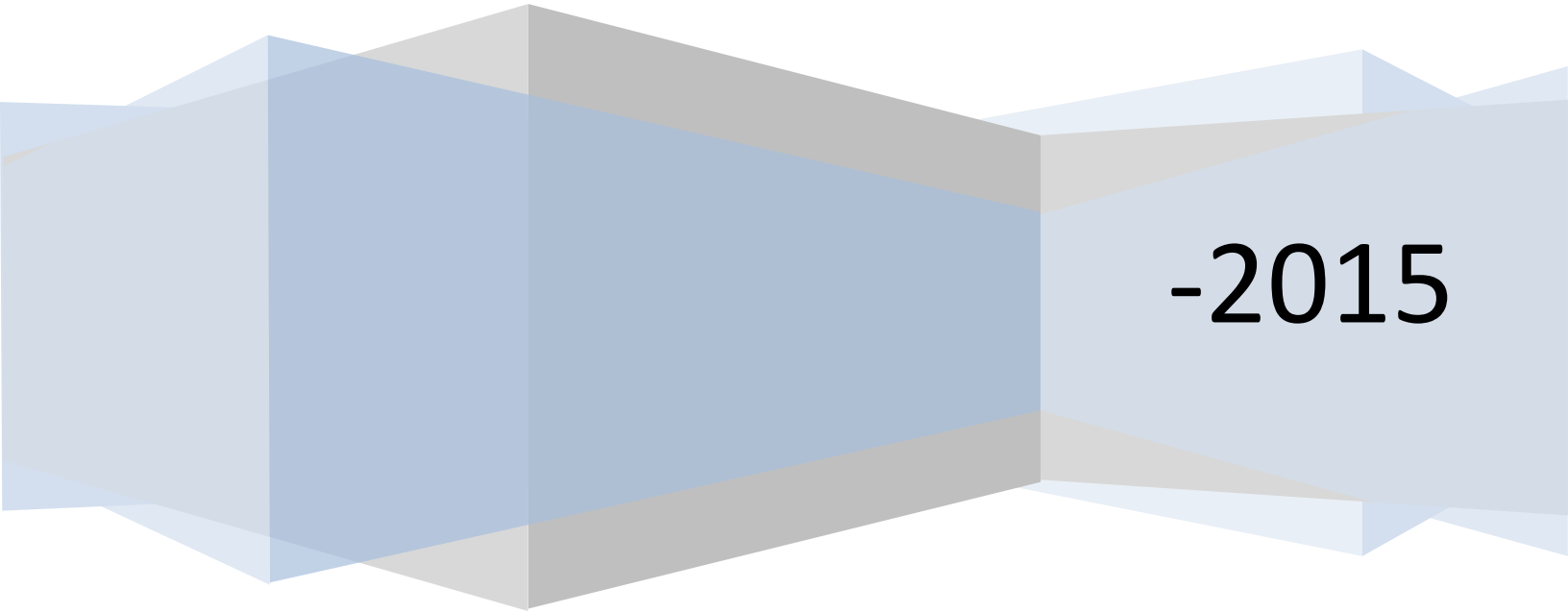
Information Technology Sustainability Training



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The Top 10 IT Jobs & Salaries for

IT is a highly competitive field, with salaries that reflect the complex nature of the work. If you're looking to enter the IT job market in (or maybe just change career paths), here are the crucial facts and figures you need to know about the most in-demand IT positions.

1. Information Security Analyst

Average salary: $86,170, according to BLS

Desirable certifications/qualifications: BA or BS in Computer Science or Management Information Systems. Qualified in penetration testing methodology. Some positions prioritize on-the-job experience, or experience in a similar setting.

What does this person do?: An information security analyst helps organizations to protect and secure sensitive data, as well as analyze potential threats to a system.

Most promising quote: "In the past year, our airwaves and Internet feeds have been clogged with tales of compromised security, leaked intelligence and diminished privacy, so of course, positions for...information security analyst[s] are popping up at Whack-A-Mole speed." — U.S. News & World Report's "Best Jobs of "

2. Mobile Developer

Average salary: $90,920,according to Mashable

Desirable certifications/qualifications: 2-3 years experience in developing mobile apps for iOS/Android. Strong Java skills. Familiarity with Eclipse, Worklight Studio, or similar.

What does this person do?: Overseeing the design and implementation of apps for mobile devices.

Most promising quote: "Development, whether mobile or web or back-end support, is where the driving need is now." — CNN's Tech Job Forecast for

3. Software Development Engineer

Average salary: $85,000, according to Glassdoor

Desirable certifications/qualifications: B.S./M.S. or Ph.D. degree in Engineering or Computer Science. Experience with Java and C++. Some positions, particularly Software Development Engineer in Test positions, emphasize problem solving and troubleshooting skills.

What does this person do?: Develops and designs software. Analyzes development and service issues. In , more and more companies are looking for engineers who know how to make cloud services easy to use.

Most promising quote: "We see more and more enterprises are embracing the cloud, so naturally engineers with cloud expertise will be more in demand." — Wintellect's Steve Porter in the Tech Republic article "Top IT Skills for "

4. Project Manager

Average salary: $89,000, according to Indeed.com

Desirable certifications/qualifications: B.A. or B.S. in Business or Computer Science. 3-6 years IT project management experience. PMP, PMI, or APICS certification.

What does this person do?: A detail-oriented leader who oversees projects, and makes sure those projects are completed on time and under budget.

Most promising quote: "What companies are looking for, instead of just bringing in a generic ... PM, they're looking — particularly in the financial services sector — for some real specific areas...derivatives experience, capital markets experiences, low latency-high frequency experience — they want skills very specific to a type of application in those areas." — Jack Cullen, president of IT staffing firm Modis, in InformationWeek's article "8 Hot IT Jobs For "

5. Help Desk/Technical Support Manager

Average salary: $76,500, according to Datamation

Desirable certifications/qualifications: Experience with Office, Exchange, or Microsoft Active Directory is often required. 5-10 years of previous help desk experience. PMP, HDI, or ITIL certifications desirable.

What does this person do?: Provides answers to support-related queries, while also supervising other help desk employees. Often reviews feedback to improve the help center experience.

Most promising quote: "Many companies are bringing the help desk back in-house after outsourcing that function." — Computerworld

6. Chief Technology Officer (CTO)

Average salary: $132,250+, according to Datamation

Desirable certifications/qualifications: 5-15 years experience in a senior management role. Master's degree in business or a tech-related field a plus. Well-rounded background in development, networks, and/or security.

What does this person do?: Guides the overall technology and tech product goals for the company. Oversees tech-related interactions with the public and with vendors. Evaluates new technologies to determine if and how they can benefit the company. Often has some public relations or public presentations responsibilities, as is the case with Robert Stephens, chief technology officer for Best Buy (pictured above).

Most promising quote: "Corporate leaders [need] to think about new operating models that might yield further advantage. Here too, many experiments are under way—from new cross-functional roles for data scientists to chief digital officers whose influence extends beyond the four walls of the enterprise." — Accenture's Technology Vision Report

7. Database Administrator

Average salary: $77,080, according to BLS

Desirable certifications/qualifications: B.A. or B.S. in Computer Science. 2-5 years of database creation and management experience. Proficient in .NET, Java, SQL, Oracle.

What does this person do?: These experts organize data and often help other departments to use collected data to improve products and services.

Most promising quote: "Database administration — which didn't even make last year's list — will be hot in , likely because of interest in big data." — Computerworld's article "8 Hot IT Skills for "

8. Systems Administrator

Average salary: $62,250+, according to Datamation

Desirable certifications/qualifications: B.S. or B.A. in Computer Science or Information Systems. Hands-on experience with Windows, Linux, SQL, C#, C++.

What does this person do?: Monitoring the day-to-day use of networks and systems, configuring software and communication systems, troubleshooting network problems, planning contingencies for data loss.

Most promising quote: "Employment of network and computer systems administrators is projected to grow 12 percent from 2012 to 2022, about as fast as the average for all occupations. Growth will be highest at firms that provide cloud computing technology." — Bureau of Labor Statistics

9. Network Systems and Data Communications Analyst

Average salary: $76,560, according to BLS

Desirable certifications/qualifications: 2- or 4-year degree in Computer Science or a related field.

