YouthBuild USA

IT

Industry Spotlight

June 2021

Overview

This industry spotlight provides an introductory overview of the **Information Technology (IT)** industry. It intends to support programs with understanding the **industry**, **career pathways,** and **occupations** and help YouthBuild participants determine whether the industry aligns with their interests and career goals.

About the IT Industry

The IT industry relates to the design, development, support, and management of hardware, software, multimedia, and systems integration services. Workers in this industry maintain networks, create new software, and ensure information security. The IT industry is integral to the safety, security, and economy of the country.

Quick Facts
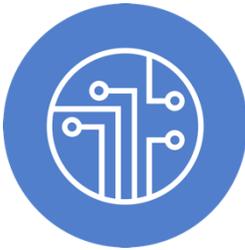
585,000 tech business establishments

12.2 million tech industry and occupation jobs

$2.0 trillion estimated economic output

Source: Cyberstates 2021, CompTIA: 2021 data on the tech industry in the United States

IT Classification and Subsectors

The IT industry is classified in a variety of ways. The Department of Labor refers to IT as an industry or **career cluster**. The North American Industry Classification System (NAICS) and U.S. Bureau of Labor Statistics (BLS) classifies many IT occupations under the Information **sector**, which is very broad. Common IT occupations

such as Computer Programmers and Software Developers fall under Computer and Mathematical Occupations (Major Group). IT is also often referred to as a **subsector** of the technology (tech) sector.

The Technology Sector

The tech sector continues to evolve and expand. According to CompTIA, the United States is the largest tech market in the world, representing 33% of the total. It consists of businesses that manufacture electronics and create software, computers, or products and services related to information technology. Consumer goods such as personal computers, mobile devices, wearable technology, and home appliances are continually improved and updated. Tech workers with IT skills play a key role in the development of these products and services.

Software & Services

Semiconductors

Technology Subsectors

Hardware

Networking & Internet
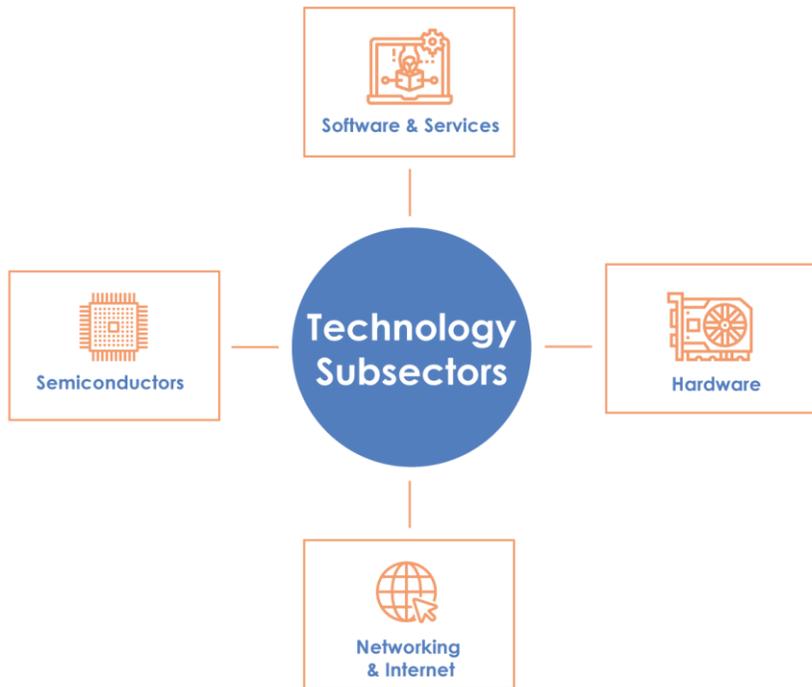
Technology Innovations

Innovations in cloud computing, e-commerce, gaming, artificial intelligence, and the Internet of Things have made the technology sector more unique and dynamic. As these innovations continue to advance, new subsectors and occupations will emerge.

IT Industry Career Facts

The IT industry offers diverse employment opportunities with strong projected growth and high-paying salaries. As economies, jobs, and personal lives become more connected and technology-driven, so does the need to find talent to support a digital world. Whether interest lies in designing and developing software applications, building

Key Definition

Semiconductors: tiny electronic devices made primarily from silicon. Semiconductors are found in just about every electronic device.

