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New report reveals wide disparity in demand and pay for noncertified versus certified IT skills at 2,400 employers beginning late 2007.

For the second straight quarter in 2012, pay for noncertified IT skills rises led by gains in Database, Applications Development, Messaging and Communications, SAP, and Process/Methodology skills.

Meanwhile IT certifications values decline from April to June for the twenty-second time in the last twenty-four quarters

No surprise that cloud computing, Big Data, and security skill shortages are causing concern.

NOTE: This news release is a summary extract of content in *IT Skills Demand and Pay Trends Report* released this week by Foote Partners. This report is updated every 3 months and contains detailed compensation and demand analyses of data from the firm's *IT Skills and Certifications Pay IndexTM*.

Vero Beach, FL, August 22, 2012 – Extra pay specifically awarded to talented IT professionals for **300 noncertified IT skills** and **265 IT certifications** critical to success in their jobs---also known as ‘skills premiums’--- has continued to follow dramatically different trend paths in the first half of 2012 according to the a new update of Foote Partners’ *IT Skills and Certifications Pay IndexTM* (ITSCPI). Since its launch in 1999, the ITSCPI has continuously tracked market values for individual IT skills and certifications at 2,400 employers in North America, with findings and detailed market analyses published every ninety days.

“This broad trend of employers willing to pay more for noncertified IT skills than for certified skills began in late 2007. Prior to that it was the exact opposite for six years, from 2000 to 2006,” notes David Foote, co-founder and chief analyst at Foote Partners and publisher of the *IT Skills and Certifications Pay Index™*.

“The reasons are not so difficult to understand if you’re at all familiar with the history of information technology and IT employment. First, many IT skills did not appear in the workplace because of a particular product or service associated with them that was (a) tightly controlled by a vendor and (b) supported by certification programs created by that vendor to support sales of their products. Examples include programming languages, software development tools, open source technologies, some operating systems, and even many network and systems technologies. In the case of process and methodology related skills such a project management, architecture, analytics, risk assessment, and numerous frameworks, more and more employers have chosen to value employees more highly based on their level of experience and demonstrated expertise regardless of whether they have earned available certifications to support what they can do with their skills and expertise. Plus, there are many highly prized ‘soft’ skills and also areas of subject matter expertise that may have been cultivated through college degree programs or on the job experience and are regarded by employers as desirable and therefore worthy of additional compensation compared to others in the same jobs who don’t have these same qualities,” notes Foote.

“There are plenty of good training opportunities to elevate your skill levels: they don’t have to be tied to formal certifications for employers to be willing to pay a premium. If IT workers are convinced a particular certification will translate into more pay they might opt for it. But the reality has been that the amount that employers have been willing to pay for IT certifications has been declining for six years according to some very hard statistics on 265 of them that has come out of our *IT Skills and Certifications Pay Index™* over the past 13 years”.

The gap between pay for noncertified and certified IT skills has never been greater than it is right now. The former are averaging the equivalent of around 8.6% of a person’s base salary¹ for a single remunerated skill; the latter is earning about two points less, according to Foote. “But in late 2004, certifications pay was averaging the equivalent of nearly 8% of base salary for a single certification compared to around 6.7% average for a noncertified skill.”

¹ Skills premium pay may or may not be paid as part of base salary, but instead as a cash bonus in addition to salary and other pay elements including retention bonus, project bonus, sign-on bonus, performance bonus, etc.

What has happened since then are dramatic changes in the role of information technology in an enterprise, and with it managers' views of what skills or certifications have the most value to them. IT is now so pervasive that managing it, and defining the jobs and roles of the workers with tech skills, is split among every department, line of business, product group and a variety of enterprise strategic and operational functions. Each entity determines how to best use technology to produce revenues and enhance profitability, build market share, ensure satisfied customers, control costs, innovate solutions and generally stay competitive in its industry. With technology and business skills collapsing into each other, the very nature of the work of IT professionals has changed. The numbers tell it all: Less than 20 percent of all technology professionals employed today — about 4 million U.S. workers, according to the Labor Department — work in traditional IT departments. Another 20 million to 24 million tech-infused hybrids can be found elsewhere in the enterprise, blending subject matter expertise, business acumen, social skills and solid technology talent and experience in a variety of roles.

“So what we’re tracking in our skills demand and pay trends research is the growth of new roles in the enterprise for people with IT and business skills, and sometimes these skills are not tied to vendors or to specific technologies that would traditionally be supported by certification programs. Or they are process based or subject matter expertise driven skills,” observes Foote. “Vendors have felt challenged by this and made changes to their certifications programs to keep them relevant to new customers and new requirements. For example, some have added master- or guru-level certifications that require peer review panels to make the final determination of whether an applicant is worthy of a certification. Or they’ve reconstructed their certification programs to add cross-training elements covering numerous domains in a converged infrastructure environment model supported by their products and services. Hewlett-Packard’s ExpertONE training program, which launched in late 2010, is one of the earliest examples of integrating existing and new certifications spanning an entire enterprise landscape from networking, storage, servers and software to printing and personal computing. Our research indicates that that this helped add value to H-P’s certifications that otherwise may have withered, and that has translated into cash for workers who earned both existing and newly created certifications.”

“It’s not simply possessing a skill that is important,” insists Foote. “It’s about what you can do with that skill and how you’ve blended it with other skills and knowledge you possess. That could be in a specific business domain like finance, marketing, logistics, sales or operations, or in a particular solution set that may involve one or more vendors and their products, such as ERP, supply chain, mobile applications, security, e-commerce, data

warehousing, or electronic medical records. It could be a new product area. The possibilities are virtually limitless.”

Another factor in this shift in greater demand and higher pay premiums for noncertified skills has been the growth of managed services the popularity of outsourcing of pure technology work. “What’s changed here is the employers who are hiring workers with tech skills traditionally certified by prominent vendors such as Cisco, IBM, Microsoft, and Oracle and others. The explosion in IT services firms of all sizes has been measured by the Department of Labor: 291,000 jobs added in the past three years. How important are IT certifications to them? Not enough it appears, since overall their value has been on a steady decline.”

HIGHLIGHTS: IT skills and certifications pay and demand in Q2 2012

Last three months (ending July 1, 2012)

Average market value for **300 noncertified skills increased 1.0% overall** in the second quarter of 2012, for the eighth gain in the past ten quarters and the second consecutive increase this year. Pay for noncertified IT skills has performed strongly historically, with gains in 25 of the previous 31 calendar quarters going back to 2004.

Quarterly gains were mixed across eight categories noncertified IT skills pay last quarter, offset by losses in three categories:

- Database skills: **+9.2%** (in market value in quarter ending July 1, 2012)
- Management/Methodology/Process skills: **+2.1%**
- Messaging and Communications skills: **+2.0%**
- Applications Development skills: **+1.9%**
- SAP & Enterprise Business Applications: **+0.5%**
- Operating Systems skills: **-1.2%**
- Web/eCommerce: **-0.6%**
- Systems/Networking skills: **-0.4%**

Average pay premiums for **265 IT certifications** continued their downward slide for a ninth straight quarter – and for 20 of the last 22 calendar quarters – posting a **0.8% decline**. The difference this quarter are pay gains recorded in four out of eight certifications segments, with two segments showing no change and two segments posting losses. Mixed pay performance across eight segment of IT certifications last quarter provided some

hope that the long, slow diminishing in the market values for certifications may be coming to an end (or at least flattening out):

- Database certifications: **+3.1%** (in market value in quarter ending July 1, 2012)
- Systems Administration/Engineering certifications: **+2.8%**
- Applications Development/Programming Lang. certifications: **+1.5%**
- Foundation level and Training certifications: **-13.3%**
- Web Development certifications: **-5.4%**
- Architecture/Project Management/Process certifications: **-4.9%**
- Networking & Communications certifications: **-4.5%**
- *No Change:* Information Security certifications

Last six months (January 1 to July 1, 2012)

Average market value for **noncertified skills increased 1.8%** in the first six months of 2012 , with pay premiums for **IT certifications losing 1.9% of their value** on average in the same period.

