspace Defense Analysis
17DXB Net Ops, Cyber Security and Control System
17DXC Net Ops, Air Force Intranet Control
17DXD Net Ops, Cyberspace Vulnerability Assessment/Hunter
17DXE Net Ops, Cyber Command + Ctrl Mission System
17DXF Net Ops, Air Force Cyberspace Defense
17DXW Net Ops, General
17DXY Net Ops, General / Special Operations / CSO
17DXZ Net Ops, Others / C2ISREW / CSO
17S Series
17SXA Cyberspace Warfare Ops, Cyberspace Def. Analysis
17SXB CW Ops, Cyber Security + Control System
17SXC CW Ops, Air Force Intranet Control
17SXD CW Ops, Cyberspace Vulnerability Assessment/Hunter
17SXE CW Ops, Cyber Command + Control Mission System
17SXF CW Ops, Air Force Cyberspace Defense
17SXG CW Ops, Network Attack System
17SXJ CW Ops, Offensive Cyberspace Platforms
17SXY CW Ops, General
17SXZ CW Ops, Other

1B Series[ii]

Airmen in the 1B series perform "duties to develop, sustain, and enhance cyberspace capabilities to defend national interests from attack and to create effects in cyberspace to achieve national objectives." In the execution of these duties, individuals in this specialty conduct offensive and defensive cyberspace operations (including defense of data, networks, and other designated systems). Those in this specialty also participate in research and development to inform decisions on the acceptance of new or modified capabilities.

1B4X1 Cyber Warfare Operations

Airmen in this specialty are required to maintain, at a minimum, Information Assurance Technical (IAT) Level II certifications, which includes the certifications listed below in Table 3.

Table 3 // IAT Level II certifications

Certification
Cisco Certified Network Associate Security (CCNA Security)
CompTIA Cybersecurity Analyst (CySa+)
GIAC Global Industrial Cyber Security Professional (GICSP)
GIAC Security Essentials (GSEC)
CompTIA Security+ Continuing Education (CE)
(ISC)2 Systems Security Certified Practitioner (SSCP)

Table 4 lists the different cybersecurity specialties within the 1B series.

Table 4 // 1B4X1 skill levels

AFSC	Title	Minimum rank	Avg. years at level
1B431	Apprentice	Airman	1.3
1B451	Journeyman	Airman First Class	4.2
1B471	Craftsman	Staff Sergeant	16.3
1B491	Superintendent	Senior Master Sergeant	1.1

Table 5 uses the O*NET crosswalk to identify the civilian occupations most analogous to these AFSCs. Note that these four occupations map to all four AFSCs in the 1B4X1 category; in other words, the O*NET crosswalk determined that all four skill levels (Apprentice, Journeyman, Craftsman, and Superintendent) are analogous to the four SOC codes in Table 5.

Table 5 // 1B4X1 civilian analogues

SOC	Title
11-3021	Computer and Information Systems Managers
15-1122	Information Security Analysts
15-1199	Computer Systems Engineers/Architects
43-9011	Computer Operators

1N Series

The 1N series refers to the Fusion Analyst specialty. These specialties manage intelligence analysis across any domain and draft long-term and/or time-sensitive intelligence reports. Because specialties in this series work across many domains, they support various Air Force and Joint Intelligence, Surveillance, and Reconnaissance operations.

1N4X1A Fusion Analyst, Digital Network Analyst

Digital Network Analysts collect, identify, and exploit communications to support Computer Network Operations. Analysts use all-source intelligence to inform technical and operational briefings. Their work shapes the US network operations environment all across the globe. While digital network analysts must be knowledgeable about global communications procedures, they are not required to have specific cybersecurity certifications. They must, however, complete Air Force courses on intelligence analysis fundamentals.

Table 6 below highlights the 1N4X1A's civilian analogues. The length of this list can be attributed to the fact that fusion analysts often have multidisciplinary backgrounds, and the 1N series broadly includes skills that are easily translatable to a wide list of occupations. Again, it should be noted that this position has some of the skills necessary to be an Information Security Analyst, the only SOC composed entirely of cybersecurity workers.

Table 6 // 1N4X1A civilian analogues

SOC	Title
11-3021	Computer and Information Systems Managers
13-1111	Management Analysts
15-1121	Computer Systems Analysts
15-1122	Information Security Analysts
15-1141	Database Administrators
15-1142	Network and Computer Systems Administrators
15-2031	Operations Research Analysts
17-1021	Cartographers and Photogrammetrists
27-3042	Technical Writers
33-3021	Criminal Investigations and Special Agents
33-3021	Intelligence Analysts
43-9011	Computer Operators

3D Series

The 3D career field, known as Cyberspace Support, is split into two specialties: Cyberspace Operations (3D0) and Cyberspace Systems (3D1). Cyberspace Operations include the management of information technology resources in order to store data; administration of networked system and distributed applications; and maintenance of systems, policy, and procedures. Cyberspace Systems focuses on the deployment, repair, and maintenance of device, network, and communications hardware.