What does this person do?: Analyzes and evaluates LANs, internet, intranet, and other communications and data systems.

Most promising quote: "This profession will grow because, as businesses implement more and newer technology, more professionals will be needed to monitor efficiency and set up networks." — Boston Globe's article "IN THE YEAR 2016: THE 30 FASTEST-GROWING JOBS"

10. Web Developer

Average salary: $70,000, according to Datamation

Desirable certifications/qualifications: Familiarity with HTML, PHP, JavaScript, CSS, jQuery, and responsive web design techniques. A degree in Design or Computer Science is often preferred, but not always essential.

What does this person do?: Designing and coding a website's layout, often now with a focus on responsive design. May work full-time, or as an independent contractor.

Most promising quote: "As more companies offer, or greatly expand, their online retail presence, more Web developers will be needed to build the websites consumers will visit to purchase their favorite products. Increased reliance on mobile search is another reason the industry's employment growth should remain strong in the near future, since this should lead to new opportunities to create sites for mobile devices." — U.S. News & World Report

Top 10 IT Jobs Of The Highest Salary You Should Consider

Information Technology is the way of the future in jobs, according to most industry experts. With major tech companies sprouting out from the knowledge of skilled technical individuals and even non-technical companies making use of technical minds to build and run their websites, technical skills can be applicable to any sector you set your mind to be a part of. For this reason, individuals in the technology and Information Technology sector are capable of earning very high salaries. Below, we will talk about the top ten highest paid IT jobs you should look into.

1 Data Analyst

Data Analysis may not be the highest paid IT job ever, but it’s on our list because salary potentials are increasing at a high rate. Because Data Analysis is applicable to any business, due to how they translate data and numbers into understandable jargon, any company that relies on anything from sales figures to marketing research will benefit from Data Analysis. At the moment, Data Analyst can make between $68,000 to $74,000 a year. A Bachelor’s degree is all that’s needed to get started; however, to advance in this industry, you will need a Master’s degree.

2 Network Architect

Just as an Architect interprets the wants or wishes of a developer or client into a residential or business property, a Network Architect interprets the needs and wants of a company on the technical side to create the best computer infrastructure for them. This can include something as simple as moving a design company over from all Windows to all Mac to something as complex as ensuring that a hospital’s security infrastructure provides confidentiality of patient medical records. Such a job pays between $100,000 – $150,000 a year.

A Bachelor's degree will be a great way to break into the business and gain some experience, especially with a degree in quantitative fields like Mathematics or Engineering. Some programming experience in languages like HTML are almost essential as well.

3 IT Security Manager

With this IT job, the title says it all. As an IT Security Manager, your job is to manage the stances and rules your company will take in terms of proper computer usage and etiquette. Along with this, your job includes analyzing your company's current security condition and figuring out its weak points to improve. IT Security Managers, when designated in a particular company, are the backbone of the company's security structure.

Because of this, IT Security Managers will work a lot with Network Architects to make sure their security decisions are good ones. IT Security Managers can make between $115,000 – $125,000 a year. Becoming an IT Security Manager is based largely on experience in the IT realm, coupled with a Bachelor's degree or a Master's in Information Technology or Computer Science.

4 Lead Applications Director

If you didn't notice yet, the previous job title dealt heavily on the data and security of a company. Without analyzing data and ensuring that it's kept safe, a company will crumble. But, what are the highest paying IT jobs dealing with the creation end? The first job title we will talk about on the creation end are Lead Application Directors. In other words, the Product Managers. These are the individuals who set the direction in which a application will be not only developed but also marketed. Product Managers can make between $110,000 to $120,000 a year. Product Managers achieve their position after years as a Software Developer or Designer, so knowledge of programming and Computer Science is essential.

5 Software Engineer

Software Engineering is one of the most well known IT jobs around. These are the pros who are behind the coding of some of your favorite websites and applications. Software Engineering involves a lot more than just coding. Along with creating code, Software Engineers must work with all aspects of the tech sector, from designers to iterate their thoughts to marketing pros so that analytic can be implemented for them to grab data.

With all of these tasks at hand, it isn't unheard of for Software Engineers to demand a pretty dollar. A Software Engineer can expect to be paid between $89,000 to $95,000 a year. If without experience, a Bachelor's in Information Technology, Software Engineering, Computer Science, or another technologically-minded quantitative degree is highly recommended.

6 Database Developer

Behind a strong company is an even stronger database to store all of their important information and data. Database Developers and Administrators are the individuals who not only build the databases according to the company's size and requirements, but they are also the individuals who work on upkeep and ensure that the database

continues to work well. Many times, the job comes with having to work behind a computer some days and other days it may require communication with other individuals in the company to discover holes in the database.

This is a very similar job to IT Security Managers, the main difference being that Database Developers work with the security of the databases that the other job title creates. Database Developers can make anywhere between $80,000 and $96,000 a year. A Bachelor's in Data Analysis or in a technological degree like Computer Science or Information Technology will be what allows you to start in this career.

7 Business Intelligence Analyst

So companies have lots of data that Database Developers are building, IT Security Managers are keeping secure, and Data Analysts are translating into understandable jargon. But who are the individuals that put all of this data to good use? Business Intelligence Analysts are the brains behind making use of data to make smart decisions in the form of good profits, smart business decisions, and to ensure that the company is staying efficient in the end.

Business Intelligence Analysts are also found in C-level positions. For this reason, Business Intelligence Analysts can expect to make around $80,000 – $90,000 for the title alone, a bit under double those amounts if they are in-fact C-level in large companies. Having a strong technical background is important, but business knowledge can work in your favor as well.

8 Chief Information Officer

Finally, we are at a c-level position. Chief Information Officer is the highest paying IT job around, because of the fact that CIOs are in other words the highest level you can go in Information Technology for a mid-sized to large company. Chief Information Officers are given less task work and are more there to ensure that the company's vision is continued to be upheld.

Unlike a Chief Technology Officer, the individual who is there to ensure that the coding and development side continues to expand the company's technological advancements, CIOs deal more with what's behind the scenes to ensure what happens on the front end is possible safely and efficiently. CIOs have as much of a salary cap as the company can sustain, but the median salary can be between $175,000 to $219,000 a year. Experience is the only way to work to this level.

9 Data Warehouse Engineer

Data Warehouse Engineers are the individuals who build the infrastructure that makes the job of Business Intelligence Analysts possible. Data Warehouse Engineers work more with business modelling and data partitioning. This is the hard stuff in Information Technology and for that reason, Data Warehouse Engineers are the bridge between the technical aspects of IT (Data Analysts, Data Mining, etc) and the business-minded IT careers (Business Intelligence Analysts, C-level tech positions, etc). Data Warehouse Engineering usually requires a heavily knowledge of Data Analysis. Data Warehouse Engineers can make upwards of $90,000 a year.

10 Chief Security Officer

Just as the Chief Information Officer is the individual who works to ensure that the vision of the business on an IT end is upheld, Chief Security Officers ensure that this vision is aligned with the security and safety policies of the company. This includes working to reduce risk, ensuring that the company is performing regular audits, and lastly to ensure that the Intellectual property that the company may be in ownership of is continued to be guarded. Chief Security Officers can make between $125,000 to $195,000 a year. Experience is the only way to work up to this level.

Many of the jobs listed above seem similar in name; however, their functions are quite varied and are vital to the survival of many large to mid-sized tech and even some non-technical companies. With them being found in such a growing and booming industry like technology, you'll be assured to find a well-paying job in this industry soon.

Top 10 Most In-Demand IT Job Titles

Software Engineer

According to Webopedia, a **software engineer** is often confused with a **programmer**, but the two are vastly different disciplines. While a programmer creates the codes that make a program run, a software engineer creates the designs the programmer implements.

Average salary: $93,000

Systems Engineering

According to Wikipedia, **systems engineering** deals with work-processes and tools to manage risks on projects, and it overlaps with both technical and human-centered disciplines such as control engineering, industrial engineering, organizational studies, and project management.