Noncertified IT Skills – last 6 months:

- Database skills: **+11.9%** (in average market value)
- Messaging and Communications skills: **+6.1%**
- Applications Development skills: **+3.6%**
- Management/Methodology/Process skills: **+3.1%**
- Systems/Networking skills: **+2.2%**
- Operating Systems skills: **+1.3%**
- SAP & Enterprise Business Applications: **+0.8%**
- Web/eCommerce: **-3.2%** (in market value)

IT Certifications – last 6 months:

- Applications Development/Programming Lang. certifications: **+4.0%** (in average market value)
- Database certifications: **+4.0%**
- Systems Administration/Engineering certifications: **+3.9%**
- Foundation level and Training certifications: **-13.3%** (in average market value)
- Networking & Communications certifications: **-8.4%**
- Architecture/Project Management/Process certifications: **-4.9%**
- Information Security certifications: **-1.6%**
- *No Change:* Web Development certifications

Q2 2012 IT Skills and Certifications Pay Trend Highlights: **Notable Market Value Gains**

Skills and certifications that *gained 10% or more in market value* in quarter ending July1, 2012 vs. prior quarter (by segment). Listed in **descending order of gain**, including ties:

IT CERTIFICATIONS		NONCERTIFIED IT SKILLS	
<p><u>Applications Development certifications</u></p> <ul style="list-style-type: none"> - Microsoft Office Specialist - Siebel 8 Consultant Certified Expert - Oracle Certified Associate, Java SE Programmer - TIBCO Certified Architect <p><u>Database certifications</u></p> <ul style="list-style-type: none"> - Microsoft Certified IT Professional (all) - Microsoft Certified Database Administrator - Advanced Teradata 12 Certified Professional - Oracle DB Administrator Certified Professional <p><u>IT Security certifications</u></p> <ul style="list-style-type: none"> - CompTIA Security+ - GIAC Information Security Professional - GIAC Certified Forensics Analyst - Certified Information Systems Auditor - InfoSys Security Architecture Professional (CISSP/ISSAP) 	<p><u>Networking and Communications certifications</u></p> <ul style="list-style-type: none"> - CWNP/Certified Wireless Analysis Professional - Juniper Networks Certified Internet Associate - Avaya Certified Implementation Specialist - Juniper Networks Certified Internet Specialist <p><u>Systems Administration certifications</u></p> <ul style="list-style-type: none"> - IBM Certified Systems Administrator (all) - RedHat Certified Technician - Red Hat Certified Engineer - Citrix Certified Advanced Administrator - Red Hat Certified Architect 	<p><u>Applications Development skills</u></p> <ul style="list-style-type: none"> - Apache Hadoop - Progress 4GL Development tools - Tcl - WebSphere MQ - Epic Systems applications <p><u>Database skills</u></p> <ul style="list-style-type: none"> - HBase - Progress DBMS products - MongoDB - Informatica <p><u>Management, Process & Methodology skills</u></p> <ul style="list-style-type: none"> - ITIL V3 - Change Management - Business Intelligence <p><u>Messaging & Communications skills</u></p> <ul style="list-style-type: none"> - Message-oriented Middleware - TIBCO Enterprise Message Service <p><u>Operating Systems skills</u></p> <ul style="list-style-type: none"> - Windows Server 2008/2003 	<p><u>SAP/ERP skills</u></p> <ul style="list-style-type: none"> - SAP NWDS - SAP CCM - SAP CS - SAP SRM - SAP EHS - SAP CE - SAP SEM - Oracle CRM - SAP SD – GTS - SAP WM - SAP PS - SAP CAF - SAP GTS - SAP APO - SAP SM - SAP Service and Asset Management - SAP CO-PA - SAP CRM <p><u>Systems/Networking Administration skills</u></p> <ul style="list-style-type: none"> - HTTPS Intrusion prevention/detection systems <p><u>Web/SOA/E-Commerce skills</u></p> <ul style="list-style-type: none"> - Google App Engine - XHTML/XHTML MP - Documentum - Microsoft Identity Integration Server - HTML5

Source: [IT Skills and Certifications Pay Index™ – Q2 2012 edition](#)

Q2 2012 IT Skills Pay Trend Highlights: **Notable Market Value Declines**

Skills and certifications that **declined 10% or more in market value** in quarter ending July1, 2012 vs. prior quarter. By segment, listed in **descending order of decline**, including ties:

NONCERTIFIED IT SKILLS

Applications Development skills

- NetWeaver
- Drupal
- Cobol
- Java/J2SE,ME,J2EE

Management, Process and Methodology skills

- E-Procurement
- Social media marketing

Messaging & Communications skills

- Oracle Communications Messaging Exchange

Operating Systems skills

- Windows NT
- Windows 7/XP/Vista

SAP & Enterprise Business Applications skills

- SAP AFS
- SAP ESA
- SAP ITS
- SAP PLM
- Oracle E-Business suite
- SAP FS
- SAP KW
- SAP Web Application Server
- SAP Business One
- SAP MDX
- SAP HR-PY
- SAP Smart Forms
- Siebel
- SAP MM
- SAP LES
- SAP Business Workflow/Webflow

Systems/Networking skills

- IPX/SPX
- Network security management
- Fast Ethernet
- EIGRP
- Multiprotocol Label Switching

Web/E-commerce Development skills

- Ajax (Asynchronous JavaScript and XML)
- JavaScript
- CGI
- Microsoft Internet Security and Acceleration Server
- jQuery
- Apache Solr

Source: [IT Skills and Certifications Pay Index™ – Q2 2012 edition](#)

Q2 2012 IT Certifications Pay Trend Highlights: **Notable Market Value Declines**

Skills and certifications that **declined 10% or more in market value** in quarter ending July1, 2012 vs. prior quarter. By segment, listed in **descending order of decline**, including ties:

IT CERTIFICATIONS

Applications Development/Programming Languages certifications

- IBM Certified Specialist – Cognos
- IBM Certified Developer – Cognos
- Oracle Certified Master, Java SE Developer
- IBM Certified Solution Expert - Cognos

Architecture, Project Management and Process certifications

- Project Management Professional
- Certified in the Governance of Enterprise IT

Beginner/Foundation and Training certifications

- CompTIA Certified Technical Trainer (CTT+)
- Microsoft Certified Trainer (MCT)

Database certifications

- Teradata 12 Certified Solutions Developer
- Teradata 12 Certified Database Administrator
- IBM Certified Advanced Database Administrator

IT Security certifications

- Cisco Certified Network Professional - Security
- GIAC Certified Incident Handler

Networking & Communication certifications

- SNIA Certified Systems Engineer
- EC-Council Certified VoIP Professional
- SNIA Certified Storage Networking Expert
- Cisco IP Telephony Design Specialist
- CWNP/Certified Wireless Network Expert
- CWNP/Certified Wireless Network Trainer
- Cisco Certified Systems Instructor
- EMC Storage Administrator - Backup Recovery
- EMC Implementation Engineer - Specialist
- Cisco Certified Design Expert
- CWNP/Certified Wireless Design Professional
- EMC Storage Administrator - Expert
- EMC Implementation Engineer - Expert
- Cisco Certified Network Professional - Voice
- Cisco Certified Design Associate

Systems Administration certifications

- HP/Accredited Integration Specialist
- Microsoft Certified Systems Engineer
- Microsoft Certified Technology Specialist
- Microsoft Certified Architect
- HP Accredited Platform Specialist
- EMC System Administrator - Specialist

Web Development certifications

- CIW Web Foundations Associate
- CIW Web Development Professional

Source: [IT Skills and Certifications Pay Index™ – Q2 2012 edition](#)

HIGHEST PAYING Noncertified IT Skills (ranked, all 300 skills)

These **noncertified IT skills** are among those earning the highest pay premiums. **Shown by overall rank in descending order including ties.** Surveyed through July 1, 2012.

NONCERTIFIED IT SKILLS

1.Tie	Information Security skills Big Data analytics	5.Tie	NetWeaver PI SAP Solution Manager
2.Tie	Complex Event Processing/Event Correlation Predictive/Prescriptive Analytics and Modeling SAP HANA (In-Memory Analytics Appliance) Virtualization (various)		Riak Hbase SAP CE (NetWeaver Composition Environment) Oracle BPM
3.Tie	Apache Hadoop Infrastructure architecture Oracle SCM (Supply Chain Management)		Epic Systems applications Quality management/TQM SAP MDM
4.Tie	Oracle CRM (Customer Relationship Management) SAP HR-PA SAP FI - FSCM Risk management Security architecture and models SAP NetWeaver BW IT Governance TOGAF (Enterprise Architecture) Information risk management Business process management/modeling/improvement TIBCO Enterprise Message Service Product lifecycle management software Oracle Exadata		SAP Oil & Gas Business Objects SAP BPC SAP Retail SAP SCM MapReduce SAP SEM (Strategic Enterprise Management) Business intelligence SAP TM Change Management Unified communications/messaging SAP IS-U (Utilities)

Source: [IT Skills and Certifications Pay Index™ – Q2 2012 edition](#)

HIGHEST PAYING IT Certifications (ranked, all 265 certs)

These **IT certifications** are among those earning the highest pay premiums. **Shown by overall rank in descending order including ties.** Surveyed through July 1, 2012.