3D0X1 Knowledge Management

An Airman in this specialty manages processes, technologies, and practices in support of information collection, organization, and dissemination in fixed and deployed environments. In other words, these Airmen manage the planning, coordination, sharing, and control of information, where information includes raw data, documents, practices, policies, and individual expertise. Airmen in this specialty must maintain internal Air Force certifications, including an Air Force Network License and Air Force Computer Security (AFMAN 33-282).

Table 7 // 3D0X1 skill levels

AFSC	Title	Minimum rank	Avg. years at level
3D031	Apprentice	Airman	1.3
3D051	Journeyman	Airman First Class	2.96
3D071	Craftsman	Staff Sergeant	14.64
3D091	Superintendent	Senior Master Sergeant	3.3

Table 8 // 3D0X1 civilian analogues

SOC	Title
11-1021	General and Operations Managers
11-3011	Administrative Services Managers
11-9131	Postmasters and Mail Superintendents
11-9199	Compliance Managers
13-1111	Management Analysts
15-1199	Document Management Specialists
43-1011	First-Line Supervisors of Office & Admin Support Workers
43-6011	Executive Secretaries & Executive Admin Assistants
43-6014	Secretaries & Admin Assistants, except Legal, Medical, Exec.
43-9022	Word Processors & Typists
43-9031	Desktop Publishers
43-9051	Mail Clerks & Mail Machine Operators, Except Postal Service
43-9061	Office Clerks, General

3D0X2 Cyber Systems Operations

This specialty focuses on the installation and support of server and computer systems and software applications. This includes ensuring that these systems have adequate and current defense mechanisms. An Airman in this specialty not only uses enterprise tools, but also designs and configures solutions himself. 3D0X2 Airmen are required to maintain at least one IAT Level II certification.

Table 9 // IAT Level II certifications

Certification
Cisco Certified Network Associate Security (CCNA Security)
CompTIA Cybersecurity Analyst (CySa+)
GIAC Global Industrial Cyber Security Professional (GICSP)
GIAC Security Essentials (GSEC)
CompTIA Security+ Continuing Education (CE)
(ISC)2 Systems Security Certified Practitioner (SSCP)

Table 10 // 3D0X2 skill levels

AFSC	Title	Minimum rank	Avg. years at level
3D032	Apprentice	Airman	1.3
3D052	Journeyman	Airman First Class	2.77
3D072	Craftsman	Staff Sergeant	15.63
3D092	Superintendent	Senior Master Sergeant	3

Table 11 // 3D0X2 civilian analogues

SOC	Title
11-3021	Computer and Information Systems Managers
15-1121	Computer Systems Analysts
15-1122	Information Security Analysts
15-1141	Database Administrators
15-1142	Network and Computer Systems Administrators
15-1151	Computer User Support Specialists
15-1152	Computer Network Support Specialists
15-1199	Information Technology Project Managers

3D0X3 Cyber Surety

This specialty focuses on the risk management of fixed, deployed, and mobile information and communications systems. An Airman in this specialty does this by identifying potential threats and managing communications security incidents and by evaluating systems, policy, and procedures. This specialty is responsible for cybersecurity risk management of systems throughout the systems' life cycles. 3D0X3 Airmen are required to maintain at least one IAT Level II certification.

Table 12 // IAT Level II certifications

Certification
Cisco Certified Network Associate Security (CCNA Security)
CompTIA Cybersecurity Analyst (CySa+)
GIAC Global Industrial Cyber Security Professional (GICSP)
GIAC Security Essentials (GSEC)
CompTIA Security+ Continuing Education (CE)
(ISC)2 Systems Security Certified Practitioner (SSCP)

Table 13 // 3D0X3 skill levels

AFSC	Title	Minimum rank	Avg. years at level
3D033	Apprentice	Airman	1.3
3D053	Journeyman	Airman First Class	2.89
3D073	Craftsman	Staff Sergeant	15.52
3D093	Superintendent	Senior Master Sergeant	3.02

Table 14 // 3D0X3 civilian analogues

SOC	Title
11-3021	Computer and Information Systems Managers
15-1121	Computer Systems Analysts
15-1122	Information Security Analysts
15-1141	Database Administrators
15-1142	Network and Computer Systems Administrators
15-1199	Computer Systems Engineers/Architects
15-1199	Information Technology Project Managers

3D0X4 Computer Systems Programming

Personnel in this specialty perform computer analysis, coding, and testing, and manage the creation and development of application software systems. Acting in accordance with Air Force Network Operations guidance, an Airman in this specialty identifies a user's software requirements and translates those needs into program code and/or database structures. Computer Systems Programmers also test to ensure systems are functioning correctly and are responsible for the stability of those systems. As this specialty is focused on the core design and creation of application software systems, Airmen in this specialty are not required to have civilian cybersecurity certifications, but they must maintain internal Air Force certifications, including an Air Force Network License and Air Force Computer Security (AFMAN 33-282).