Average salary: $91,000

Software Developers

Software developers design, develop and maintain the operation of database-driven ASP .NET/C# Web applications, with a specific emphasis on usability, performance and scalability. Additional responsibilities include programming objects, events, and functions, as well as adhering and contributing to development policies and procedures.

Average salary: $89,000

Java Developers

Java developers create and support Web-based Java applications, Web services and Web interfaces. Other responsibilities include server-side component design, reviewing and understanding business requirements, developing and enhancing product offerings, and ensuring that development tasks are completed within the timeline provided.

Average salary: $98,000

Business Analysts

Business analysts are responsible and accountable for all business aspects (i.e., technical, operation, economical) of the requirements and analysis phase of a project. They are also responsible for ensuring that the final deliverable of a software development project meets all of the intended needs of the business. They act as the primary resource in the requirements phase of a project and the primary business representative in the design and development phases of the project.

Average salary: $84,000

NET Developers

NET developers design and build applications using the Microsoft .NET Web services development framework. Other responsibilities include providing clear technical documentation and supporting production Web applications.

Average salary: $91,000

Web Developer's

The **Web developer's** role is to build the operations end of the organization's websites and keep them running smoothly. This includes designing, building, and implementing new Web pages and sites; integrating sites with back-end applications; migrating legacy applications to the Web; and performing day-to-day administration of the organization's Web portfolio. Use of a variety of Web development languages is required.

Average salary: $82,000

Systems Administrators

According to Webopedia, computer **systems administrators** install, maintain, and support an organization's information technology systems. They test system components to ensure that computers, software, and network equipment function seamlessly together. Systems administrators may be in charge of the company's LAN, WAN, intranet or Internet systems. Some administrators focus on specialist roles such as network security, IT audit, or system upgrade research.

Average salary: $77,000

Project Manager

The role of the **project manager** is to plan, execute, and finalize projects according to strict deadlines and within budget. This includes acquiring resources and coordinating the efforts of team members and third-party contractors or consultants in order to deliver projects according to plan. The project manager will also define the project's objectives and oversee quality control throughout its life cycle.

Average salary: $93,000

Network Engineer

According to Webopedia, a **network engineer**, also known as network architect, designs and implements computer networks. Unlike network administrators, who perform day-to-day support, the network engineer focuses on high-level design and planning. Network engineers select the appropriate data communications components and configure them to meet user and corporate needs. The construction of a reliable and high-performing network integrating LAN, WAN, Internet, and intranet components entails network modeling and analysis.

Average salary: $91,000

Top 10 Most Difficult-to-Fill Tech Jobs

According to **Dice**, finding certain hard-to-find, skilled technology professionals continues to be a battle. The most difficult hires to find and secure among today's pool of tech candidates: Java developers, mobile developers, .NET developers and software developers. Those positions are cited by hiring managers and recruiters about double or triple the frequency of other skill sets in the employment marketplace.

Many of the top 10 positions have figured prominently on the list each time Dice has asked America's tech hiring managers and recruiters for their toughest openings to fill. This raises a particular question: Why isn't the market fixing the talent gaps?

In some cases such as mobile developers, the market is expanding faster than the talent pool can adapt. That in turn impacts software developers who can fairly transition into the mobile space. Still, not all the positions or skill-sets on the list are in the "sexiest" corners of the tech employment market.

There are other factors too. Technology hiring managers largely want journeymen, not apprentices. Asked for experience preference, corporate hiring managers most frequently say IT pros with two to five years in the workforce, followed by those with six to 10 years' experience. Competition is fierce when companies are all chasing the same talent, making positions hard-to-fill.

Developing talent from within? Formal training in technology is very hit or miss. Companies have been shifting the responsibility for training their employees to the individual for decades. Hiring managers say they expect tech professionals to stay with their firm about three years. That makes it tough to cross-train, retrain, or train at all.

Finally, even with an unemployment rate for technology professionals hovering around 3.5 percent, bold hiring decisions are not on the agenda. Companies are largely sticking

to their terms. Sometimes the pay is unacceptable. Sometimes the requirements are for fantasy candidates. And, sometimes talent remains as elusive as the next great idea to fix our tech talent gaps.

Java Developer

Mobile Developer

,Net Developer

Software Developer

Security

SAP

SharePoint

Ten Certifications That Actually Mean Something

What gives meaning to a certification? Is it the certification vendor? Is it the subject? Or is it the perceived difficulty, mystique or aura? Or might it be something totally different? There are some certifications and/or vendors that are perceived to be more valuable - think of Cisco's CCIE, which has been perceived as meaning something (value) since its inception. Then there are other certifications that don't have this same perceived value - certifications that are seen as too easy or ones that might be seen as entry-level certifications. **Global Knowledge** instructor Randy Muller, MCT, MCTS, MCSE, CEH, has identified a list of certifications that do have perceived value and worth.

Project Management Professional (PMP)

The Project Management Professional (PMP) certification from the Project Management Institute's (PMI) credential is universally recognized as the most important certification for project managers. Those with a PMP are in great demand and highly sought after by corporations. The Project Management Professional credential demonstrates that you have documented project management experience as well as professional education to successfully lead and direct projects. The PMP credential is for experienced project management professionals as the qualifications and testing for this certification are rigorous, and there are required continuing education requirements. All of these factors ensure that the PMP credential is widely respected. The PMP experience and exam requirements focus on five process groups: Initiating, Planning, Executing, Controlling, and Closing.

Certified Information Systems Security Professional (CISSP)

Security managers and security professionals who develop policies and procedures in information security will benefit from the Certified Information Systems Security Professional (CISSP). The CISSP certification is the gold standard in information security certifications and education. Earning and maintaining a CISSP certification is required for many governmental, military, and civilian security positions. The CISSP was

the first credential in the field of information security, accredited by the ANSI (American National Standards Institute) to ISO (International Organization for Standardization) Standard 17024:2003.

VCP5-DCV (VMware Certified Professional 5 - Data Center Virtualization

The demand for skilled and certified virtualization professionals is growing quickly, especially those professionals with data center virtualization skills. In the highly competitive virtualization market, it is essential to distinguish yourself with a certification that validates your technical capabilities. VMware is one of the leading vendors of virtualization products and earning a VMware certification is the first step toward gaining industry-recognized expertise in virtual infrastructure. There are three certification levels with VMware: VMware Certified Professional (VCP), VMware Certified Advanced Professional (VCAP), and the VMware Certified Design Expert (VCDX). To earn your VCP, you must attend a class (not always required from other vendors) and then pass the certification test. The VCP5-DCV (VMware Certified Professional 5 - Data Center Virtualization) is the latest certification on vSphere and highly sought after.

Information Technology Infrastructure Library (ITILv3)

The Information Technology Infrastructure Library (ITILv3) is a foundational process that provides for quality IT service management. The success of ITIL is through the use of documented and proven processes that cover the entire service lifecycle. The ITIL Expert level is the third of four levels. The ITIL Expert level certification is aimed at those individuals who are interested in demonstrating a superior level of knowledge of ITIL Version 3 (V3) in its entirety. Once you have achieved ITIL Expert level, you will also satisfy the pre-requisite entry criteria for the ITIL Master level, the highest level of certification within the ITIL V3 scheme, though the Master level is still under development.

Microsoft Certified Technology Specialist (MCTS)

The MCITP certification validates that the IT professional is capable of deploying, building, designing, optimizing, and operating technologies for a particular job role. MCITP certifications build on the technical proficiency measured in the Microsoft Certified Technology Specialist (MCTS) certifications. The MCITP Database Administrator demonstrates knowledge of SQL Server instances and database solutions, database server security solutions, high-availability databases, backup and recovery solutions, monitoring strategies, database management and maintenance strategies, and data distribution strategies. The exams for this certification will retire in late July 2013 - replaced by the MCSE: Data Platform. The MCSE: Data Platform demonstrates that you have a broad skill set in building and administering enterprise-scale data solutions on both cloud environments and on-premises.