IT CERTIFICATIONS

- | | | | |
|-------|--|-------|--|
| 1.Tie | Open Group Master Architect
PMI Program Management Professional | 5.Tie | GIAC Certified Forensics Analyst
Juniper Networks Certified Internet Specialist |
| 2.Tie | Information Systems Security Architecture
Professional (ISSAP-CISSP)
Certified Information Security Manager | | GIAC Web Application Penetration Tester
HP/Accredited Systems Engineer
GIAC Assessing and Auditing Wireless Networks |
| 3.Tie | Certified Information Systems Auditor
Certified Secure Software Lifecycle Professional
Open Group Certified Architect
Oracle DBA Administrator Certified Master
Certified Information Systems Security Professional
InfoSys Security Engineering Professional (ISSAP-CISSP)
CyberSecurity Forensic Analyst
Certified in Risk and Information Systems Control (CRISC)
Cisco Certified Design Expert | | Oracle Certified Master, Java EE Enterprise Architect
Red Hat Certified Security Specialist
IBM Certified Infrastructure Systems Architect
Cisco Certified Internetwork Professional
GIAC Systems and Network Auditor
Teradata 12 Certified Master
Juniper Networks Certified Internet Expert
Project Management Professional |
| 4.Tie | Red Hat Certified Architect
HP/Master Accredited Solutions Expert
HP/Master Accredited Systems Engineer
ITIL Expert Certification
Oracle Exadata 11g Certified Implementation Specialist
GIAC Secure Software Programmer –Java
GIAC Reverse Engineering Malware
Security Certified Network Architect
Check Point Certified Master Architect
GIAC Secure Software Programmer --.NET
Cisco Certified Design Professional
Cisco Certified Internetwork Expert
PMI Risk Management Professional
Microsoft Certified Architect | | |

Source: [IT Skills and Certifications Pay Index™ – Q2 2012 edition](#)

TREND DISCUSSION

Overall Economy and Jobs

July 2012 U.S. employment numbers by the Department of Labor Bureau of Labor Statistics (DOL/BLS) reveals a net gain of 18,200 jobs across four jobs segments commonly associated with IT professionals---the largest monthly IT employment increase since 2008. 4,900 new IT jobs were added in two job segments, *Telecommunications and Data Processing, Hosting and Related Services*, notable because this is the first monthly net job gain in these categories since November 2010. This excludes a Sept 2011 anomaly involving tens of thousands of telecomm workers returning to work last summer following a nationwide labor dispute in August. In other IT related job segments 13,300 additional jobs were added in July in *Management and Technical Consulting Services* and *Computer Systems Design/Related Services* which have been enjoying robust employment expansion for more than two years: job growth in these two segments has totaled 242,000 in the past 24 months.

The overall employment situation in the United States is lackluster: July was the fifth consecutive month of subpar results. But the fact that more than 18,000 jobs were created last month for people with significant IT skills and experience---and nearly 57,000 new jobs added in the past three months---is good news for IT professionals.

The bottom line is that IT professionals are desired and being hired, momentum has been consistently building over more than two years, and it is paying dividends at a time when the national employment situation is very precarious. Businesses are transforming themselves, shifting to new business models and incorporating cloud computing, mobile platforms, Big Data analytics, new architectures and business processes, and adding new technologies and tools. But not all IT workers are benefitting from the expansion of IT employment segments. Many companies are looking for superstars and workers that Foote Partners refer to as ‘walking Swiss Army knives’ ---those with the right mix of technology, business, and people skills to handle some very tough jobs. It could also be unique combinations of pure tech skills. So despite IT job expansion, the nature of demand for labor today is that too many jobs requisitions require skills and skills combinations that are elusive to large numbers of unemployed and underemployed IT professionals. But these are exactly the kind of people employers should be searching for innovating and inventing their futures.

Perhaps the longest and still most important trend as far as the IT labor market continues to be *IT-business hybrid workers* whom we have described in great detail in prior ITSDPT reports, and are impossible to track in government employment data reports. Businesses are looking for more multidimensional skills sets in many of their new hires: workers with combinations of both business and technology knowledge and experience, and skill sets unlike those you might find in the tracking of labor more common to a traditional IT organization.

It's not that employers are not also actively building capabilities in purely technical areas relating to networks and systems, securing them, or continuing to aggressively develop and maintain ERP systems and data warehouses, or their business intelligence and analytics capabilities. But employers can acquire those skills in many different ways and still manage to get the job done. Many of the most in-demand jobs require combinations of knowledge and skill in a business or customer context applied to problems and solutions with a high degree of difficulty. Employers will take seven to nine months to find the right full time hire and build from that, filling in needs with consultants in the meantime. They will also develop these unique skill sets in house if necessary.

Demand is very robust for these hybrids especially where applications development, analytics and Big Data, mobile applications, architecture, and business analysis are involved, and that's to name only a handful of hot skills areas. But there is also demand in functional areas of the business and products groups where subject matter expertise in a particular area and strong social skills are as critical as tech skills for getting the job and keeping it.

Foote Partners has published extensive research in defining these jobs and skill sets and the market opportunities for each. The bottom line: there are not enough of these 'walking Swiss Army knife' professionals to meet the demand.

Big Data, Cloud Computing, Mobile Platform and Security Skills Shortages Shaping the Business Landscape

Across the IT industry and in some business circles, most people would agree that there is a shortage of cloud computing skills that threatens expectations for smooth adoption. And not just among information technology professionals: a recent analysis of national help-wanted ads by Wanted Analytics found that cloud computing is now entering the job descriptions of a range of non-IT positions, including marketing managers, sales managers, customer service representatives, and even cargo and freight agents. Simply more evidence of what

lies ahead for employers who have made next-generation IT-business hybrid professionals a keystone of their corporate staffing strategies.

Another major group of hard to fill jobs has emerged from the proliferation of digital technologies and digital storage and recording media and the massive accumulations of diverse data---so-called Big Data---that have been created, and which can be used for multiple purposes. Big Data refers to structured and (more often) unstructured data that is beyond the processing capabilities of traditional data management tools. It can take up terabytes and petabytes of storage space in diverse formats including text, video, sound, images, and others. Traditional relational database management systems cannot deal with such large masses of data consisting of search indexes; image and video archives; social networks; research data generated by R&D centers; weather and surveillance data from satellites and other sources; and archives of all kinds: company records, medical records, the data generated in such data-heavy fields as astronomy, genomics, economics, and so on.

The popularity of mobile computing devices has unleashed a whole new set of labor problems that are as disruptive, if not more so, than Big Data and cloud computing. Even though mobile computing has been around in one form or another for at least 15 years, it has only been recently that companies are starting to comprehend its impact. By 2015, more U.S. Internet users will access the Internet through mobile devices than through PCs or wire line devices, growing at an estimated compound annual growth rate of 17%. The global installed base of smartphones will increase at a compound annual growth rate of 33 percent by that year and the tablet market will move even faster, achieving a CAGR of 81% by some estimates. Given this trend, mobile-device connectivity to corporate networks is a significant concern presenting serious security implications associated with mobile-device use and the requirement for safeguards in their employee populations.

Hot Cloud, Big Data and Mobile Computing Jobs and Skills

Key skills relating to Big Data, cloud computing and the mobile device explosion are not necessarily technical but the ones that *are* combine open source technology with existing tools. Integration of the two worlds are often fraught with problems: IT professionals will be required to focus on how new cloud resources will integrate with those existing systems, software, and data sources. Knowing how to blend new cloud capabilities with existing resources and being able to move data around are invaluable skills going forward. Areas of focus

should include project management and interpersonal communication, because the in-house IT staff will be dealing directly---and more frequently--- with both users and the cloud provider.

Cloud roles and skills. There has been a certain amount of resistance to the cloud by IT professionals because of the misguided notion that they may no longer have a position within the organization. Quite the contrary: the truth is that companies can't leverage the benefits of cloud computing without very specific skill sets in their current workforce that are in short supply, whether it's **software engineers** who know how to develop applications for the cloud; **resource planners** who can estimate an enterprise's need for computing capacity; **architects** who can integrate services from different cloud vendors; or **administrators** who understand how to configure and support cloud-based services.