Table 15 // 3D0X4 skill levels

AFSC	Title	Minimum rank	Avg. years at level
3D034	Apprentice	Airman	1.3
3D054	Journeyman	Airman First Class	3.13
3D074	Craftsman	Staff Sergeant	15.31
3D094	Superintendent	Senior Master Sergeant	2.54

Table 16 // 3D0X4 civilian analogues

SOC	Title
11-3021	Computer and Information Systems Managers
15-1121	Computer Systems Analysts
15-1122	Information Security Analysts
15-1131	Computer Programmers
15-1132	Software Developers, Applications
15-1133	Software Developers, Systems Software
15-1141	Database Administrators
15-1142	Network and Computer Systems Administrators
15-1199	Software Quality Assurance Engineers and Testers
15-1199	Database Architects
43-9011	Computer Operators

3D1X1 Client Systems

This specialty focuses on voice, data and video network, and cryptographic devices in fixed and deployed environments. An Airman in this specialty troubleshoots, repairs, and analyzes these devices on a hardware and software level. Those in the specialty conduct corrective security procedures and report security incidents. Airmen in these positions are required to maintain an IAT Level II certification, at a minimum.

Table 17 // IAT Level II certifications

Certification
Cisco Certified Network Associate Security (CCNA Security)
CompTIA Cybersecurity Analyst (CySa+)
GIAC Global Industrial Cyber Security Professional (GICSP)
GIAC Security Essentials (GSEC)
CompTIA Security+ Continuing Education (CE)
(ISC)2 Systems Security Certified Practitioner (SSCP)

Table 18 // 3D1X1 skill levels

AFSC	Title	Minimum rank	Avg. years at level
3D131	Apprentice	Airman	1.3
3D151	Journeyman	Airman First Class	3.07
3D171	Craftsman	Staff Sergeant	15.39
3D191	Superintendent	Senior Master Sergeant	2.54

Table 19 // 3D1X1 civilian analogues

SOC	Title
11-3021	Computer and Information Systems Managers
15-1121	Computer Systems Analysts
15-1122	Information Security Analysts
15-1141	Database Administrators
15-1142	Network and Computer Systems Administrators
15-1151	Computer User Support Specialists
15-1152	Computer Network Support Specialists
15-1199	Information Technology Project Managers
43-9011	Computer Operators
49-2011	Computer, Automated Teller, & Office Machine Repairers
49-2021	Radio, Cellular, & Tower Equipment Installers & Repairers
49-2022	Telcom Equip. Installers & Repairers, Except Line Installers

3D1X2 Cyber Transport Systems

This specialty focuses on voice, data and video network infrastructure systems, and cryptographic equipment. An Airman in this specialty supervises network design, operation, and defense, taking corrective action in response to problems as necessary. An Airman may also fabricate and connect wiring between network infrastructure devices or deploy and operate expeditionary communications systems. With regards to cybersecurity, this specialty ensures physical, cryptographic, transmission, and emissions security. Airmen must maintain an IAT Level II certification, at a minimum.

Table 20 // IAT Level II certifications

Certification
Cisco Certified Network Associate Security (CCNA Security)
CompTIA Cybersecurity Analyst (CySa+)
GIAC Global Industrial Cyber Security Professional (GICSP)
GIAC Security Essentials (GSEC)
CompTIA Security+ Continuing Education (CE)
(ISC)2 Systems Security Certified Practitioner (SSCP)

Table 21 // 3D1X2 skill levels

AFSC	Title	Minimum rank	Avg. years at level
3D132	Apprentice	Airman	1.3
3D152	Journeyman	Airman First Class	3.21
3D172	Craftsman	Staff Sergeant	14.38
3D192	Superintendent	Senior Master Sergeant	4.01

Table 22 // 3D1X2 civilian analogues

SOC	Title
15-1121	Computer Systems Analysts
15-1122	Information Security Analysts
15-1142	Network and Computer Systems Administrators
15-1143	Computer Network Architects
15-1143	Telecommunications Engineering Specialists
15-1152	Computer Network Support Specialists
15-1199	Information Technology Project Managers
43-9011	Computer Operators
49-2022	Telcom Equip. Installers & Repairers, Except Line Installers

17 Series – Cyberspace Operations Officer

17X cyberspace operations officers plan, organize, direct, and execute defensive and offensive cyber operations, DoD Information Network (DoDIN)[1] operations, and mission assurance for Air Force weapons systems and platforms. They also operate weapon systems, command and train crewmembers, and develop plans and policies.

