



## Opportunities in IT: Iowa



# WELCOME TO THE EXCITING WORLD OF INFORMATION TECHNOLOGY

So you're interested in a career in IT... But what exactly is IT? Information Technology in today's world represents one of the fastest growing industries with jobs and opportunities that change every day. IT is much more than using a computer or programming a smart phone. IT jobs exist at every company, and people of all backgrounds and interests are filling those jobs and working together to make new and exciting innovations every day!

The following tool contains IT career pathways information that shows career opportunities for every type of person, no matter what your interests or skills. Career opportunities have been grouped into **families**, each containing several types of jobs. These are not all the jobs that exist within IT but they represent a significant **range of jobs** to help you get a sense of what a job in IT might look like.

Use the guide below to quickly find a career family that may appeal to your interests and skills. You will probably see yourself represented in a few different families. We hope that you will explore and research jobs that sound interesting to you. On the last page of this document there are additional resources and points of contact to help you be better prepared to pursue a career in IT that is exciting and fits who you are.

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## QUICK GUIDE FOR FINDING OCCUPATIONAL FAMILIES

- Consider the following questions.
  - Which word(s) best describe your personality?
  - What types of skill(s) are you interested in?
- Match your answers to the personality traits and skills on the graph on the right to discover which occupational families may be a good fit for you.
- Use the table of contents to quickly find those pages.

PERSONALITY TRAITS	SKILLS
Analytical   	Analysis & Research  
Articulate   	Business    
Creative    	Communication & Persuasion   
Detail Oriented     	Designing & Creating   
Investigative & Curious   	Problem solving     
Logical  	Teamwork    
Strategic   	Technical    

## DEFINITIONS & KEY

### DEFINITIONS

- Hardware** is the part of computer systems that you can physically touch (e.g. keyboard, monitor).
- Software** is a collection of instructions that allow a computer to work (e.g. apps)
- A **network** is when many computers connect to each other
- Data** is information that is used to make decisions
- A **database** is where information is digitally stored

### EDUCATION & SALARY KEYS: \*

			
HS Diploma Only	Associate (or Certificates)	Bachelor's	Master's or PhD
			
\$20k-\$44k	\$45k-\$69k	\$70k-\$99k	\$100K & Up

\* Education and salary ranges are based on industry averages, individual company and job requirements may vary

# INFRASTRUCTURE [PAGE 1]

Every company needs computers to do business. They also need these computers to connect with one another so that employees can share information. When many computers connect to each other, this is called a *network*. The information that they share via the network is stored in something called a *database* (think of a big digital file cabinet). People in infrastructure jobs make sure that the computers in the network are connected and working and that information in the company's databases can be viewed by others.

People in these jobs are good at organizing things, pay close attention to details, and think creatively.

\* Please refer to directions page for definitions and key

## CLOUD ENGINEER



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Much of the information and many of the programs a company needs to run are now stored in the cloud: they aren't saved or used on just one computer, but on many connected computers (the "cloud") and can only be used by a computer when it connects to that network. Cloud Engineers design and build the network that holds this information. They also make sure that other computers can use this information.

## STORAGE ENGINEER



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Storage Engineers design and build the databases that companies use to store their information. They make sure that the databases are large enough to store all of the company's information and that many people can use that information at once. They also make sure that people in the company are only able to see the information they need, and that others outside the company can't access that information without permission.

## SYSTEMS ANALYST



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Systems Analysts are responsible for keeping track of how well a company's network is working and making sure that the computers in the network are using the most up-to-date software they need to work well together. They also make sure that the information in the company's databases can be seen by the people that need to see it and that extra copies of that information exist.

## INFRASTRUCTURE ENGINEER



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Infrastructure Engineers have knowledge of and work on issues across all parts of the infrastructure process. They can also communicate with business people, applications owners, and customers in a non-technical way. Infrastructure Engineers have excellent technical, problem solving, and communication skills.

## IT ARCHITECT



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The IT Architect provides technical leadership and makes sure there is long-term alignment between product development and infrastructure. The IT Architect has significant knowledge of a broad range of infrastructure technologies as well as analytic and communication skills.