Internet of Things: concept of connecting any device to the Internet and other connected devices.

websites, or ensuring information security, pathways to both creative and technical careers exist. The IT industry and industries such as healthcare, finance, and manufacturing, benefit from a highly skilled workforce to oversee IT services. **Learn more in the following sections about whether a career pathway in the IT industry is the right pathway for your program and participants.**

High-Paying Salaries from Entry-level to Advanced

IT occupations jobs are well-paying, with wages typically twice as high as the national average for all occupations. According to the BLS, the median wage for IT workers in the United States in 2020 was $91,250. Many entry-level jobs start with salaries well over the national median and lead to career and wage progression.

> **YouthBuild Program Tip**
> *Find Your Local Living Wage*
>
> What is considered a good salary in one region may not be in another. To determine a viable, living wage in a specific region, use the **MIT living wage** calculator.

Median Annual Salary Examples by Beginner Experience

$81,323	$61,294	$80,251
Web Developer	Networking Specialist	Cybersecurity

Source: CompTIA Career Path Planning Tool, CompTIA analysis of data from Burning Glass Technologies Labor Insights, EMSI, and U.S. Bureau of Labor Statistics.

Wages and salary correspond with skill, competency, credential attainment, and experience. **Image 1.0** demonstrates the progression of salary with credential attainment. In 2017, job postings for core IT positions in the United States that did not cite a bachelor's degree or higher requirement paid $83,000 per year on average (CompTIA).

Image 1.0
Career Progression of a Software Developer and Credential Attainment

Beginner	Intermediate	Advanced
$81,323	$98,849	$107,037
CompTIA ITF+, Google, Red Hat, Microsoft		Google, AWS, Redhat, IBM, Oracle, VMWare

Source: CompTIA

Wide Range of Education & Skills Attainment

IT is a highly lucrative and skilled profession. While a postsecondary degree is essential for many IT occupations, it is a misconception that you need to have a four-year degree to enter the IT industry. According to the BLS, about 37 percent of workers that fall under "Computer Occupations," a major employment group, do not hold a bachelor's degree or higher. There are certain IT jobs in tech and non-tech industries for individuals that seek alternative training options to consider. The IT occupations highlighted in **Image 1.1** have a higher percentage of workers that chose an alternative education and training route.

YouthBuild Program Tip
Identify Entry-Level Points

Programs can work with employers to identify entry-level points, credentials and competencies needed to enter specific career paths. Refer to the section below on how to evaluate and assess viable occupations for young people.

Image 1.1
IT Occupations by Educational Attainment

■ High School Diploma ■ Some college, no degree ■ Associate's degree

Occupation	High School Diploma	Some college, no degree	Associate's degree
Computer Network Support Specialist	10.9%	23.7%	15.5%
Network and Computer Systems Administrator	6.4%	20.6%	16.8%
Web Developers	5.1%	14.4%	9.0%
Information Security Analysts	4.2%	15.6%	10.1%
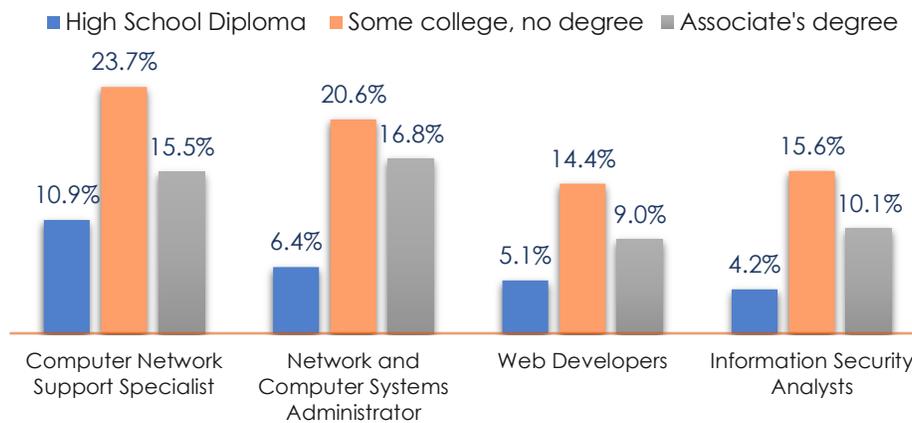
Source: BLS, Educational Attainment for workers 25 years and older, 2019

Training and industry-recognized credentials from accredited training institutions, trade associations, and businesses can offer on-ramps to enter the IT industry.