Cisco Certified Internetwork Expert

When one thinks of a highly sought after certification, generally, the first one most people think of is the CCIE. The Cisco Certified Internetwork Expert is the highest level of certification offered by Cisco and is one of the most respected. You must prove your knowledge through arduous hands-on lab - no memorization, pure hands-on examination - and this is regarded as one of the most difficult and sought after IT certifications today. There are nine discrete CCIE specializations to the CCIE Program and, as of January 2012, there were a little over 25,000 CCIE professional around the world. The CCIE exam focuses on managing large, converged networks.

Red Hat

The Red Hat certification program is seen as one of the most prominent Linux certification programs, if not the most prominent. What distinguishes the Red Hat certification program is that it is performance-based - i.e., candidates must perform specified tasks on a live system and not just take a computer-based, multiple-choice test. Within the Red Hat certification program, the Red Hat Certified Architect is considered the most complete (and grueling) certification amongst the seven major Red Hat certifications (some equate the prestige of the RHCA as equal to that of the Microsoft Certified Master and possibly the CCIE). The program provides an enterprise-level focus on the Red Hat technology solutions. Red Hat systems provide unique, cost-

effective infrastructure management systems such as cloud systems and server technology to enterprises.

Microsoft Certified Solutions Master (MCSM)

A recent change to Microsoft's Certification program also engendered a name change for the Microsoft Certified Master (MCM) to Microsoft Certified Solutions Master (MCSM - similar to the changes with MCSA and MCSE). The Microsoft Certified Solutions Master (MCSM) certifications validate skills that are deeper and broader than those validated by MCM certifications, skills that are required to build solutions both on-premises and in the cloud. Currently, there are five MCSM fields - each of which requires an examination and an exhaustive hands-on lab. The MCSM is a prerequisite for the Microsoft Certified Architect - the premier Microsoft certification.

CISM

This certification is offered by ISACA (formerly known as the Information Systems Audit and Control Association) and is only given three times a year (new for 2013 - before it was just twice a year). The CISM is aimed at higher-level IT security positions - those who are involved in the design, management, and building of enterprise information security programs. This certification requires that you have a number of years of documentable experience along with education requirements.

Global Information Assurance Certification (GIAC)

The Global Information Assurance Certification, or GIAC, is considered one of the most prestigious certifications in the IT field, and the GIAC Security Expert (GSE) certification is considered to be one of the hardest security certifications to obtain. This is a two-part exam with a computer-based exam and a two-day, hands-on lab that tests the depth and breadth of your security knowledge. Traditionally, the CISSP certification (Certified Information Systems Security Professional) has been considered to be the premier security certification. Now the GSE looks as though it might overtake this venerable certification.

Top 10 Programming Languages for Job Seekers in

Looking for a job as a programmer? An eWEEK study found that employers are looking for skills in the tried-and-true languages, with Java topping the list of in-demand programming languages. Java development was even among the 10 most in-demand flexible jobs overall in 2013, ranking fifth. Evaluating which languages will best get you a programming position early in is not exactly scientific. Several Websites, including career sites and programming sites, maintain numbers on language popularity among employers and applicants, as well as figures on the overall number of searches on programming languages on popular search engines.

For its list, eWEEK used resources from Dice.com, Stack Overflow's Careers 2.0 site, Indeed.com, FlexJobs.com, the TIOBE index and eWEEK's own research that included

interviews with hiring managers. Any list of programming languages is bound to be different. There also is an East Coast/West Coast dichotomy when it comes to applicant searches. In New York, Python tops the list of languages in which applicants are looking for jobs, whereas in San Francisco Ruby is at the top.

Java

Java ranked No. 1 on the eWEEK list, having a strong showing in all areas of our research. On the TIOBE list of most popular programming languages, Java ranked second behind C. The language remains a powerhouse in the enterprise and continues to see growth from areas such as mobile and big data, where Java-based Hadoop is hot. It is used for a variety of things, including enterprise apps and infrastructure, as well as Web and mobile development.

JavaScript

JavaScript gets its share of criticism, but as the lingua franca of the Web it is in high demand. The language topped Stack Overflow's 2013 job listing tags and maintained that top position in both New York and San Francisco. JavaScript ranked third on Dice.com's list, trended well on Indeed.com and Simplyhired.com, and was ninth on the TIOBE index of most popular languages. JavaScript-related skills such as jQuery and Node.js also came up strong in the research. JavaScript is primarily used in the form of client-side JavaScript, implemented as part of a Web browser to provide enhanced user interfaces and dynamic Websites. However, its use in applications outside Web pages is also significant, as is its server-side presence.

C/C++

C and C++, which is based on C, are among the most popular programming languages. C is used as a systems programming language as well as for applications—such as embedded systems applications. C++, developed as an enhancement of C, was initially known as "C with Classes" and quickly became one of the most popular languages among developers. It is used for developing systems software, application software, device drivers, embedded software, high-performance server and client applications, and entertainment software such as video games. On the TIOBE index, C ranked No. 1 and C++ ranked No. 4. The combination of C and C++ ranked second on Dice.com and trended well in the research.

C#

Microsoft's C# was developed as a Java alternative and borrows from its predecessors: Java, C, C++ and Delphi—as it should, since Anders Hejlsberg, creator of C#, also created the Delphi programming environment while at Borland. Powered by Microsoft, C# has become very popular among developers and Microsoft shops. C# ranked third in terms of searches by companies in 2013 on the Stack Overflow Careers site and

trended highly on the other sites. On the TIOBE index, C# was the fifth most popular language for 2013.

PHP

PHP is a widely used general-purpose scripting language that is especially suited for Web development and can be embedded into HTML. It was originally designed to produce dynamic Web pages. Zend Technologies, known as the PHP company, says its training courses are loaded, and it just announced long-term support for PHP. PHP was fourth in 2013 for both applicants' and hiring companies' searches on Stack Overflow, and sixth in terms of top listings. The language was sixth on the TIOBE index of most popular languages.

Python

Python is a dynamic language that is used in a wide variety of application domains. Often compared to Tcl, Perl, Ruby, Scheme and Java, it enables developers to write code quickly. Python trended well across the career sites, and was top among applicant searches in New York City and third in San Francisco. On the TIOBE index list of most popular programming languages, Python ranked eighth.

Ruby

Ruby is a dynamic, open-source language with a focus on simplicity and productivity. It has an elegant syntax that is natural to read and easy to write. Ruby is catching on in the enterprise as it is being offered in hosting and platform-as-a-service (PaaS) environments from companies such as Engine Yard and Salesforce.com's Heroku, and it has been successfully used in enterprise applications by companies such as Coupa Software. Ruby trended among the top 10 languages among some of the career sites in 2013 and was the language applicants most sought positions for in San Francisco.

Objective-C

Objective-C is a reflective, object-oriented language that adds Smalltalk-style messaging to the C programming language. It is used primarily on Apple's Mac OS X and iOS, two environments based on the OpenStep standard, though not compliant with it. Objective-C is the primary language used for Apple's Cocoa API, and was originally the main language on NeXT's NeXTSTEP OS. With the enormous popularity of the Apple platform, Objective-C is a good language to know. iOS skills and Objective-C trended well in the eWEEK research, as developers choose it to build native apps for the Apple platform. It was sixth on Indeed.com and third on the TIOBE index list of the most popular programming languages.

HTML5

HTML5 is a markup language used for structuring and presenting content for the Web and a core technology of the Internet. It is the fifth revision of the HTML standard.

According to VisionMobile, HTML5 continues to play an important role in mobile development, providing diverse development paths for those developers who want to extend their Web skills or Web assets onto mobile, as 37 percent of developers rely on HTML5 for developing mobile Websites and Web apps. HTML came up big in eWEEK's research among employers.

CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style Web pages and interfaces written in HTML and XHTML, the language can be applied to any kind of XML document. CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors and fonts. CSS trended well among the top job listing tags for 2013 on Stack Overflow's Careers site and was seventh on Dice.com among languages.