## NETWORK/SYSTEMS ADMINISTRATORS



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Network and Systems Administrators help Network Engineers to build a company's network and to make sure that it runs well. They also make sure that the network cannot be used by people outside of the company without permission.

## NETWORK ENGINEER



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Network Engineers design and build a company's network. They make sure that the company's computers are connected and that information moves quickly and easily between them.

## TECHNICAL ANALYST



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Technical Analyst gather data and analyze results as relates to infrastructure issues. They have experience in databases and knowledge of programming.

## DATA CENTER OPERATOR



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Data Center Operators maintain and support the services at the Data Center, the facility organizations use to house their computer systems and associated components.

# INFRASTRUCTURE [PAGE 2]

Every company needs computers to do business. They also need these computers to connect with one another so that employees can share information. When many computers connect to each other, this is called a *network*. The information that they share via the network is stored in something called a *database* (think of a big digital file cabinet). People in infrastructure jobs make sure that the computers in the network are connected and working and that information in the company's databases can be viewed by others.

People in these jobs are good at organizing things, pay close attention to details, and think creatively.

## TELEPHONY ARCHITECT

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Telephony Architects design and build communications networks. They have excellent technical, critical thinking, and communication skills.

## COMPUTER OPERATOR

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Computer Operators show users how to use their computer systems and hardware and walk them through the troubleshooting and repair process. Computer Operators have excellent computer knowledge, problem solving, and customer service skills.

## NETWORK OPERATOR

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Network Operators help technicians monitor and maintain the company's network systems. They fix issues and make improvements to the network. Computer Operators have excellent computer experience, network knowledge, and problem solving skills.

## PRODUCTION SUPPORT

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Production Support is the role that receives requests from users for help and either responds to them or sends the requests to other members of the technical team for solutions.

## SYSTEMS PROGRAMMER

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Systems Programmers create software that provides services to the computer system, rather than the product or user. Systems Programmers have excellent technical and problem solving skills.

\* Please refer to directions page for definitions and key



# APPLICATION DESIGN

**Computer systems need two major elements to work: hardware and software.**

*Hardware* is the part of computer systems that you can physically touch (e.g. keyboard, monitor).

*Software* is a collection of instructions that allow a computer to work (e.g. apps). Careers in application design involve creating new application software or improving existing software.

**Employees under this job family have excellent technical and design skills.**

## SOLUTION CONSULTANT



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Solutions Consultants provide leadership and support to link development and infrastructure. Individuals in this role understand a broad range of technologies and have strong analytics and communication skills.

## DEVELOPMENT OPERATIONS



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Development Operations is the link between software and operations to make organization's processes run more efficiently. They help use software to complete tasks usually done by occupations in the Infrastructure family.

## WEB DESIGNER



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Web Designers design the visual elements of a website by combining graphic design with an understanding of web development. Web Designers are creative and have at least a general understanding of development skills.

## USER EXPERIENCE (UX) DESIGNER



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User Experience Designers create appealing designs that match the target audience. They work with other designers and members of the development team to make sure the designs and processes work together. UX Designers have strong creativity, analytic, and communication skills.

## HUMAN FACTORS EXPERT



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Human Factors Experts study how people use technology. They look at how people's abilities, expectations, and limitations can be considered when designing technology. Human Factors Experts can come from many different kinds of backgrounds, including psychology, engineering, and computer science.

## FRONT END DEVELOPER



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Front End Developers determine what users want from a product and then develop the application to reflect those needs. Because users' opinions change often, they have to keep up with new trends and update apps. Front End Developers have excellent analytic, communication, and technical skills.

## HARDWARE ENGINEER



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Hardware Engineers work with the parts of a computer system that you can physically touch. They are in charge of designing and improving hardware products, testing to make sure that the hardware works, and fixing issues before the product goes to the consumer.

## SOFTWARE ARCHITECT



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Software Architects create software solutions (such as web services and coding programs) that solve a problem and are efficient and cost-effective. Software Architects have excellent critical thinking and technical skills.