69% of CompTIA certification candidates do not hold a four-year college degree. (CompTIA Post Exam Survey, Q1 2018)

Key Definition

Industry-Recognized Credentials: Reflect the specific competencies needed for a given industry or occupational area.

49% of the 2.3 million IT job postings surveyed in 2017 did not list a four-year degree as a minimum requirement for candidates. (Source: CompTIA Employer Perception Study)

> ### YouthBuild Program Tip
> *Pre-requisites for Technical Industry-Recognized Credentials*
>
> An effective approach to navigating credentials is to meet participants where they are. A good place to start may be to build foundational digital skills and introduce common terminology used in the field. These foundational skills can set YouthBuild participants up for success before they take on more technical credentials. Digital skills can be applied across any IT and non-IT profession. Activities and trainings that build digital skills can also be a career exploration tool to help participants connect their interests and skills to career pathways in IT.

Both self-paced and instructor-led online courses to acquire new IT and digital skills are becoming more accessible as tech companies attempt to reach more workers. While these courses can introduce key concepts and skills, many lead to a certificate of completion rather than industry-recognized certification. For example, LinkedIn and Microsoft launched two online courses to create more accessible opportunities to learn the fundamentals of using digital technologies.

Industry-recognized certifications indicate skill mastery that results from a final assessment. Since technology is constantly changing, individuals often must meet ongoing requirements to maintain the currency of the certification. Entry-level certifications are offered by entities such as CompTIA, Cisco, and Microsoft. Many entry-level credentials in IT require a 10th grade reading level.

Industry-Recognized Certifications Examples		
Credential	**Entry-Level Certification(s)**	**Example of Topics Covered**
CompTIA	CompTIA IT Fundamentals, CompTIA Network+, CompTIA Security+	Security, Database Fundamentals, Applications and Software, Infrastructure, IT Concepts and Terminology, Software Development
Cisco	Cisco Certification Technician (CCT), CCT Collaboration	Cisco Networking Devices and Systems

	Microsoft 365 Certified Fundamentals, Azure Fundamentals, Power Platform Fundamentals	Cloud, Microsoft 365 Services and Concepts, Security, Azure Services
Microsoft		
Learn more about IT certification roadmaps by occupation group here.		

Diverse Training Options

IT skills can also be learned from hands-on experience, paid on-the-job training, and tinkering on a computer. With the projected demand for IT talent, training models such as pre-apprenticeships, software boot camps, certification programs through community colleges, and Registered Apprenticeship Programs (RAP) have grown. A RAP combines on-the-job work experience, classroom learning, mentorship, and credential attainment. High-demand IT apprenticeships include software developers, network administrators, and cybersecurity analysts. Visit www.apprenticeship.gov for more information.

YouthBuild Program Tip
IT Work Experiences in Tech and Non-Tech Industries

Work experiences can take the form of internships, apprenticeships, job shadows, mentoring, and service projects. As a pre-apprenticeship program, YouthBuild grantees already work with employers to design work experiences. With IT work experiences, programs can engage employers in various industries to identify activities that engage and further develop tech and digital skills. Prior to the work experience, programs and employers should identify how the activity will lead to new digital skills. Another way for participants to gain work experience is to start a helpdesk led by youth at a YouthBuild program site. Participants can help troubleshoot computer issues or provide other tech support as needed.

Personal Effectiveness Skills Needed

Personal effectiveness skills are just as critical as technical skills in IT. Many IT jobs require good communication, collaboration, problem-solving, project management, and customer service. For those who are developing tech products or software, empathy and relationship skills are key to connecting technology to consumers. As for math, most IT jobs require basic arithmetic skills to get started.

Many IT jobs can be performed remotely if a reliable internet connection is available. Several major cities represent the highest numbers of IT job openings: San Francisco, San Jose, Seattle, Los Angeles, Dallas-Fort Worth, and Chicago. Several smaller cities are also adding significant numbers of IT jobs, including Austin, Charleston, Charlotte, Fort Myers, and Madison (CareerOneStop).