17X officers are required to maintain Information Assurance Management (IAM) certifications. 17X Company Grade Officers (officers with a rank of O-1 Second Lieutenant, O-2 First Lieutenant, or O-3 Captain) must maintain at least one IAM Level I certification, while 17X Field Grade Officers (officers with a rank of O-4 Major or O-5 Lieutenant Colonel)[iii] must maintain IAM Level II certification, at a minimum. Once assigned to a cybersecurity position, a 17X officer is required to attain the necessary certification within six months of his or her duty assignment.

Referring to the O*NET crosswalk, the only civilian analogue for any and all AFSCs within the 17X series is 11-3021 Computer and Information Systems Managers.

Table 23 // IAM Level I certifications

Certification
(ISC)2 Certification Authorization Professional (CAP)
GIAC Security Leadership (GSLC)
CompTIA Security+ Continuing Education (CE)

Table 24 // IAM Level II certifications

Certification
(ISC)2 Certification Authorization Professional (CAP)
CompTIA Advanced Security Practitioner (CASP) Continuing Education (CE)
ISACA Certified Information Security Manager (CISM)
(ISC)2 Certified Information Systems Security Professional (CISSP) or Associate[2]
GIAC Security Leadership (GSLC)

[1] DoDIN comprises some 15,000 networks with three million users and enables US military operations across the globe.

[2] A CISSP Associate certification indicates that an individual has qualified for certification but lacks the required number of years of experience.

17C Series – Cyberspace Operations Commander

17C0 Cyberspace Operations Commander

Cyberspace Operations Commanders command Cyberspace Operations Groups and are responsible for the integration of cyberspace operations resources for USAF operations. These operations include DoDIN, offensive and defensive operations, combat communications support, and computer systems engineering and installation. A Master's degree in a relevant field of study, such as computer science, telecommunications, or business administration, among others, is desired.

17D Series – Network Operations

17D officers are tasked with operating cyberspace weapons systems, including those with cyberspace capabilities. As such, they supervise mission planning and preparation. Within the 17D series, there are a series of more specific specializations that map to an AFSC suffix. They are listed below.

Table 25 // 17D AFSC suffixes

AFSC	Suffix	Area	Acronym
17DX	A	Cyberspace Defense Analysis	CDA
	B	Cyber Security and Control System	CSCS
	C	Air Force Intranet Control	AFINC
	D	Cyberspace Vulnerability Assessment/Hunter	CVA/Hunt
	E	Cyber Command and Control Mission System	C3MS
	F	Air Force Cyberspace Defense	ACD
	Y	General	N/A
	Z	Other	N/A

17S Series – Cyber Warfare Operations

Whereas 17D officers are focused on the maintenance, security, and operability of cyberspace weapons systems and, more generally, USAF and DoD networks, 17S officers utilize those resources to conduct operations. As mentioned in the 17X overview, this can include offensive and defensive cyber operations. Like 17D, this AFSC has suffixes that point to more specific function areas within the specialty. There is a great deal of overlap between these suffixes, but 17S includes two suffixes that are not present under 17D: G and J. All 17S suffixes are listed below.

Table 26 // 17S AFSC suffixes

AFSC	Suffix	Area	Acronym
17SX	A	Cyberspace Defense Analysis	CDA
	B	Cyber Security and Control System	CSCS
	C	Air Force Intranet Control	AFINC
	D	Cyberspace Vulnerability Assessment/Hunter	CVA/Hunt
	E	Cyber Command and Control Mission System	C3MS
	F	Air Force Cyberspace Defense	ACD
	G	Network Attack System	NAS
	J	Offensive Cyberspace Platforms	N/A
	Y	General	N/A
	Z	Other	N/A

Appendix A | Sources

[i] "DoD 8570.01-M: Information Assurance Workforce Improvement Program," *Department of Defense Chief Information Officer.* November 10, 2015. http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/857001m.pdf
[ii] "AFSC 1B4X1 Cyber Warfare Operations Career Field Education and Training Plan," *Department of the Air Force.* November 1, 2014. http://static.e-publishing.af.mil/production/1/saf_cio_a6/publication/cfetp1b4x1/cfetp1b4x1.pdf
[iii] "Officer Rank Insignias," *Department of Defense.* https://www.defense.gov/About/Insignias/Officers/