The Top 10 States for IT

Despite disappointing employment growth in the U.S. as a whole -- the unemployment rate is at 6.7 percent, according to the BLS (Bureau of Labor Statistics) -- the IT job market is faring better with an unemployment rate of only 3.3 percent. Where are these jobs? Based on CompTIA's IT Industry Outlook report, BLS data, and reports from Payscale.com, we've ranked the top 10 states for IT job seekers.

We also include each state's median salary based on data from Payscale and Computer and Mathematical Occupations as listed by the BLS (occupations include computer and information research scientists, systems analysts, information security analysts, computer programmer, software developers, Web developers, database administrators, network and systems administrators, network architects, user support specialists, and network support specialists).

1. California

Not surprisingly, considering the prominence of Silicon Valley in the IT market, California takes the top spot. CompTIA reports that California is home to the largest number of IT firms, with more than 34,000. And, according to Payscale data, the San Jose-Sunnyvale-Santa Clara corridor offers some of the top salaries in the field, with a median income of $109,000.

Working in tech at a Silicon Valley/San Francisco company is like no other job on earth. Strange things are happening as the job market heats up to near record levels. Million-dollar salaries, culture wars, ageism-on-the-sly, an eastward migration, and slippery office slides (literally) are just a few of the oddities to be found on the local tech scene. It

seems just about everyone, from Google and Facebook to promising startups to the CIO of a non-tech company, is vying for talented techies.

Elite Techies Make the Big Bucks

A Silicon Valley startup tried to woo a Google programmer away with a giant carrot: a $500,000 annual salary. The programmer scoffed. That's because he's making $3 million annually in cash and restricted stock units, according to Business Insider. Sure, the programmer's massive salary isn't typical, but it does point to a sign of the times. Google, Facebook, Twitter and others flush with cash are throwing wads of money at tech talent.

Startup City: Venture Capital Flowing Again

Tech giants aren't the only ones courting techies. Silicon Valley's startup scene is once again bustling with activity, thanks to a tech rebound of sorts in the public markets and lucrative exits that venture capitalists crave. But startups need talent and must compete with the Googles of the world. They're doing so by appealing to a techie's sense of independence, tapping into their entrepreneurial spirit and promising a big payday -- the trident of a Silicon Valley startup.

2. Texas

With Dell headquartered in Round Rock, it's not surprising to find Texas near the top of the list. But there are 24,121 other IT firms in the Lone Star State, with the median income reported by Payscale at $77,900 for the Dallas-Ft. Worth-Arlington metro area and $77,200 for the Round Rock area.

3. Florida

Though best-known for a certain mouse and associated tourist attractions, Florida's also becoming a technology hot spot. Technology distributor Tech Data is headquartered in Tampa, and CompTIA reports an additional 21,517 IT firms in the Sunshine State. The median income is $70,930 based on data listed by the BLS for Computer and Mathematical Occupations.

4. Illinois

There are 19,856 IT firms in Illinois, most located along Interstate 88 that winds through suburban Chicago. Home to Alcatel-Lucent as well as a Microsoft regional office, the median income for the region is approximately $79,800 based on data listed by the BLS for Computer and Mathematical Occupations.

5. New York

Sure, the Big Apple is crawling with IT firms, but the 18,645 tech companies CompTIA says are located statewide aren't all located in the city that never sleeps. The emerging tech corridor in Poughkeepsie-Newburgh-Middletown boasts a median income of $80,700 for IT pros based on BLS data, so don't limit your job search to NYC.

6. Virginia

Arlington and Alexandria are two of Virginia's bedroom communities for the tech- and government-heavy city of Washington, D.C., and the metro area boasts a median income of $82,100 based on data listed by the BLS for Computer and Mathematical Occupations. There are 15,851 IT firms statewide, according to CompTIA.

7. Georgia

Atlanta is a major technology hub, though statewide CompTIA reports 12,995 tech firms in Georgia. The companies range from mobile device application firms to SEO and social media companies, and the median income is $76,060 based on data listed by the BLS for Computer and Mathematical Occupations.

8. New Jersey

New York's much-maligned neighbor is a tech haven in and of itself, without many of the commuting headaches. There are 12,677 IT firms in the Garden State, not to mention the presence of major healthcare and pharmaceutical firms and colleges. And the median income isn't too shabby, either, at $79,700 based on data listed by the BLS for Computer and Mathematical Occupations.

9. Pennsylvania

Motorola, Google, and SAP are just three of the 11,057 tech employers in the Keystone State, and the Technology Council of Pennsylvania is dedicated to growing this number and expanding the concentration of these firms beyond the major metro areas of Philadelphia and Pittsburgh. Median income is $75,660 based on data listed by the BLS for Computer and Mathematical Occupations.

10. North Carolina

The Tech Triangle region of the Tarheel State is home to IBM, SAS, and other top global tech firms totaling 10,980 statewide. Anchored by the Raleigh, Durham, and Chapel Hill metro areas in addition to Cary, the median income for the region is $76,100 based on data listed by the BLS for Computer and Mathematical Occupations.

The Top Five Fastest-Growing Tech Hubs
http://www.itbusinessedge.com/slideshows/the-top-five-fastest-growing-tech-hubs.html

The fastest-growing cities in the country when it comes to technology jobs posted on **Dice** may have been unexpected in the past. But, with communities coming together to support start-ups, court large employers and fund STEM education initiatives, no one should be surprised that "traditional tech centers" need a new definition.

St. Louis, Missouri

The number of St. Louis-based technology jobs posted on Dice jumped 25 percent year/year. And those new tech jobs are coming at a higher price tag too: average tech salaries are up 13 percent year/year to $81,245. Popular jobs? Developers, programmers and consultants. St. Louis is becoming a start-up town, with support from the St. Louis Information Technology Entrepreneur Network.

Charlotte, North Carolina
Tech recruiting activity in Charlotte is off to a fast start in 2013, with job postings on Dice up 22 percent year/year. That's impressive growth, considering North Carolina's tech workforce already grew 6 percent last year, according to the Bureau of Labor Statistics. A new wave of investments in energy is under way in Charlotte, which could provide a further boost for technology and engineering jobs

Austin, Texas

Tech jobs are up 16 percent year/year in Austin, with more than 1,100 available postings on any given day. Austin also ranks in the top 10 for salary nationwide, according to the 2012-2013 Dice Salary Survey. Austin tech salaries were flat year/year, from $89,419 in 2011 to $89,680 in 2012, but that’s coming off of last year, when Austin was the fastest-growing city for tech salaries (+13 percent). Austin salaries are above the national average of $85,619.

Phoenix, Arizona

The number four just keeps coming up for Phoenix. Not only is it the fourth-ranked, fastest-growing city for technology job postings, Phoenix also ranked fourth-fastest in the country for tech salary growth, up 12 percent year/year to $83,607, according to the Dice Salary Survey. How many Fortune 500 companies are located in Phoenix? You guessed it – four.

Detroit, Michigan

Detroit is the only two-timer on the list, having worn the crown for fastest growing city in 2011, as measured by job postings on Dice. Back then, Detroit had more than 800 tech jobs posted on any given day. Now it's more than 1,100. Automation Alley, Michigan's largest technology association, ranked the Greater Detroit region among the best for its

strong record of students completing science, technology, engineering and math (STEM) degrees.

Top 10 Security DOs and DON'Ts

Security is the responsibility of us all. Follow the below tips and you'll be helping to keep yourself, your colleagues, and our School safe.

1. Don't be tricked into giving away confidential information

Don't respond to emails or phone calls requesting confidential information—including employee information, student data, or protected research information. It's easy for an unauthorized person to call you and pretend to be an employee or one of our business partners. Stay on guard to avoid falling for this scam, and report any suspicious activity to the IT Service Desk. Remember to protect your personal information just as closely.

2. Don't use an unprotected computer

When you access sensitive or confidential information from a non-secure computer - like one in an Internet café or a shared machine at home - you put the information you're viewing at risk. Make sure your computer is running the latest approved security patches, anti-virus software, and firewall. You should also work in user mode, not administrator mode, whenever possible.