National Career and Occupation Outlook

Computer and IT Occupations

Employment in computer and information technology occupations is projected to grow 11 percent from 2019 to 2029, much faster than the average for all occupations. These occupations are projected to add about 531,200 new jobs. Demand for these workers will stem from greater emphasis on cloud computing, collecting and storing big data, and information security.

According to the BLS, computer occupations are expected to see fast job growth as strong demand is expected for IT security and software development and as new products associated with the Internet of Things are developed. These occupations include software developers as well as information security analysts.

Tech Jobs Growing in Non-Tech Industries

A 2021 CompTIA report defines tech employment as technology professionals working in technical positions including IT support, network engineering, software development, and related roles. 46.5 percent of tech professionals work for technology companies, but 53.5 percent work in other industry sectors.

IT occupations are projected to grow in other industries, such as healthcare and manufacturing. According to a 2019 report by Burning Glass Technologies and Oracle Academy, 90 percent of IT skills and jobs exist in non-IT industries. This trend is expected to continue as demand for technology increases.

> **YouthBuild Program Tip**
> *Using Labor Market Information*
>
> National career and occupation projections can help YouthBuild programs understand labor demands and trends. On a local level, labor market information may vary. Programs are encouraged to converse with employers regarding local job openings and skills needed to fill those jobs.

> **Technology Jobs Snapshot**
>
> - By 2030, projections from the U.S. Bureau of Labor Statistics and EMSI put the base of tech occupation employment at approximately **9.0 million.**
>
> - Tech occupation employment is expected to grow at about **twice** the rate of overall employment across the economy. Occupations with the strongest growth include:
>   - Cybersecurity
>   - Data Scientists
>   - Software Developers
>   - Web Developers
>
> Source: Cyberstates 2021

IT Career Pathways

Within the IT industry, four common career pathways offer various occupations.

| Information Support and Services | Network Systems | Web and Digital Communications | Programming and Software Development |
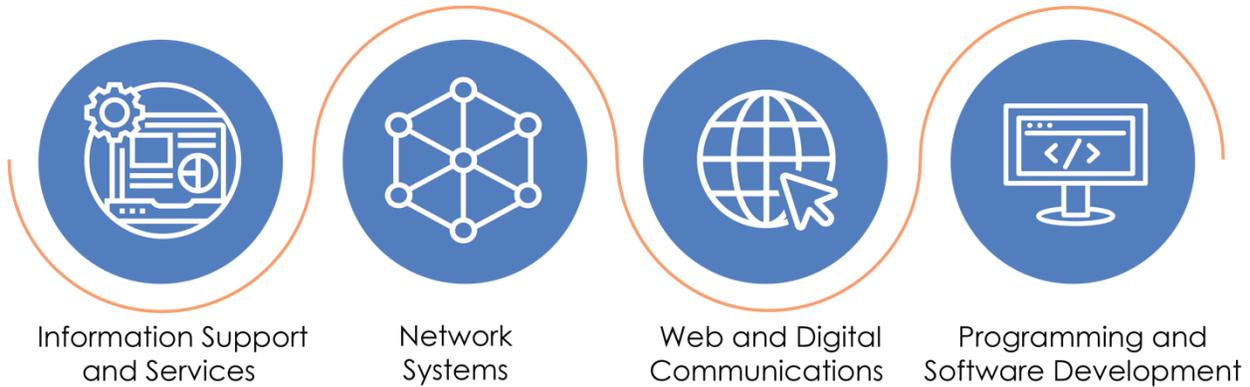
Table 1 includes occupations organized by each of the four common career pathways in the IT industry. While national labor market information can provide insight into general industry trends and occupations in demand, DOL YouthBuild grantees are encouraged to consult with local employers and workforce development stakeholders to identify how to meet local economies and regional business needs. For local labor market data and information, visit the Department of Labor's state labor market projection website at projectionscentral.org or contact your local Workforce Development Boards.

How to evaluate viable occupations based on regional needs

To determine the occupations that are most viable in the IT industry, YouthBuild programs can utilize and consider the following criteria:

- **Competitive and Family-Sustaining Wages:** Does the occupation offer competitive, family-sustaining wages?
- **Occupation Growth:** Is there local demand for these roles? Is there enough supply to meet demand?
- **Accessibility:** Are there accessible entry-level points? Is the employer willing to create more accessible entry-level points?

