

CTE: DEVELOPING THE INFORMATION TECHNOLOGY WORKFORCE

Career and technical education (CTE) supports America's information technology needs by

preparing learners to enter this critical workforce, which contributes roughly **8.8%** to the U.S. economy and employs more than **9 million** people – 5.6 million in technical occupations.¹

CTE programs in information technology develop students' technical, academic and employability skills through work-based and hands-on learning, ensuring that they are prepared to enter **high-wage, in-demand** careers in areas such as networking, software and web services, cybersecurity and data science.

This infographic describes a small sample of the career opportunities available in the information technology field.



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NETWORK ARCHITECTURE & ADMINISTRATION

- In 2022, there were almost **700,000** individuals engaged in designing, building and managing networks.²
- Jobs for network specialists, who support servers, computers and other networked devices, are projected to grow at a **much faster rate** than the rate of growth projected for jobs overall.³
- Associate and bachelor's degrees and industry certifications can help network specialists **launch careers** and move up into roles as network or systems administrators, engineers or architects.
- Network specialist salaries start at **\$50,000**, while systems engineers and architects can earn more than **\$130,000** annually.⁴



SOFTWARE & WEB SERVICES

- The workforce in software and web design and development and quality assurance numbered more than **2 million** in 2022.⁵
- Over the next 10 years, jobs in software and web services are expected to grow more than **twice as fast** as the overall job growth rate.⁶
- Software and web developers that build applications, websites and systems earn a starting salary of **\$64,000**, up to almost **\$170,000** per year.⁷
- Industry certifications and degrees are among the credentials that can help individuals build a **fulfilling career** in software and web services.



CYBERSECURITY & DATA SCIENCE

- U.S. employers are looking to fill more than **663,000** jobs⁸ that require cybersecurity skills and pay between **\$61,500** and **\$166,000** annually.⁹
- Data scientists and analysts, who often work in cybersecurity and other tech roles, are the **fastest-growing** occupations in information technology.¹⁰
- Data specialists analyze data and create and oversee databases, earning a yearly salary starting at more than **\$45,000**, while data scientists can earn **\$162,000**.¹¹
- Postsecondary and advanced degrees as well as industry certifications are key to **career growth** in cybersecurity and data science.



CTE: TECHNOLOGY

DEVELOPING THE INFORMATION WORKFORCE

MORE JOBS IN INFORMATION TECHNOLOGY

In addition to the careers already profiled, CTE prepares youth and adults for these further occupations in information technology:

- **User experience designer**
- **Cloud systems engineer**
- **Database administrator**
- **Chief technology officer**
- **IT support specialist**
- **Penetration tester**
- **Help desk analyst**
- **Software engineer**
- **Ethical hacker**
- **IT auditor**

Through the game design and web development program at Henrico County Public Schools' Advanced Career Education Center in Hermitage, Virginia, students can earn two industry certifications and six credits through dual enrollment with Reynolds Community College. Students develop portfolios that showcase their skills in database, web, mobile and interactive multimedia applications.

HOW CTE PREPARES THE INFORMATION TECHNOLOGY WORKFORCE

CTE programs of study and career pathways prepare secondary, postsecondary and adult learners for the information technology workforce in many ways:

- **Courses** in computer applications, computer programming, cybersecurity, database management, networking systems, website design and more spanning secondary and postsecondary education.
- Opportunities to earn **postsecondary certificates and degrees** in computer engineering technology, information systems technology, web design and development, networking technology and more.
- Opportunities to earn **industry credentials** from Adobe, Apple, AWS, Cisco, CompTIA, Google, Microsoft and Oracle, among many others.
- **Work-based learning** experiences like job shadowing, internships and apprenticeships.
- Competitive events, service learning and leadership development through **career and technical student organizations** such as Business Professionals of America, Future Business Leaders of America, SkillsUSA and the Technology Student Association.
- **Activities** that build technical, academic and employability skills such as teamwork, communication and problem solving.

Learn More

This document highlights just a few occupations within the information technology workforce. To learn more, please visit the U.S. Department of Labor at www.CareerOneStop.org/ExploreCareers and MyNextMove.org.

Citations

¹ CompTIA. (2023). *State of the tech workforce: Cyberstates 2023*. Retrieved from https://www.cyberstates.org/pdf/CompTIA_State_of_the_tech_workforce_2023.pdf

² Ibid.

³ Ibid.

⁴ CompTIA. (N.d.). *What is a network specialist?* Retrieved from <https://www.comptia.org/content/it-careers-path-roadmap/it-networking-specialist>

⁵ CompTIA. (2023). *State of the tech workforce: Cyberstates 2023*. Retrieved from https://www.cyberstates.org/pdf/CompTIA_State_of_the_tech_workforce_2023.pdf

⁶ Ibid.

⁷ CompTIA. (N.d.). *What is a software & web developer?* Retrieved from <https://www.comptia.org/content/it-careers-path-roadmap/software-and-web-developers>

⁸ CyberSeek. (2023). *Cybersecurity supply/demand heatmap*. Retrieved July 6, 2023, from <https://www.cyberseek.org/heatmap.html>

⁹ CompTIA. (N.d.). *What is a cybersecurity specialist?* Retrieved from <https://www.comptia.org/content/it-careers-path-roadmap/cybersecurity-specialist>

¹⁰ CompTIA. (2023). *State of the tech workforce: Cyberstates 2023*. Retrieved from https://www.cyberstates.org/pdf/CompTIA_State_of_the_tech_workforce_2023.pdf

¹¹ CompTIA. (N.d.). *What is a data specialist?* Retrieved from <https://www.comptia.org/content/it-careers-path-roadmap/data-specialist>