3. Don't leave sensitive information lying around the office or School

Don't leave printouts containing sensitive or confidential information on your desk, in classrooms, or within computer labs. Lock them in a drawer or securely shred them when no longer needed. It's very easy for a visitor to glance down and see sensitive documents if they are unprotected. Keep your desk tidy and documents locked away to reduce the risk of information leaks and make the area look more organized.

4. Lock your computer and mobile phone when not in use

Always lock your computer and mobile phone when you're not using them. You work on important things, and we want to make sure they stay safe and secure. Locking your phone and computer keeps your data and contacts safe from prying eyes.

5. Stay alert and report suspicious activity

Always report any suspicious activity to the IT team. Part of our job is to stop information security compromises and to make sure our data isn't lost or stolen. In case something goes wrong, the faster we know about it, the faster we can deal with it.

6. Password-protect sensitive files and devices

Always password-protect sensitive files on your computer, USB, smartphone, etc. Losing items like phones, USB flash drives, and laptops can happen to anyone. Protecting your devices with strong passwords means you make it incredibly difficult for someone to break in and steal data.

7. Always use hard-to-guess passwords

Don’t use obvious passwords, like “password,” “cat,” or obvious character sequences on the qwerty keyboard, like “asdfg” and “12345.” It’s better to use complex passwords. Include different letter cases, numbers, and even punctuation. Try to use different passwords for different websites and computers, so if one gets hacked, your other accounts aren’t compromised.

8. Be cautious of suspicious emails and links

Don’t let curiosity get the best of you. Always delete suspicious emails and links. Even opening or viewing these emails and links can compromise your computer and create unwanted problems without your knowledge. Remember, if something looks too good to be true, it probably is.

9. Don’t plug in personal devices without the 'OK' from IT

Don’t plug in personal devices like USB flash drives, MP3 players, and smartphones without permission from the IT Service Desk. These devices can be compromised with code waiting to launch as soon as you plug them into a computer. Talk to the IT Service Desk about your devices and let them make the call.

10. Don’t install unauthorized programs on your work computer

Malicious applications often pose as legitimate programs, like games, tools, or even anti-virus software. They aim to fool you into infecting your computer or network. If you like an application and think it will be useful, contact the IT Service Desk to look into it for you before installing.

An ongoing effort

Technology is constantly evolving and becoming more advanced, and that means so too are the threats. This top 10 list will change over time as we encounter and overcome new threats at HGSE. Keep an eye out for updates to the Top 10 Security DOs and DON'Ts so you don’t accidentally put yourself or our School in a compromised position.

Survival guide: Do's and don'ts for next-gen IT

Business IT is evolving behind your back. Here's how to head off extinction and assert a larger role

Here's the hard truth: The employees you support -- whose data centers you keep humming and whose email accounts you provision -- they don't need you any more. If you can't provide a service they want right now, they'll call up Salesforce or Amazon Web Services and order it from the cloud. And they'll do it without even telling you.

Your enterprise customers no longer belong to just you, says Narinder Singh, co-founder of cloud-based professional services organization Appirio.

[Also on InfoWorld: Bring peace to your IT department by avoiding IT turf wars and the nine circles of IT hell, and stay away from these 20 common IT blunders. | Explore the current trends and solutions in BI with InfoWorld's interactive

Business Intelligence iGuide. | Stay on top of the current state of the cloud with InfoWorld's special report, "Cloud computing in 2012." | For more IT management wisdom, sign up for Bob Lewis' Advice Line newsletter.]

"The first thing you need to realize is that your business customers can leave or go around you in any number of ways," says Singh. "If people have an iPhone, they're going to use that for work, whether you want them to or not. If IT doesn't provide cloud storage, they'll sign up for their own Dropbox account. They aren't going to wait six to eight weeks for you to provision something for them. You can no longer treat business users as a captive entity. Instead, you'll have to become a consultant to the business and prove to them the value of what IT can do."

IT departments that wish to stay relevant in a BYOD and cloud-based world will need to redefine themselves as service providers. They'll need to make the leap from being technicians responsible for maintaining systems to experts who offer a menu of services and offer intelligent recommendations about which ones will help drive the business forward.

Of course, the transition from tech house to service catalog is full of pitfalls. Here are the key do's and don'ts for evolving your IT organization.

Do: Take a long hard look in the mirror
Don't: Jump in before you're ready
The first question you need to ask: Is your IT organization mature enough to become a service organization? Only 30 to 40 percent of large IT groups are ready to make the shift, says Patrick Gray, president of Prevoyance Group, a business strategy consulting company. You can't expect to have a seat at the table when your servers are still crashing and business apps are going down.

"The first step is to take a hard look in the mirror and make sure your IT department is really as mature as you think it is," he says. "Is your CIO called in after the business decisions have already been made and management just needs the cables to be connected, or is IT a valued part of the decision-making process from the beginning? 'IT as a service provider' sounds nice, but it's a much more fundamental transition than many CIOs and IT departments expect, and it's far more than allowing some cloud services into the company."

Honest assessment of your IT tools is key, adds Tom Davis, CTO for IT solutions firm LANDesk Software. The more point tools you have and the more you're still wedded to a break-fix mentality, the less ready you are for taking the next step.

"Providing a high level of service and automating redundant processes is exponentially harder in an environment riddled with point products," he says. "This will be your biggest expense in the move to becoming a service provider."

The good news? Removing point tools with integrated systems can save your organization money, he adds. But if your organization isn't ready to make the leap, it will end up costing you, says Joseph Lee, IT operations and delivery manager for SWC Technology Partners, a provider of managed services and infrastructure solutions.

"Before you adopt a shared services model, you need to make sure your infrastructure and your IT processes are mature enough and can scale properly," he advises. "If your solutions are inadequate and you try to scale them, you'll end up with bad processes repeating over and over. What you've accomplished is basically moving the work from one unit to another with no gains."

Do: Automate your infrastructure
Don't: Get stuck changing lightbulbs
Unless it's a one-person operation, execs who make the big decisions (and the big bucks) aren't usually asked to also replace the lightbulbs and fix the toilet. IT departments need to stop being glorified service techs who keep the servers humming and email free from spam; instead, they must start assuming a larger role.

"IT is always going to have a mundane component: setting up email accounts, jockeying help desk tickets, and the like," says Gray. "In the service-based IT organization however, these activities should be 'outsourced' to an internal or external party that manages itself, getting these activities off of the CIO and IT's radar. You can't be a high-value service provider if these tasks are your main area of focus."

You don't necessarily have to move to the cloud to transform your IT department into a service provider, says Jeff Fisher, VP of strategy for RES Software, a provider of dynamic desktop solutions. But you will need to automate as many low-level services as possible.

"Don't assume that moving services to the cloud is going to automatically elevate your role," he says. "It's better to focus on automating the delivery of in-house services first to intimately understand their dependencies. This will help immensely when it comes to determining which services can be moved to the cloud. Automating challenging IT projects like application upgrades or operating system migrations can give users a better experience without requiring direct intervention from the IT team."

Randy Clark, chief marketing officer for IT process automation company UC4 Software, says most enterprises are already heavily reliant on integrated applications using shared infrastructure, making them too complex to manage manually.

"For example, doing inventory and pricing refreshes for hundreds of retail stores or assuring stock trades through online brokerages requires multiple applications to work together to provide relevant, accurate data," he says. "This requires applications and infrastructures to be in sync and managed to defined service levels. IT process automation can reduce manual effort by up to 90 percent, allowing valuable human resources to focus on more productive work to better drive the business."

Do: Solve business problems
Don't: Try to be an IT hero
You've been hearing this for years, and now it's become a matter of professional survival: It's time to stop acting like a geek and start thinking like a suit. That could mean a 180-degree shift in your approach to technology, notes Simon Johnson, director for service management at GlassHouse Technologies, a provider of infrastructure consulting services.

"Transforming IT into a service provider means shifting away from the traditional mantra of greater efficiency, higher utilization, and cost reduction and toward what the business is looking for, which is primarily innovation and agility," he says. "You need to sit down with the business side and understand what problems they are trying to solve."

LANDesk's Davis says tech staff who are accustomed to being praised when they step in and fix problems need to resist the urge to play hero, no matter how good it feels.