## USER INTERFACE (UI) DESIGNER



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User Interface Designers create and arrange elements of the user interface (the part of the program that the end-user will see and interact with). They work with the User Experience Designer, and have strong creativity, artistic, and communications skills.

\* Please refer to directions page for definitions and key



# PROGRAMMING/DEVELOPMENT

All the programs, apps, and websites on your computer or your phone work by giving your computer (or phone) instructions about what to do and show based on what you click or type. People in programming/ development jobs use different kinds of *software languages* (like Spanish or French, but with funny names like Java and Ruby) to write the instructions (or scripts) that these apps and websites follow to make your computer or phone act how you want them to. They also make sure that the instructions written by other people are working like they are supposed to.

People in these jobs are often creative, good at solving problems, and can give good instructions.

\* Please refer to directions page for definitions and key

## EMBEDDED TECHNOLOGY



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Nowadays computers are everywhere, including in our refrigerators, our cars, and even our toasters. Computers help these objects run, and can also connect them to the internet and other objects. This kind of technology is embedded technology, and people who write the instructions for these "mini-computers" not only need to know the programming languages that they use, but how these objects work so that the computers can provide them with the correct instructions.

## TECHNICAL CO-FOUNDER



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Understanding how a business runs is very different from understanding how computers run. Many companies that are focused on technology require two people to start: one who understands business and another who understands computers. These are called co-founders. The Technical Co-Founder understands how computers work and what the business needs to focus on computers and technology.

## DEVELOPER



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Developers must also be able to write instructions (or code) for programs, websites, and computers. However, programmers and coders often work on one app or program using one kind of programming language. Developers use many languages to make sure that apps and programs talk to each other. Because they work with many different apps or programs, developers must also be able to talk and plan with other programmers and coders.

## CODER



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Coders write the instructions (or code) that apps, websites, and programs follow and use to tell your computer or phone how to work when you click or type. They write these instructions in different languages depending on how the app or program works. Often they will work on individual chunks of code within a larger program or app.

## MOBILE DEVELOPER



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Mobile Developers write instructions (code) for apps and programs that are used on phones and tablets (like the iPhone). Because phones and tablets use different programming languages and work differently than computers, mobile developers need to know these specific languages and how phones and tablets work.

## PROGRAMMER



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Programmers do what coders do but write instructions (or code) that are often more complicated and complete. Coders may write some of the instructions for an app, but programmers make sure that whole app works and can talk to other apps or programs. They may need more knowledge of math and formulas in order to write instructions that repeat or interact with information in a complex way.

## TECH LEADS



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Tech Leads are the senior-most member of a development team. They lead programmers, coders, and developers to write instructions that make your technology work the way you want it to.



# PRODUCT DEVELOPMENT

**The Product Development family includes people who design and develop the products that people use in their everyday lives.**

Occupations in product development figure out what products consumers want, design the product, and make sure the product works. People in these occupations have both creative and technical skills.

**“Outside the box” thinkers and people who are very efficient and can pay attention to detail should pursue Product Development careers.**

## PROJECT MANAGER



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Project managers lead project teams, solve problems when projects are not going as planned, and keep track of how much the project costs to run. These jobs require people skills since they motivate employees, tell them how they are doing, and make sure they are working together.

## PRODUCT OWNER



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Product owners use creativity and technical skills to develop and improve the products that consumers use in their everyday lives. Product owners improve existing products and develop completely new products that meet a need that no one else has addressed.

## BUSINESS ANALYST



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Business Analysts gather information from different sources in order to fix problems and improve products. They use many techniques to analyze the information including critical thinking, problem solving, and advanced mathematics and data analysis.

## PRODUCT MANAGER



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Product Managers oversee the product's development. They help the employees inside the organization and people outside the organization work together to create the best product. They work with consumers to make sure the product meets their needs and hear suggestions to improve it. Product Managers also think about how to advertise the product to consumers.

## AGILE COACH/ SCRUM MASTER



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Scrum is a set of rules commonly used in the IT sector to help teams create products that solve complex problems creatively. These rules help the product development process run smoothly and effectively. The Agile Coach/Scrum Master roles make sure that the Scrum team understands the rules and follows them in order to make the best possible product.