Table 1: IT Occupations by Career Pathways		
Web and Digital Communications		
Occupation	2020 Median Salary	Typical Entry-Level Education
*Web Developers and Digital Designers	$77,200	Vocational training or an Associate's degree
Programming and Software Development		
Occupation	2020 Median Salary	Typical Entry-Level Education
*Computer Systems Analysts	$93,730	Bachelor's degree
*Software Developers	$110,140	Bachelor's degree
Network Systems		
Occupation	2020 Median Salary	Typical Entry-Level Education
*Computer Network Support Specialists	$65,450	Bachelor's degree
*Database Administrators	$98,860	Bachelor's degree
*Database Architects	$98,860	Bachelor's degree
*Information Security Analysts	$103,590	Bachelor's degree
Network and Computer Systems Administrators	$84,810	Bachelor's degree
*Telecommunications Engineering Specialists	$116,780	Vocational training or an Associate's degree
Information Support Services		
Occupation	2020 Median Salary	Typical Entry-Level Education
*Business Intelligence Analysts	$98,230	Bachelor's degree
*Computer Systems Engineers/Architects	$92,870	Bachelor's degree
*Computer User Support Specialists	$52,690	Vocational training or an Associate's degree
*Data Warehousing Specialists	$98,860	Bachelor's degree

*Document Management Specialists	$92,870	Bachelor's degree
*Geographic Information Systems Technologists and Technicians	$92,870	Bachelor's degree
*Information Technology Project Managers	$92,870	Bachelor's degree
*Project Management Specialists	$77,420	Bachelor's degree
*Search Marketing Strategists	$65,810	Bachelor's degree
*Software Quality Assurance Analysts and Testers	$110,140	Bachelor's degree
*Video Game Designers	$77,200	Bachelor's degree
*Web Administrators	$92,870	Bachelor's degree
*Web and Digital Interface Designers	$77,200	Bachelor's degree

O*NET, the U.S. Department of Labor's Occupational Information Network, categorizes occupations with an asterisk as Bright Outlook meaning they are anticipated to grow more quickly than others on a national level. Wages listed are as of May 2020. For the most current wage information, visit O*NET.

Industry Skill Needs and Competencies

CareerOneStop, in partnership with the Department of Labor, offers the IT Competency Model that employers in the IT industry developed. This model identifies a multi-tier set of building blocks defining the competencies needed for success in IT, starting with Personal Effectiveness Competencies and building up to Management Competencies and Occupation-Specific Requirements. A detailed description of all the specific skills that comprise each tier of competencies can be accessed in the IT Competency Model.

IT Competency Model

Management Competencies | Occupation-Specific Requirements

Tier 5 - Industry–Sector Technical Competencies

Tier 4 - Industry–Wide Technical Competencies

| Principles of Information Technology | Databases & Applications | Networks, Telecom Wireless & Mobility | Software Development & Management | User & Customer Support | Digital Media & Visualization | Compliance | Risk Mgmt., Security & Info Assurance |

Tier 3 - Workplace Competencies

| Teamwork | Planning & Organizing | Innovative Thinking | Problem Solving & Decision Making | Working with Tools & Technology | Business Fundamentals | Health & Safety |

Tier 2 - Academic Competencies

| Reading | Writing | Mathematics | Science | Communication | Critical & Analytic Thinking | Fundamental IT User Skills |

Tier 1 - Personal Effectiveness Competencies

| Interpersonal Skills | Integrity | Professionalism | Initiative | Adaptability & Flexibility | Dependability & Reliability | Lifelong Learning |

Source: Competency Model Clearinghouse, CareerOneStop

> **YouthBuild Program Tip**
> *Building Competency Models*
>
> DOL YouthBuild grantees' program model is designed to address the first three tiers of the competency model. In the upper tiers of the competency model, it is essential to work with industry partners to customize a Construction Plus (C+) pathway that meets the local needs of employers.

Conclusion

The IT industry will continue to grow and evolve with consumer behavior, technology, and automation changes. YouthBuild programs can use Industry Spotlights to gain a basic understanding of the IT industry and continue to monitor local labor market information and work alongside employers to design C+ pathways. YouthBuild participants interested in further developing their IT skills, STEM knowledge, critical thinking, and design skills should consider exploring an IT industry career.