"It feels great to swoop in and save the day whenever things go wrong, but it doesn't help the business grow," he says. "It is a big cultural shift to stop being a glorified technician and start being a business enabler and service provider. By breaking away from that hero mentality, you can move IT forward into planning and working with the business-critical systems."

Techs also need to learn how to be proactive, not reactive, says Gray. If the marketing department has adopted a cloud service it really likes, then approach the VP of sales and suggest she might want to give it a try as well.

"The ultimate benchmark is when you get a call from the director of operations who says, 'We're thinking about implementing this strategy and we want your input on it,'" he says. "So instead of just trying to be better at delivering technology, you become the people the business goes to for ideas."

Do: Build a catalog of services
Don't: Forget about people, policies, and processes
Many companies moving to a cloud-based service model can get everything right from a technical point of view and still fail miserably because they forget about the human element, says Johnson.

"We've had a number of customers deploy private clouds from a technical perspective without considering the process and organizational change that goes along with it," he says. "The technical platforms were sound, but they failed anyway, because the IT organizations were not ready to provide consumerlike services, and the services they were offering were not the ones the business organizations were looking for."

When creating a catalog of services for business users, you need to write it in language they can understand, adds Jay Seaton, chief marketing officer for GlassHouse. You'll also need a way to accurately allocate the costs of the services procured, and to define who's authorized to procure which services and for how long.

"You don't want to be a situation where either no one can provision services or everyone is doing it and it gets out of control," he says. "And once something is provisioned, how do you decommission it? Does it expire after a certain amount of time, or does it go on forever?"

SWC's Lee says IT orgs should take care to avoid overwhelming users with too many options or offering tools no one actually wants.

"One big thing is to review your service catalog every year to make sure the core services you're offering are being used," he says. "Hopefully you've gathered enough metrics to know which services are being used and which ones are not. If not, is it still

worth it to provide these services? At a certain point in time it stops making business sense."

Do: Become a data specialist
Don't: Be a server hugger
Resistance to change is a hallmark of many old-school IT professionals -- but not to anyone who's looking for a long and fruitful career, notes Gerry McCartney, CIO for Purdue University, which transformed its IT offerings into a services catalog more than half a decade ago.

"There are IT people we call 'server huggers' who've defined their job by the piece of equipment they maintain," he says. "That's a very risky posture to have from a professional standpoint. There's not going to be a lot of demand for IT people who only know IT. You have to be in the gap between the business and technology. The value the local IT person brings depends on how good they are putting themselves between the technology offerings and the needs of the organization."

As menial IT tasks melt away, technical people who want to bring value to the organization need to morph into data analysts, says McCartney.

"Your value will depend on your ability to extract useful business knowledge from the data your institution already produces or owns," he says. "That is the Internet of this decade."

Two exceptions to this rule are information security and contract law, McCartney adds. With the number of external and internal threats growing exponentially, security pros are needed more than ever. And if IT is going to act as a broker between business users and services available via the cloud, they need to be well versed in what those service agreements entail.

Willingness to embrace change is the key, says Appirio's Singh.

"If you signed up for a career in technology, you signed up for an industry where everything is turned upside down every few years, so to attach yourself to some past paradigm is the ultimate irony," he says. "More than anyone in any other field, technologists should be aware that change is coming and be willing to embrace that change."

o: Retool, retrain, and restaff as necessary
Don't: Expect it all to happen overnight
You can't close up on Friday evening as a traditional IT shop and expect to wake up Monday as a fully operational service organization, says Patrick Gray.

"This is not something a lot of companies have done well," adds Gray. "They've said, 'Great idea, we'll outsource all this other junk and become a service organization,' but they don't factor in the fact that they need different types of workers. It's not like they're going to have to fire everyone and hire all new staff, but it's imperative employers realize it's a transition for workers and helps them make that transition, through formal or informal training."

For example, rather than developing a deep knowledge of a particular technology or discipline, IT pros will need to become familiar with a wide range of disparate services.

"You'll need staff that knows from 1 to 5 percent of a broad basket of technologies, ranging from cloud-based CRM to VoIP," he says. "They'll need to know enough to apply the right tech to the right business problem, and then kick the implementation to another party."

Management will also need to change how it measures IT's success, says Singh, whose company continually surveys its customers to gauge whether Appirio is meeting their expectations.

"Don't create an IT organization where whether you rise in the organization is based on how well you meet your budget and headcount," he says "You need to change incentives and reward people based on how well they serve the business."

As BYOD and cloud services come to dominate the tech landscape, IT pros no longer have the luxury of ending every conversation by simply saying no. Enterprises must move from an environment where tight control of technology use and cost was considered a plus, to one where IT's success is measured by the success of the company as a whole.

It's not an easy transition, says Singh, but it is inevitable.

"We're asking today's IT departments to do something unique," he says. "We want them to be cutting costs and squeezing pennies on their maintenance spend, while at the same time encouraging innovative try-fast/fail-fast business-centric initiatives instead of rolling out yet another application delivery paradigm. It's hard to run IT with two conflicting mind-sets. That's one of the things that has inhibited its evolution. But you need to become the organization of yes, and not no."

12 effective habits of indispensable IT pros

Ditch the slackers, take on dirty work, do it with data -- here's how to get the inside track on a highly rewarding career in IT

How do you keep your job -- or get a better one -- in an era when hiring is in a freeze and budgets are perpetually squeezed? Follow these 12 maxims and find out.

Some of these ideas are practical advice you've probably heard before (and ignored). Being familiar with the business objectives and how technology can improve the bottom line is more important than ever. But so is expanding your portfolio of IT skills. Mastering cloud services or data management will help ensure your relevance in a rapidly changing work environment. You'll also want to reach out and communicate with your colleagues across the aisle and the organization, and take on dirty jobs nobody else wants. Eventually it may even mean leaving the comfort of a big organization and branching out on your own.

[Also on InfoWorld: Bring peace to your IT department by avoiding IT turf wars and the nine circles of IT hell. | Find out which of our eight classic IT personality

types best suit your temperament by taking the InfoWorld IT personality type quiz.]

But remember: Becoming "indispensable" can be a double-edged sword. Get too indispensable and you might find yourself unable to move beyond your niche.

Effective IT habit No. 1: Get down to business
You may be your organization's most talented developer or dedicated systems administrator. But if you don't know what the business is selling or what service it's providing, you're an unemployment statistic waiting to happen.

First step: Learn as much about the business as you possibly can, advises Mark A. Gilmore, president and co-founder of Wired Integrations, a strategic technology consulting firm.

"Ask yourself, 'How does it make its money? What are its strengths and weaknesses?'" Gilmore says. "Once you understand how the company works, you can use your IT knowledge to improve the company -- thus making yourself more valuable and less dispensable."

It helps to have a deep understanding of the company's critical infrastructure and to keep abreast of tech trends, he adds. But this may also require broadening your worldview.

"Don't look at things from strictly an IT perspective," he says. "Widen your vision to see how things relate to the business world around you. That will make you more valuable than 20 technical certifications and a master's degree."

Effective IT habit No. 2: Keep your eye on the bottom line
Your job isn't just to keep the lights on and the data center humming. It's to help your organization use technology to improve the business -- especially by trimming costs and increasing efficiency.

Servers running at a fraction of their capacity? If you haven't already virtualized your data center, now's the time. Software licenses dragging down your budget? You have an increasingly broad choice of low-cost cloud-based apps that let you pay only for what you use and only for as long as you use it. That's barely scratching the surface.

"IT professionals need to focus on areas which either drive down costs, such as virtualization, cloud computing, and converged networking, or on areas that help to generate revenue, such as social media, mobile marketing, and SEO," notes Rick Mancinelli, managing partner for IT consultants Cloud Computing Concepts. "Ultimately, those IT professionals that have a positive impact on the bottom line will be the most valuable to their employer."

Effective IT habit No. 3: Keep your head in the cloud
Because so many traditional IT functions are moving to the cloud, which any business user can procure with a phone call and a credit card, your company may no longer need you to flip switches, connect cables, or troubleshoot machines. But they will still need

someone who can tell them what services are available, which ones are worth looking at, and which ones they should avoid.