Businesses need **Enterprise Architects** that understand how cloud computing fits in to their current architecture, the role of SOA, the new directions that cloud computing can take both of those disciplines. They must have deep knowledge of private and public cloud computing technology and providers, PaaS, IaaS, and SaaS, and the players and solutions that are available on the market. This means working with developers and existing IT and business leadership to progress toward the use of cloud computing, making the right decisions along the way.

Security specialists also have an important role for companies moving to the cloud. They need to understand the newer security models and enabling security technology that's required to keep avoid trouble as core business processes and data are relocated to private, public, or hybrid clouds including federated identity management and the ability to support data encryption both in flight and at rest in and between clouds. They should be skilled in identifying risks in cloud services and formulating measures to control these risks. They typically work with existing security staff, so people skills also critical to their effectiveness.

New administrators and infrastructure experts charged with operating the cloud-based systems are critical to the successful outcome of a migration to the cloud. This means dealing with service-level agreements (SLAs), outages, and data integration, among other important issues. Companies fall into the trap of having well designed and implemented cloud-based systems being handed off to an administrative staff that is ill-prepared to deal with public and private cloud-computing technology. The result is lower service levels than traditional systems and high degrees of failure in first generation cloud projects.

Similarly, cloud computing requires special attention to *networking and remote or local server monitoring*. Thus, somebody needs to pay close attention to the management of infrastructure in support of cloud. Skills required here are knowledge of existing network, application, and database management approaches and technologies, and a deep knowledge of the cloud providers and/or technology you're leveraging. This role can be filled by retraining the best infrastructure managers in your IT organization.

Finally, *cloud developers* are needed who understand core PaaS platforms, private, public, and hybrid, and how applications are designed, developed, and deployed on those platforms. This is a creative and innovative position, and one that requires individuals who are motivated to learn on their own and who are willing to experiment with new rapidly emerging technology. The better cloud developers will have skills that are self-taught and they will create applications on their own time because they have the mindset and forethought to do so.

Here's a short list of tech skills commonly associated with cloud computing initiatives:

- Oracle Java
- Linux
- SQL
- UNIX
- XML
- SaaS
- Python Extensible Programming Language
- Perl
- JavaScript
- Service Oriented Architecture

Big Data roles and skills. Enterprises need a new breed of worker who understand how to collect, interpret and analyze vast amounts of data in a way that's useful for making business decisions. Like many of the other hot jobs in IT, this specialty requires the right combination of business and technical skills. The ideal candidate needs to be familiar with sophisticated algorithms, analytics and marketing -- as well as ultra-high-speed computing, data mining, statistics and even artificial intelligence.

Big Data job opportunities are emerging across industries, in particular Web companies and e-retailers, financial services, healthcare, energy, utilities, pharmaceuticals, telecommunications and media. But as Neil Raden of Constellation Research insists, the problem is that most commercial organizations have little to no depth in these disciplines. They're not Google or Amazon, employing hundreds of applied mathematicians and statisticians, or medical informatics, genomics, and intelligence and defense groups working on the bleeding edge of research into methods for classification, prediction and optimization. Moreover, the McKinsey Global Institute has forecasted possible shortfalls by 2018 of 140,000 to 190,000 people with deep analytical skills and 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.

There's a lot of talk about the *Data Scientist* role and for the most part we think this role is misunderstood. For some, this job title is reserved for true scientists, those who research and create algorithms and methods, publish papers and actively participate in their discipline's communications. For others, these are simply workers who understand and employ quantitative methods, design, test and deploy models but do not create new science. According to Raden, Data Scientists usually work in research, academia and organizations where the production of new methods and algorithms are the core of the enterprise. Finding them is difficult for these reasons:

- Varied types of data available and the resultant multitude of analyses that can be employed
- A skill set that includes programming capability, quantitative methods, investigative and modeling orientation
- The ability to understand what is meaningful and what is not
- Need to have sufficient domain knowledge, not be quant-for-hire
- The ability to communicate complex subjects to others who lack the background in the tools and methods employed

When it comes to Big Data staffing the truth for the average employer is there are different classes of Data Scientists, largely differentiated by the sophistication of the techniques applied and whether they possess the business domain knowledge and apply it towards developing specific models for the enterprise. Companies clearly need the latter. These specialists not only find and deliver the data; they also use it for extensive forecasting. They can take raw data and apply it in order to predict customer behavior, for instance. Integrating all of the big data pieces into a well formed architecture so that everything can interact with everything else is key, emphasizing the demand for data architects.

Also in hot demand are data-centric developers and system administrators specializing in open source tools and platforms such as Apache Hadoop which is designed for data-intensive, distributed applications. It's a great cluster of skills for IT professionals with relational database management experience who understand data structure and queries, however Hadoop is an extremely complex system to master and requires intensive developer skills. There is a lack of an effective ecosystem and standards around this open-source offering and generally poor tools available for using Hadoop.

There are too few Hadoop experts around who know how to master a Hadoop file system using tools now available to them; who know how to administer a Hadoop cluster; who understand the complexities of the R statistical programming language or have sufficient expertise in NoSQL; and professionals with Cassandra, HBase, and Pig experience. Plus, the traditional structured data component within big data is not new but what *is* new is the introduction of unstructured data from sources such as sensors and social media. This, together with increased velocity is processed and analyzed in real time, is making big data analytics more complex.

Dataspora, a predictive analytics company, cites "munging, modeling and visualizing" as critical Big Data skills. Munging is the process of cleaning, parsing and proofing original data before it is suitable for analysis, while modeling refers to building either aggregated or targeted data sets. Visualizing is the process of presenting the insights gleaned from analyzing the data to the company's decision-maker.

Finally, there is *data security*. The demands of having data available to achieve guaranteed IT service levels underscore the need for people who are experts in disaster recovery and business continuity. Companies need to ensure that the systems that users depend on will be there when they need them, and those systems need to be backed up and replicated.

Here's a short list of skills commonly associated with Big Data initiatives:

Open Source:

- | | | |
|-----------------|-------------------------|-----------------|
| - Apache Hadoop | - MongoDB | - Tokyo Cabinet |
| - MapReduce | - CouchDB | - Db40 |
| - HBase | - ThruDB | - Hazelcast |
| - Pig | - XML(Exist, MarkLogic) | - Infinispan |
| - Hive | - BDB | - Java |
| - Cassandra | - Bitcask | - .NET |
| - Riak | - Membase | - Ruby |
| - Redis | - Scalaris | - C++ |

Vendor

- | | | |
|----------------------------|-------------------------------|-----------------------------------|
| - Alachisoft NCache | - DataStax Enterprise | - Microsoft Azure AppFabric Cache |
| - Amazon CynamoDB | - Gigaspaces Xap | - NetApp Cloud |
| - Basho RiakCS | - InterSystems Caché | - Oracle NoSQL |
| - Citrix Open Source Cloud | - HP Converged Cloud | - Progress ObjectStore |
| - Cloudant Data LayeraaS | - IBM WebSphere eXtreme Scale | - VMware GemFire |

Mobile computing roles and skills. Mobile applications sales will top \$30 billion by 2013 as the total number of Internet users grows to 2.7 billion by 2015. A majority of business technology specialists in our research expect that by 2015 more business software will be made for smartphones and tablet computers than for traditional office systems. A recent IBM Tech Trends Survey involving 2 000 respondents from 87 countries reports that 91% agreed that within five years it will be more popular for companies to use programs offered online as services than for firms to manage in-house computer networks.

The lifestyles of new workers coming into the workforce have for the most part been entirely mobile/wireless enabled. Combined with the high adoption rates in the current workforce for smartphones, tablet computers and cloud hosted software, the challenges in demand for skills, knowledge and experience are many. The following is an abbreviated list.

- *Integrating mobile into business processes and existing applications:* New mobile-centric interfaces emphasizing touch, gesture, search, voice and video. More focused, simple applications that can be assembled into more complex solutions. Business processes and applications re-engineered for mobile
- *Multiple devices and platforms:* No single platform, form factor or technology, requiring management of a diverse environment of intelligent clients for both B2E and B2C scenarios.
- *Coverage in rural and undeveloped regions:* more interest in technologies that can boost the productivity of remote workforces.
- Reliability of mobile technologies
- Security issues, both physical and data.