## TESTING & QUALITY ASSURANCE



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Testing and Quality Assurance roles are in charge of testing products to make sure that they work well. Quality assurance analysts in software development review thousands of lines of programming instructions (code) to spot any errors. Quality assurance analysts are usually trained to fix these errors or report them to someone who can.

## HARDWARE ENGINEER



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Hardware engineers work with the parts of a computer system that you can physically touch. They are in charge of designing and improving hardware products, testing to make sure that the hardware works, and fixing issues before the product goes to the consumer.

*\* Please refer to directions page for definitions and key*



# CLIENT RELATIONS & CUSTOMER SERVICE

**Client Relations & Customer Service occupations work with clients to understand their needs and help companies develop products that meet those needs.** This area ensures that IT projects run smoothly throughout the various phases of sales, development, and delivery.

**These jobs might be a good fit for those who are excellent communicators, enjoy solving complex problems, working in a team, working with partners and clients, and working with ideas from start to finish.**

*\* Please refer to directions page for definitions and key*

<p><b>SOLUTIONS ARCHITECT</b> </p> <p> <span style="float: right;">\$\$\$ - \$\$\$\$</span></p> <p>Solutions architects identify the business's current problems and future technological goals and help to build new systems needed by an organization.</p>	<p><b>TRAINER</b> </p> <p> <span style="float: right;">\$ - \$\$</span></p> <p>Trainers teach customers how to use the product when they first receive it. They build curriculum and create procedures for training new users. Trainers have excellent communication skills and judgement.</p>	<p><b>SUPPORT ANALYST</b> </p> <p> <span style="float: right;">\$ - \$\$</span></p> <p>Support Analysts handle the day-to-day technology support for employees and clients and develop strategies to improve technology to avoid future problems. Individuals in this role excel in problem solving, technical skills, and communication.</p>
<p><b>ACCOUNT EXECUTIVE</b> </p> <p> <span style="float: right;">\$ - \$\$</span></p> <p>Account Executives work closely with clients to ensure their satisfaction, making sure clients' needs are being met quickly and successfully. In addition, they also help manage team projects and assist their organization in obtaining new clients. Account Executives excel in communication, customer service, and multi-tasking.</p>	<p><b>SALES ENGINEER</b> </p> <p> <span style="float: right;">\$\$\$ - \$\$\$\$\$</span></p> <p>Sales Engineers are members of the Client Relations &amp; Customer Service family that combines technical and sales expertise. In this role, they use their technical knowledge to better sell products to customers based on their technical benefits. Sales Engineers employ both technical skills and sales skills, such as communication and customer service.</p>	<p><b>HELPDESK TECHNICIAN</b> </p> <p> <span style="float: right;">\$ - \$\$</span></p> <p>Helpdesk Technicians provide technical and product support, help customers start using products, and solve technical problems. They use communication and problem solving skills to respond to telephone calls and emails to guide the computer user through the steps to fix the issue.</p>
<p><b>DEKSIDESIDE SUPPORT</b> </p> <p> <span style="float: right;">\$ - \$\$</span></p> <p>Individuals in Deskside Support provide in-person support to customers and employees within the organization. They identify and fix issues in both hardware and software, as well as provide support for setting up new technology. Individuals in these roles have strong communication, customer service, and problem solving skills.</p>	<p><b>IT LIAISON</b> </p> <p> <span style="float: right;">\$\$</span></p> <p>The IT Liaison is the bridge between information technology and the business team in an organization. Individuals in this role help improve communication between the technology and business teams. Besides having technical skills, IT Liaisons have a good understanding of business and how technology can help improve an organization's processes.</p>	



# SECURITY

**Security positions make sure that an organization's data, computer systems, and network are secure and work well.** Information Security jobs may be well suited for individuals who like to strengthen weaknesses and protect sensitive information.