"If your organization plans to rely more on public cloud providers, especially for basic infrastructure needs, you may find you need fewer in-house operations people to maintain, patch, and upgrade systems," says Mark White, chief technology officer of Deloitte Consulting's technology practice. "But you'll still require people with expertise in managing a catalog of cloud services, handling subscribers, brokering agreements with cloud providers, and intervening when problems arise.

"The cloud puts greater demands on both your technical and your business-of-IT skills. If you're CIO, it's an opportunity to take your capabilities up to the next level."

Effective IT habit No. 4: Broaden your tech horizons

Besides mastering their own tech domains, savvy IT pros broaden their skill sets to include other areas of expertise. If a crisis arises in one of those areas -- and the persons responsible for handling it aren't available -- you may be able to step in and save the day.

"This helps employers view them as valuable team players who can easily branch out to handle other jobs," says Dr. Issac Herskowitz, dean of the Graduate School of Technology at Touro College. "And an employee who has more than one area of expertise is more valuable when a department is downsizing."

The easiest way to develop new skills (and impress your boss) is by volunteering your services to other areas of IT and to stay on top of emerging tech trends, Herskowitz adds. The more you know about the latest and greatest tech, the more likely you'll be invited into the conversation when those technologies are being considered for adoption.

Effective IT habit No. 5: Teach your co-workers to speak geek (and learn to talk biz)

Want to break down the walls between IT and the business side, as well as earn a little goodwill in the process? Start a series of casual teaching sessions where you bring less savvy coworkers up to speed about the latest in tech, suggests Ben Dunay, founder of Sixthree Technology Marketing, a consulting firm that helps facilitate sales of technology to the military. You might also learn a thing or two about the business along the way.

"Even if you start small and informally over brown bags in the break room, it is a very cool way to step outside the norm and boost your career," he says. "By making the technical terms clearer to the business people, and by making the business terms clearer to the technical people, you can quickly become the go-to guy for your boss when he needs something technical explained to save the day," he says.

The opposite is also true. By meeting with the business side, you'll grow more familiar with their needs and concerns, as well as how they communicate, says Jay McVinney,

CEO of DBA in a Box, a provider of on-demand support for Microsoft SQL Server databases.

"The most common failure of technical people is the lack of understanding of the business side," he says. "To be effective in the future, a technical person must learn key business concepts, learn the industry language spoken by their business units, and be able to translate freely and fluently between technical and business units."

Effective IT habit No. 6: Ditch the slackers, find a mentor
Hanging with a crew that likes to take long lunches and knock off at five (or earlier)? You're not doing your career any good, says David Maxfield, author of "Change Anything: The New Science of Personal Success," a book about alter your career-limiting habits.

"The habits that hold you back are likely enabled, tolerated, or encouraged by others," he says. "Use positive peer pressure by surrounding yourself with hardworking friends who share your career goals. Distance yourself from the office slackers."

Instead, Maxfield advises you seek someone with more experience to steer your career in a positive direction. "Find a trusted mentor," he says. "That will help you navigate the career development opportunities that exist within the organization."

Effective IT habit No. 7: Do it with data
If your business users aren't drowning in information now, they will be soon. Taming the data deluge will make you invaluable to any organization.

"IT people who can make sense of business data, safely store it, categorize it, retrieve it, and especially analyze it are highly valuable," notes Scott Lever, a managing consultant with PA Consulting Group. "These are the people who are using customer data to help drive business decisions."

George Mathew, president and COO of business analytics platform vendor Alteryx, predicts one of the hottest jobs in tech over the next few years will be the "data artisan," a hybrid role that mixes data analysis with business savvy, pulling market insight, competitive information, and customer data into business intelligence systems.

"Data artisans will be asked to pull from structured and unstructured sources to drive the most important decisions within an organization -- like where it should open its next retail location, whether to pursue a new market, and which products to push," he says.

Effective IT habit No. 8: Take on jobs no one else wants
Safe, predictable jobs won't get you into trouble, but they won't earn you any glory either. It's the tough jobs where you can prove your value, says John Paul Engel, principal for Knowledge Capital Consulting, a boutique management consulting firm.

"The best career advice I ever received was from then president of Citibank California who told me, 'Look for the biggest problem and solve it because there in lies your greatest opportunity'," he says

Take on a project that's already going well, the best you can hope for is that it will continue to go well. Take on something that's a disaster and turn it around -- even just a

little better -- and you get a reputation as somebody who gets things done, Engel adds. "If you make a problem even a little bit better, you are making progress."

Effective IT habit No. 9: Don't be a jerk
You might be the world's most brilliant coder or the industry's leading expert on user interface design. But if nobody likes you, your head is on the chopping block. Given the often challenging personality types drawn to technology, this is especially true for IT.

"Personality goes a long way when it comes time to make cuts in an organization," notes Nathan Letourneau, director of marketing for PowerWise USA, makers of PC power management software. "Companies prefer people with positive attitudes and a good work ethic, even if they aren't as highly skilled as another. Don't be a pain in the butt or overly negative. This isn't to say you shouldn't speak your mind, but just make sure you're respectful when doing it."

Ultimately, managers like to get rid of the troublemakers and malcontents first, says Engel: "At the end of the day, it's the person that makes the work environment of the other coworkers better that gets promoted and is the last to leave in a layoff."

Effective IT habit No. 10: Go public
That doesn't mean issuing your own personal IPO (though if you could pull one off, more power to you). The more people who know and rely on you -- especially outside your department or organization -- the harder it is to fire you, notes Engel.

If you have a client-facing job, you're less likely to feel the ax on your neck because companies don't generally like to fire people who have relationships with key accounts, he says -- provided, of course, you obey Rule No. 9.

If your job doesn't bring you into regular contact with clients, you can strive to become well known across different departments, especially in larger, more siloed enterprises.

"Look for projects and opportunities that cut across departments because this builds your internal network -- thus making you more valuable to the company," he says.

Effective IT habit No. 11: Don't become literally "indispensable"
The problem with being labeled indispensable is that it can become a trap. Your talents can become so critical to an organization's survival that you can never leave or rise to a new position within your company, says Steven A. Lowe, CEO of Innovator LLC, a consulting and custom software development firm.

"A friend of mine is an excellent developer who has created a few critical software systems for the company that employs him," Lowe says. "No one else can step in and do what he does, and the company can't 'afford' to promote him to a more senior position or pay him much more money. So he's frustrated and miserable -- but he's certainly indispensable!"

The way to avoid this trap: Don't hoard information or expertise. Delegate responsibility. Start training your own replacement now, or find ways to outsource your current responsibilities so that you can take on more challenging assignments.

"I have been both indispensable and dispensable, and I had better job security and was happier when I was dispensable," says Jen Hancock, author of "The Humanist Approach to Happiness: Practical Wisdom."

Hancock says, "When I was indispensable, things fell apart. If I tried to take a long weekend I came back to a mess I had to clean up. The longer I was away, the worse the mess. When I finally got my act together enough to manage the work and delegate it out properly, everything ran more smoothly."

Effective IT habit No. 12: Know when to fire yourself

Sometimes the best way to become indispensible as an IT pro is to step away from a stifling career path, even if that means branching out on your own.

"I boosted my career by starting my own company," says Lowe, of Innovator LLC. "I doubled my take-home pay immediately, set my own hours, and got to work on really interesting things with highly motivated people."

The notion that a "successful career" implies a steady progression of higher-paying jobs within a company or industry just doesn't apply any more, he adds.

"A successful career today is a journey on which you discover and do what you love," he says. "If that happens to be offering businesses innovative ways of changing their work flow to achieve new levels of productivity and efficiency, that's great. If that happens to be giving guided tours of canyons in Utah (instead of applying the advanced math degree you earned at university), that's also great."

When you're out on your own, being indispensable means solving problems and letting others reap the rewards, Lowe says. "That's pretty much the essence of my consulting career. I innovate, they prosper, we both win. The next time the client has a challenge, they call me first."

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