Here's a short list of hot mobile computing skills, in particular for mobile applications development:

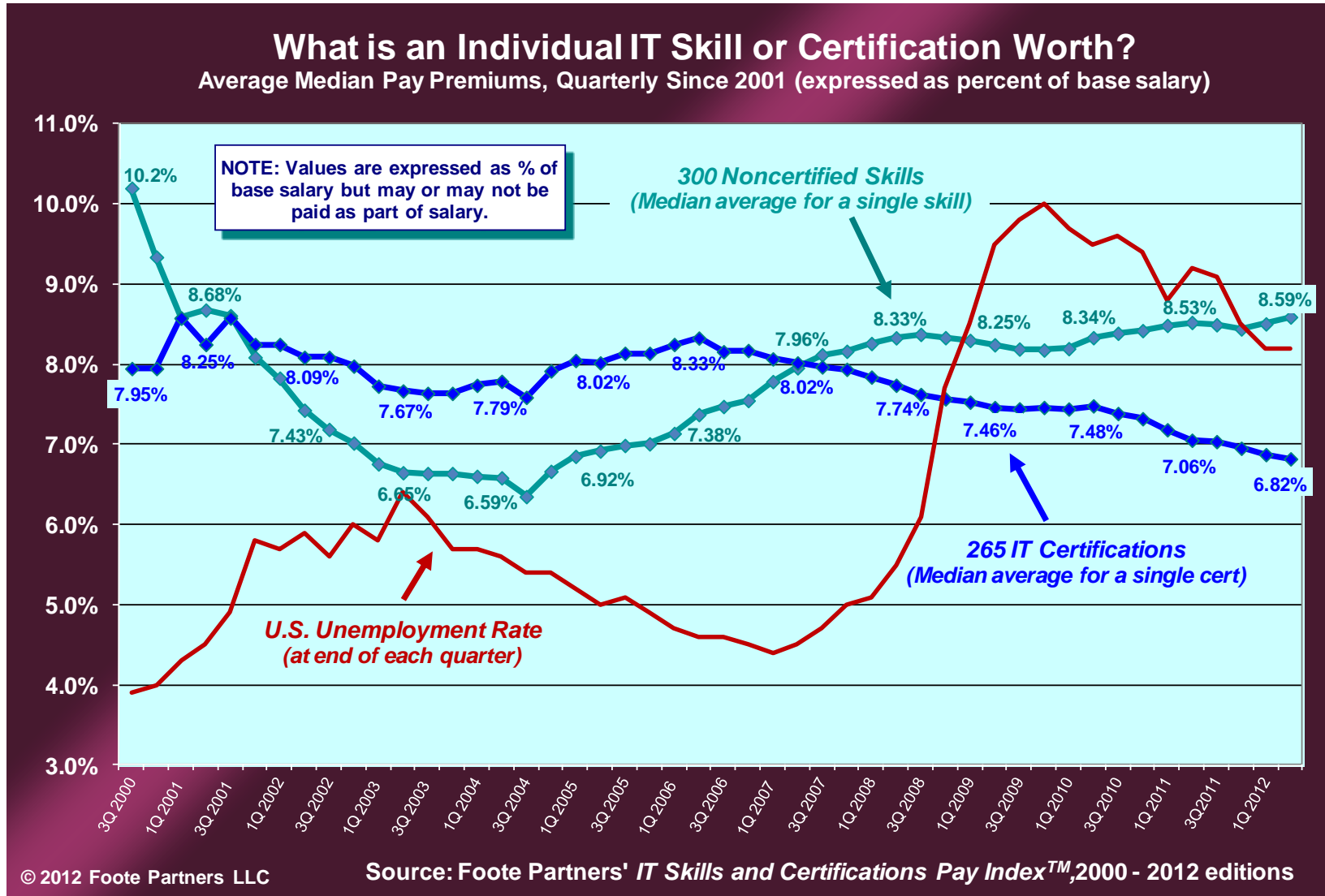
- | | | |
|-------------------|------------------------|--------------------|
| - Java/JavaScript | - Eclipse | - MS Visual Studio |
| - C/C++/C# | - Flash | - Xcode |
| - .NET | - XML | - Python |
| - HTML5 | - Mobile OS (all) | - Ruby |
| - CSS | - jQuery/jQuery Mobile | - Mobile SDKs |

IT Skills & Certifications Pay Trends Charts

2012 IT Skills and Certifications Pay Index™ – 2nd Quarter 2012 edition

(Data collected through July 1, 2012)

- 12 year trending: IT skills and certifications market value performance
- IT Certifications market value trends
- Noncertified IT skills market value trends



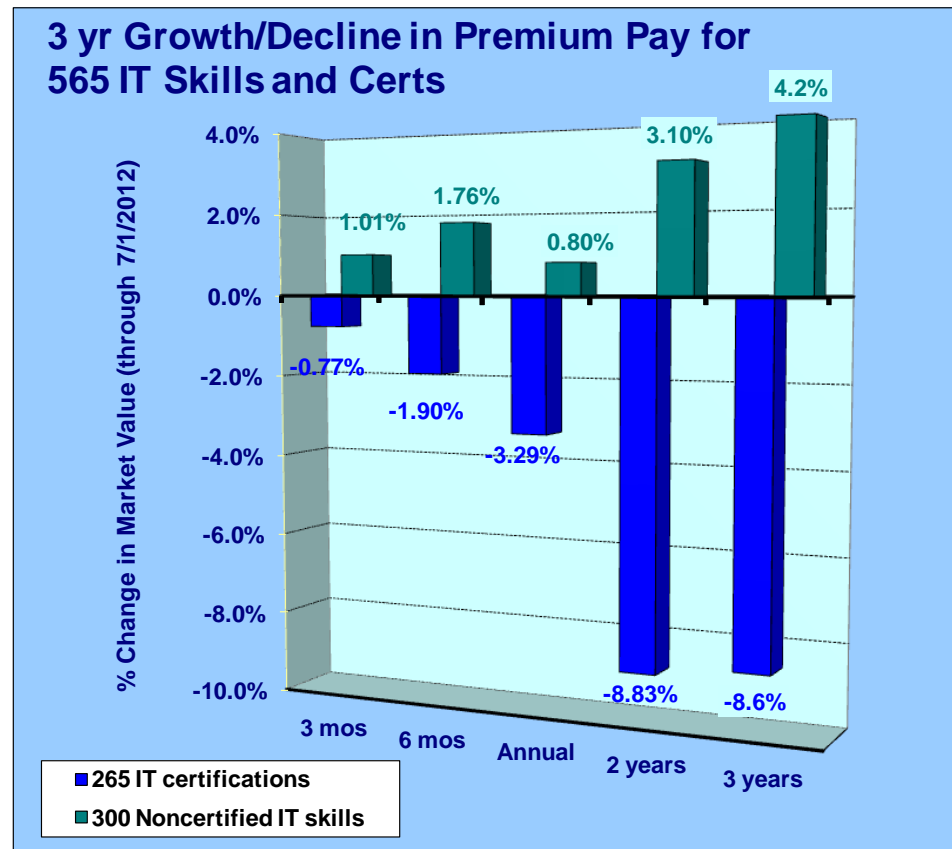
SOURCE: Foote Partners IT Skills & Certifications Pay Index™ 2000 - 2012 quarterly editions

Pay Performance Trends, 3/12/24/24/36 months

Certified vs. Noncertified IT Skills

(38,553 IT professionals)