**These jobs are a good fit for people who are technical, logical, detailed, highly focused, and investigative in nature.**

*\* Please refer to directions page for definitions and key*

## SECURITY ADMINISTRATOR



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Security Administrators are in charge of an organization's security system. They work with Security Analysts to find the weaknesses in a security system and make the changes analysts recommend. Security Administrators have excellent technical, organization, and leadership skills.

## SECURITY ANALYST



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Security Analysts find and prevent threats to an organization's security system. They test the systems to make sure an organization's network is secure and recommend changes that will better protect an organization. This job might be a good fit for individuals who are creative, curious, and technical.

## LOCAL SECURITY



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Local Security supports the IT and security team by monitoring access to the security system to make sure only the right people are accessing information. Individuals in this role have excellent customer service and communication skills, attention to detail, and can work both independently and as a team player.

## SYSTEMS ENGINEER (SECURITY)/ SECURITY ARCHITECT



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Systems Engineer (Security)/Security Architects create new ways to solve existing security problems. They test the current systems to find holes and look at how risky the issues are. This role may also be responsible for creating new security rules for the organization, testing new tools, and overseeing security system changes.

## FIREWALL ENGINEER



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Firewall Engineers oversee the security of a network using software called Firewalls (programs that control who outside of an organization can talk to its network). Firewall Engineers use these programs to protect the network from threats. They may also help educate coworkers on how to keep their information safe.

## BUSINESS INFORMATION SECURITY



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Business Information Security is the bridge between the security team and the business team in an organization. Individuals in this role use security policies to support the business team in providing quality service to customers by making sure the business team is following security procedures.

## DISASTER RECOVERY



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Individuals in Disaster Recovery/Business Continuity are responsible for helping an organization continue its work while a security problem is fixed. Individuals in this role are good communicators, strong leaders, and work well in stressful situations.

## COMPLIANCE MANAGER



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Compliance Managers make sure that all the programs and employees in an organization are following its policies and keeping those policies up to date with current laws and regulations.

# DATA MANAGEMENT/STRATEGY

**Information that someone uses to make decisions is called data.** The Data Management/Strategy job family creates systems that store data (databases) that make it easy to find the data when the organization needs to use it. They also manage and analyze data to help organizations use it more effectively.

**These jobs may be a good fit for those who enjoy working with numbers and are good at paying attention to detail and problem solving.**

## DATABASE ADMINISTRATION

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A Database Administrator makes sure that the software managing a database allows people to quickly find the information they need. The administrator works to make the database as efficient as possible because many people may try to use it at once.

## ANALYTICS ENGINEER

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Analytics Engineers gather information from multiple sources and combine these different information sources to find trends and patterns. Analytics Engineers have excellent creativity, technical skills, and communication skills

## MARKET INTELLIGENCE

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They find out who customers are and what they need. They look at trends in sales to find opportunities for their organization to grow. They also monitor what the competition is doing and how their organization compares.

## DATA SCIENTIST

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Data Scientists discover findings in data and translate it into information that is useful to their organization. They hold advanced degrees in computer science/mathematics, are experts in data and analysis, and have excellent communication skills. Data Scientists will often work in groups and deal with cutting edge technologies to turn complicated topics into information that is useful in real life.

## EXTRACT TRANSFORM LOAD (ETL) ANALYST

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When an organization gets a large amount of information from many different sources, it holds it in a data warehouse (a type of database specific to analytics). ETL involves the process of putting information into the data warehouse, combining it with information from other sources, and making it easily usable. ETL analysts have strong problem solving and technical skills.

## DATA VISUALIZATION

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Data Visualization roles take the findings from analysis and turn it into graphs, charts, and pictures. Data Visualization helps decision-makers understand difficult topics quickly and find trends and patterns easily. Individuals in this role must be able to understand data analysis and use creativity to visually tell a story with those results.

## BUSINESS INTELLIGENCE

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Business Intelligence uses data to find trends that will improve the way an organization works. They use databases to look for important information that helps them improve products and services. They are data experts that use advanced analytics skills to come up with creative solutions.