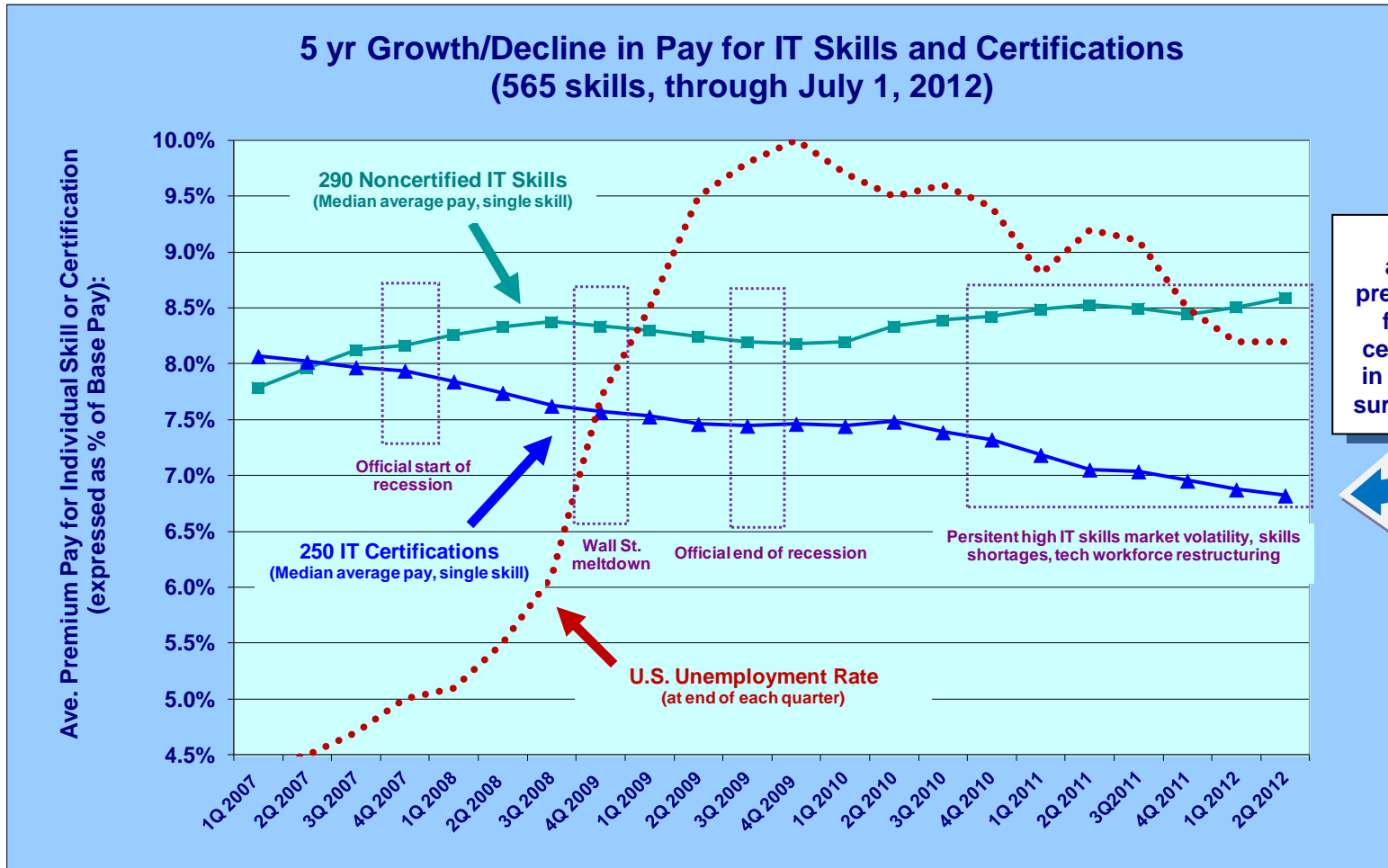
(Pay data supporting these charts is from the 2008 to 2012 quarterly editions of Foote Partners *IT Skills and Certifications Pay Index™*.)



Source: Foote Partners, *IT Skills and Certifications Pay Index™* (2Q2009 – 2Q2012 data editions)

Premium Pay for Noncertified IT Skills--not Certifications--Has Become the Dominant Component of Tech Skills Compensation During the Economic Recovery

(Average Median Pay for a Single Certified vs. Noncertified IT Skill, Last 4 years – 38,533 IT professionals)



(Pay data supporting these charts available in the 2012 [IT Skills and Certifications Pay Index™](#).)

Source: Foote Partners, *IT Skills and Certifications Pay Index™* (1Q2007 – 2Q2012 data editions)

How to interpret gains and losses in IT skills and certifications pay premiums

Quarterly gains and losses in premium pay reflect a widening or narrowing, respectively, in the gap between supply and demand for skills and certifications. This may occur for any number of reasons. For example, a quarterly decline in pay for a skill may signal that the market supply of talent for that skill is catching up to demand—not necessarily that demand is starting to wane. IT professionals are often attracted to a skill or certification if they perceive that it has rising value in the marketplace and therefore can help them to achieve higher pay, greater job security, a promotion, or more flexibility in their career choices. As they pursue greater competency in that skill or as more workers attain certification, supply increases and market pricing (which is elastic to the laws of supply and demand) will be driven downward unless demand is rising at the same proportional rate. Conversely, if demand rises and supply is not increasing to match that level of demand, pay premiums for specific skills and certifications will increase.

Therefore when interpreting gains and losses in market pay it is important to consider all factors that could be driving supply and demand and market perception. Those factors range from:

- aggressive marketing of certifications by vendors;
- changes in certification programs (e.g. certification extensions or retirement);
- new technology and evolution/maturation of current technologies;
- technology adoption rate;
- product integration strategies,
- economic conditions;
- employment opportunities;
- mergers/acquisitions;
- budget cycles and the timing of skills and talent acquisition by employers;
- changes in labor sourcing plans pursuant to company strategies.

Q2 2012 IT Certifications Pay and Demand Trends

Latest market values for **IT CERTIFICATIONS**

(Data collected through July 1, 2012)

265 IT Certifications Surveyed (NEW THIS QUARTER IN RED)

IT Skills and Certifications Pay

IT Skills and Certifications Pay Index™ (data through July 2012)

- Avaya Certified Implementation Specialist
- Avaya Certified Professional Design Specialist
- **Avaya Certified Solution Specialist**
- **Brocade Certified Network Engineer**
- Brocade Certified Network Professional
- Brocade Certified Fabric Designer
- Brocade Certified Fabric Professional
- Certified Associate in Project Management
- Certified Computing Professional (CCP-ISC2)
- Certified Database Design Specialist
- Certified in the Governance of Enterprise IT (CGEIT)
- Certified in Risk and Information Systems Control (CRISC)
- Certified Information Security Manager (CISM)
- Certified Information Systems Auditor (CISA)
- Certified Information Systems Security Professional (CISSP)
- Certified Protection Professional
- Certified Secure Software Lifecycle Professional (CSSLP)
- Check Point Certified Master Architect (CCMA)
- Check Point Certified Security Administrator (CCSA)
- Check Point Certified Security Expert (CCSE)
- Cisco Advanced Wireless LAN Design Specialist
- Cisco Advanced Wireless LAN Field Specialist
- Cisco ASA Specialist
- Cisco Certified Design Associate (CCDA)
- Cisco Certified Design Expert (CCDE)
- Cisco Certified Design Professional (CCDP)
- Cisco Certified Entry Network Technician (CCENT)
- Cisco Certified Internetwork Expert (CCIE)
- Cisco Certified Internetwork Professional (CCIP)
- Cisco Certified Network Associate (CCNA)
- Cisco Certified Network Professional Wireless (CCNP Wireless)
- Cisco Certified Network Associate Wireless (CCNP Wireless)
- Cisco Certified Network Professional (CCNP)
- Cisco Certified Network Professional - Security
- Cisco Certified Network Professional Voice
- Cisco Certified Systems Instructor (CCSI)
- Cisco Data Center Networking Infrastructure Design Specialist
- Cisco Data Center Networking Infrastructure Support Specialist
- Cisco Data Center Storage Networking Design Specialist
- **Cisco Data Center Unified Computing Design Specialist**
- **Cisco Data Center Unified Computing Support Specialist**
- Cisco Data Center Storage Networking Support Specialist
- **Cisco Firewall Security Specialist**
- Cisco IP Communications Express Specialist
- Cisco IP Contact Center Express Specialist (CPCX)
- Cisco IP Telephony Design Specialist
- Cisco IP Telephony Support Specialist
- Cisco IPS (Intrusion Prevention System) Specialist
- Cisco Network Admission Control Specialist
- Cisco Rich Media Communications Specialist
- Cisco Unity Design Specialist
- Cisco Unity Support Specialist
- Cisco VPN Specialist
- **Cisco VPN Security Specialist**
- Citrix Certified Advanced Administrator (CCAA)
- Citrix Certified Administrator (CCA)
- Citrix Certified Enterprise Administrator (CCEA)
- Citrix Certified Enterprise Engineer (CCEE) for Virtualization
- Citrix Certified Integration Architect
- CIW Associate
- CIW Certified Database Design Specialist
- CIW Network Technology Associate
- CIW Web Design Professional
- CIW Web Development Professional
- CIW Web Foundations Associate
- CompTIA Advanced Security Practitioner (CASP)
- CompTIA Certified Technical Trainer (CTT+)
- CompTIA Convergence+
- CompTIA/Linux Administrator (Linux+)
- CompTIA/Network Technician (Network+)
- CompTIA Project+
- CompTIA Security+
- CompTIA Server+
- CompTIA Storage+
- Convergence Technologies Professional (CTP)
- CWNP Certified Wireless Analysis Professional (CWAP)
- CWNP/Certified Wireless Design Professional
- CWNP Certified Wireless Network Administrator (CWNA)
- CWNP Certified Wireless Network Expert (CWNE)
- CWNP Certified Wireless Network Trainer (CWNT)
- CWNP Certified Wireless Security Professional (CWSP)
- CWTS/Certified Wireless Technology Specialist (CWTS)
- CyberSecurity Forensic Analyst
- EC-Council Certified Ethical Hacker (CEH)
- EC-Council Certified Hacking Forensics Investigator (CHFI)
- EC-Council Certified Secure Programmer (ECSP)
- EC-Council Certified Security Analyst
- EC-Council Licensed Penetration Tester (LPT)
- EC-Council Network Security Administrator (ENSA)
- EC-Council Certified VoIP Professional (ECVP)
- EMC Implementation Engineer – Specialist
- EMC Implementation Engineer - Expert
- EMC Platform Engineer – Specialist
- EMC Storage Administrator - Backup Recovery
- EMC Storage Administrator – Expert
- EMC Storage Administrator – Specialist
- EMC System Administrator – Specialist
- EMC Technology Architect – Expert
- EMC Technology Architect – Specialist
- HP/Accredited Integration Specialist (AIS)
- HP Accredited Platform Specialist (APS)
- HP/Accredited Systems Engineer (ASE)
- **HP Accredited Technical Professional (ATP - all)**
- **HP/Accredited Solutions Expert (ASE - all)**
- **HP/Master Accredited Solutions Expert (MASE - all)**
- HP/Certified Systems Administrator
- HP/Certified Systems Engineer
- HP/Master Accredited Systems Engineer (Master ASE)
- **IBM Certified Advanced Security Professional**
- **IBM Advanced Systems Administrator (all)**
- IBM Certified Database Administrator
- IBM Certified Advanced Database Administrator
- IBM Certified Developer - Cognos
- IBM Certified Solution Expert - Cognos
- IBM Certified Specialist – Cognos
- **IBM Certified Systems Expert - AIX and Linux v2 (all)**
- IBM Certified Advanced Application Developer (all)
- IBM Certified Applications Developer (all)
- IBM Certified Administrator for SOA Solutions: WebSphere Process Server
- IBM Certified Advanced Technical Expert - Power Systems with AIX v2/v3
- IBM Certified Infrastructure Systems Architect
- IBM Certified SOA Solution Designer
- IBM Certified Solutions Developer: WebSphere (al)
- IBM Certified Operator - AIX Basic Ops
- **IBM Certified Solution Designer - WebSphere**
- IBM Certified Specialist - System z
- IBM Certified Specialist - Storage
- IBM Certified Systems Administrator
- **IBM Certified Systems Administrator - AIX 7**
- IBM Certified Systems Administrator - IBM i 6.1
- **IBM Certified Systems Administrator – WebSphere**
- IBM Certified Advanced Technical Expert - Power Systems with AIX v2
- InfoSys Security Architecture Professional (ISSAP/CISSP)
- InfoSys Security Engineering Professional (ISSEP/CISSP)
- InfoSys Security Management Professional (ISSMP/CISSP)
- Open Group Certified Architect
- Open Group Master Architect
- ITIL Practitioner Certificate in IT Service Management
- ITIL Service Manager Certification
- Juniper Networks Certified Internet Associate
- Juniper Networks Certified Internet Specialist
- Juniper Networks Certified Internet Professional
- Juniper Networks Certified Internet Expert
- Linux Professional Institute certification (LPIC-Level 2)
- Linux Professional Institute certification (LPIC-Level 3)

265 IT Certifications Surveyed (NEW THIS QUARTER IN RED)

IT Skills and Certifications Pay

IT Skills and Certifications Pay Index™ (data through July 2012)

- Microsoft Certified Applications Developer (MCAD)
- Microsoft Certified Architect
- Microsoft Certified Database Administrator (MCDBA)
- Microsoft Certified Desktop Support Technician (MCDST)
- Microsoft Certified IT Professional (MCITP/all)
- Microsoft Certified Professional Developer (all)
- Microsoft Certified Professional (MCP)
- Microsoft Certified Solution Developer (MCSO)
- Microsoft Certified Systems Administrator (MCSA)
- Microsoft Certified Systems Engineer (MCSE)
- Microsoft Certified Technology Specialist (all)
- Microsoft Certified Trainer (MCT)
- Microsoft MCSA: Messaging (MCSA: Messaging)
- Microsoft MCSA: Security (MCSA: Security)
- Microsoft MCSE: Messaging (MCSE: Messaging)
- Microsoft MCSE: Security (MCSE: Security)
- Microsoft Office Specialist
- Nortel Certified Architect
- Nortel Networks Certified Design Expert (NCDE)
- Master CIW Administrator
- Master CIW Designer
- Master CIW Enterprise Developer
- Master CIW Web Site Manager
- Nortel Networks Certified Design Expert (NCDE)
- Nortel Networks Certified Design Specialist
- Nortel Networks Certified Support Expert (NCSE)
- Nortel Networks Certified Support Specialist
- Nortel Networks Support Expert (NCSE)
- Novell Certified Instructor
- Novell Certified Linux Engineer (Novell CLE)
- Novell Certified Linux Professional (Novell CLP)
- Novell/Certified Directory Engineer (NCDE)
- Novell/Certified Internet Professional (CIP)
- Novell/Certified Novell Administrator (CNA)
- Novell/Certified Novell Engineer (CNE)
- **Novell Identity Manager Administrator**
- Oracle Certified Associate, Java SE Programmer
- Oracle Certified Expert, Java Platform EE Developer
- Oracle Certified Expert MySQL 5.1 Cluster Database Administrator
- Oracle Certified Expert, Oracle Solaris 10 Network Administrator for Solaris
- Oracle Certified Expert, Oracle Solaris 10 Systems Administrator for Solaris
- Oracle Certified Expert Siebel CRM Business Analyst
- Oracle Certified Master, Java SE Developer
- Oracle Certified Master, Java EE Enterprise Architect
- Oracle Certified Professional Application Server 10g Administrator
- **Oracle Certified Professional, E-Business Suite**
- **Oracle Exadata 11g Certified Implementation Specialist**
- Oracle Certified Professional, Oracle Solaris 10 Systems Administrator for Solaris
- Oracle Certified Professional - Advanced PL/SQL Developer
- Oracle PL/SQL Developer Certified Associate
- Oracle Certified Professional Java SE Programmer
- Oracle Certified Programmer, Java EE Web Services Developer (Sun SCJDWS)
- Oracle Certified Professional, Java EE Web Component Developer
- Oracle Certified Professional, MySQL 5 Developer
- Oracle Certified Professional MySQL 5.0 Database Administrator
- Oracle DBA Certified Associate (OCA)
- Oracle DBA Certified Master (OCM)
- Oracle DBA Certified Professional
- Oracle Forms Developer Certified Professional
- Oracle SOA Infrastructure Implementation Certified Expert
- Oracle WebLogic Server System Administrator Certified Expert
- PMI Program Management Professional (PgMP)
- PMI Project Management Professional (PMP)
- PMI Risk Management Professional (PMI-RMP)
- Red Hat Certified Architect (RHCA)
- Red Hat Certified Datacenter Specialist (RHCD)
- Red Hat Certified Engineer (RHCE)
- Red Hat Certified Security Specialist (RHCSS)
- Red Hat Certified Technician (RHCT)
- RSA Certified Administrator (RSA/CA)
- RSA Certified Systems Engineer (RSA/CSE)
- SANS/GIAC Assessing and Auditing Wireless Networks
- SANS/GIAC Auditing Wireless Networks (GAWN)
- SANS/GIAC Exploit Researcher and Advanced Penetration Tester
- SANS/GIAC Certified Firewall Analyst (GCFW)
- SANS/GIAC Certified Forensic Analyst (GCFA)
- SANS/GIAC Certified Forensics Examiner
- SANS/GIAC Certified Incident Handler (GCIH)
- SANS/GIAC Information Security Fundamentals (GISF)
- SANS/GIAC Certified Intrusion Analyst (GCI)
- SANS/GIAC Certified ISO-27000 Specialist (was G7799)
- SANS/GIAC Legal Issues in Information Technology and Security (GLEG)
- SANS/GIAC Certified Penetration Tester (GPEN)
- SANS/GIAC Certified Project Manager (GCPM)
- SANS/GIAC Certified Security Essentials (GSEC)
- SANS/GIAC Certified Unix Security Admin (GCUA) SA
- SANS/GIAC Certified Windows Security Admin (GCNT)
- SANS/GIAC Information Security Professional (GISP)
- SANS/GIAC Reverse Engineering Malware (GREM)
- SANS/GIAC Secure Software Programmer-- .NET
- SANS/GIAC Secure Software Programmer—Java
- SANS/GIAC Security Essentials
- SANS/GIAC/Security Leadership (GSLC)
- SANS/GIAC Systems and Network Auditor (GSNA)
- SANS/GIAC Web Application Penetration Tester (GWAPT)
- SAS Certified Advanced Programmer
- SAS Certified Base Programmer
- Security Certified Network Architect (SCNA)
- Security Certified Network Specialist (SCNS)
- **Siebel 8 Consultant Certified Expert**
- SNIA Certified Storage Architect
- SNIA Certified Storage Networking Expert
- SNIA Certified Storage Professional
- SNIA Certified Systems Engineer Sniffer Certified Expert
- Sun Certifications (SEE ORACLE)
- Systems Security Certified Professional (SSCP)
- Teradata 12 Certified Associate
- Teradata 12 Certified Database Administrator
- Teradata 12 Certified Enterprise Architect
- Teradata Certified Master
- Teradata Certified Professional
- Teradata 12 Certified Solutions Developer
- Teradata 12 Certified Technical Specialist
- Advanced Teradata Certified Professional
- TIBCO Certified Professional
- TIBCO Certified SOA Architect
- VMware Certified Advanced Professional
- VMware Certified Design Expert (VCDX)
- VMware Certified Professional (VCP)