\* Please refer to directions page for definitions and key



# LEADERSHIP

**Leadership consists of individuals at the highest level of management in an organization.** Occupations in the Leadership family manage whole divisions of the organization and jointly make decisions that affect the direction an organization takes.

**These roles typically have extensive work experience in their particular field and are excellent communicators, motivators, decision-makers, and creative thinkers.**

## CHIEF RISK OFFICER



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Chief Risk Officers are responsible for judging many types of risk to an organization, including technology threats, competition, and regulations. In this role they help organizations avoid risk and lessen it when it happens.

## CHIEF TECHNOLOGY OFFICER (CTO)/CHIEF ENTERPRISE ARCHITECT

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Chief Technology Officers manage how technology in an organization can affect customers. They use technology to improve the products and services an organization offers to help further an organization's goals.

## CHIEF EXECUTIVE OFFICER (CEO)/PRESIDENT

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The Chief Executive Officer/President is traditionally the highest position in an organization and senior-most member of the Leadership team. Individuals in this position are the lead decision-maker responsible for an organization's strategy and policies.

## CHIEF INFORMATION OFFICER (CIO)/IT DIRECTOR



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Chief Information Officers are the highest level of management responsible for information technology and infrastructure within the organization. Besides being an expert in technology, CIOs have a good understanding of business and how technology can help improve an organization's processes in order to increase profit.

## CHIEF INFORMATION SECURITY OFFICER



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Chief Information Security Officers are the highest level of management responsible for the technology and processes that make sure an organization's networks and information are secure. They lead teams that create and manage the security software and processes and are responsible during security disasters.

## ENTREPRENEUR



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Rather than working as employees of organization, Entrepreneurs run businesses by taking on more risk than a typical employee, and in turn, receiving more rewards when the organization does well. Because entrepreneurs often create a new business, their education backgrounds are not as defined as those in traditional leadership roles. Further, their salary largely depends on how well an organization performs.

## VICE PRESIDENT

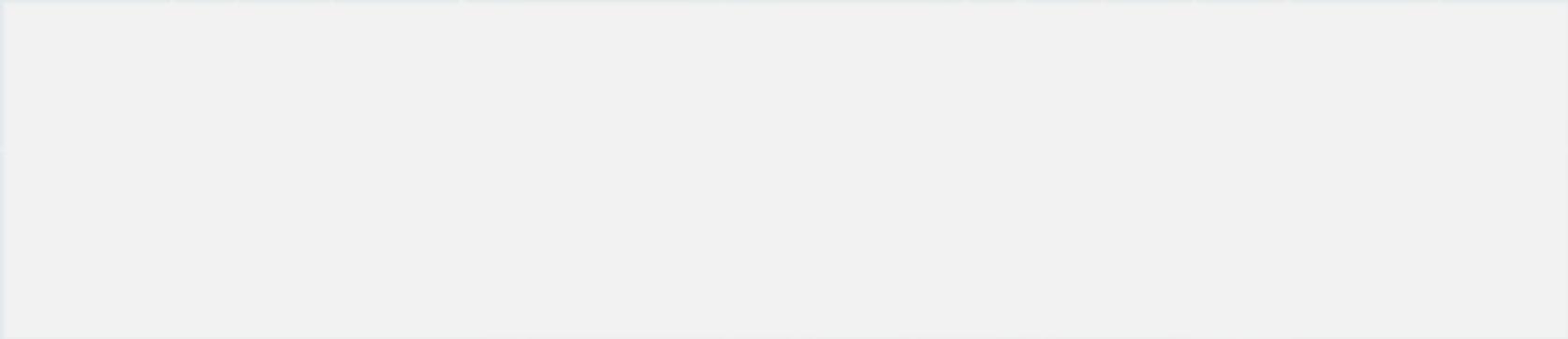


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The Vice President of an organization usually reports directly to the Chief Executive Officer/President and helps support the individual in that position. It is common in large organizations to have multiple Vice Presidents for different divisions, sometimes reporting to different member of the Leadership team.

*\* Please refer to directions page for definitions and key*

## More Information on Local Opportunities within IT



*Upcoming Events/Website/Social Media*

*Contact Information*