2-YEAR IT CERTIFICATIONS PAY TRENDS

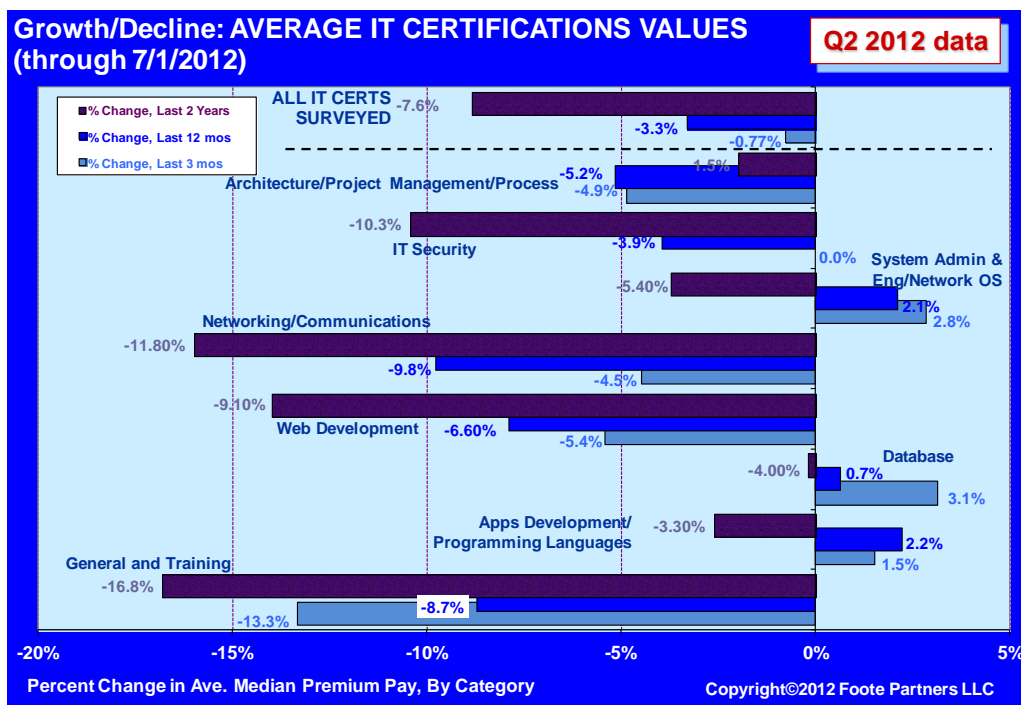
(Data collected 7/1/2012 – 38,533 participants)

IT CERTIFICATIONS CATEGORIES	# of certs surveyed	Change in Average Premium Pay by Category			
		% Change 3 mos	% Change 6 mos	% Change ANNUAL	% Change 2 yrs
Foundation level and Training	5	-13.3%	-13.3%	-18.8%	-31.6%
Apps Development/Prog. Languages	34	1.5%	4.0%	2.2%	-2.6%
Database	19	3.1%	4.0%	0.7%	-0.2%
Web Development	11	-5.4%	0.0%	-7.9%	-14.0%
Networking & Communications	72	-4.5%	-8.4%	-9.8%	-16.0%
System Administration/Engineering	53	2.8%	3.9%	2.1%	-3.7%
Information Security	61	0.0%	-1.6%	-3.9%	-10.4%
Architecture/Project Management/Process	10	-4.9%	-4.9%	-5.2%	-2.0%
ALL CERTIFICATIONS SURVEYED	265	-0.77%	-1.90%	-3.29%	-8.83%

3/12/24 MONTH IT CERTIFICATIONS PAY TRENDS BY CATEGORY

(% Change in Average Median Pay for a Single IT Certification)

(Data collected 7/1/2012 – 38,533 participants)



(Pay data supporting these charts is from the [IT Skills and Certifications Pay Index™](#))

SOURCE: Foote Partners *IT Skills & Certifications Pay Index™*, 2nd Quarter 2012 data edition

Q2 2012 Noncertified IT Skills Pay and Demand Trends

Latest market values for **Noncertified IT skills**

(Data collected through July 1, 2012)

300 Noncertified IT Skills Surveyed
 (NEW THIS QUARTER IN RED)

IT Skills and Certifications Pay

IT Skills and Certifications Pay Index™ (data through July 2012)

Applications Development Tools & Platforms

Adobe Flex
 Apache Hadoop
 Business Objects
 C
 C#
 C++/CLI
 Clarity PPM
 Cobol
 Cognos
 Delphi
 Drupal
 Eclipse
 Epic Systems applications
 F#
 Groovy/Grails
 iRise
 Java/J2SE,ME,J2EE
 MapReduce
 NetWeaver
 Oracle Applications Developer Framework
 PL/SQL
 Powerbuilder
 Progress 4GL/Development tools
 RAD/Extreme Programming/
 Agile Programming
 Ruby
 Ruby on Rails
 SAS
 SQL Windows
 Tcl
 Tomcat
 Transact-SQL
 UML (unified modeling language)
 Visual Basic 6.0
 Visual C++
 Visual J++
 WebSphereMQ

SAP & Enterprise Bus. Apps.

ABAP (all modules)
 Baan
 J.D. Edwards
 Lawson
 Accelerated SAP (ASAP)
 NetWeaver
 NetWeaver BI (SAP BW)
 NetWeaver Portals (SAP EP)
 NetWeaver PI
 Oracle E-Business suite
 Peoplesoft
 Oracle BPM
 Oracle CRM
 Oracle SCM
 SAP AFS
 SAP ALE
 SAP APO
 SAP Banking
 SAP Basis Components
 SAP BI Accelerator
 SAP BODI
 SAP BPC
 SAP BSP
 SAP Business One
 SAP Business Workflow/Webflow
 SAP CA
 SAP CAF
 SAP CCM
 SAP CE
 SAP CFM
 SAP CO
 SAP CO-PA
 SAP CRM
 SAP Crystal Reports
 SAP CS
 SAPEBP
 SAP EC
 SAP EDI
 SAP EHS
 SAP EPM
 SAP ERP

SAP/Enterprise Bus. Apps, cont'd.

SAP ESA
 SAP FI – FSCM
 SAP FI - Travel Management
 SAP FI
 SAP FS (Insurance)
 SAP GRC
 SAP GTS
 SAP HANA (In-Memory Appliance)
 SAP HCM (SAP HR)
 SAP HCM ESS/MSS
 SAP HR-PA
 SAP IM
 SAP IS-U (Utilities)
 SAP ITS
 SAP KW
 SAP LES
 SAP LO
 SAP Manufacturing
 SAP MDM
 SAP MDX
 SAP MI
 SAP MM
 SAP MRO
 SAP Netweaver Applications Server
 SAP NetWeaver Visual Composer
 SAP NWDS
 SAP Oil & Gas
 SAP PLM
 SAP PM
 SAP PP
 SAP PS
 SAP PSCD
 SAP Public Sector Management
 SAP PY (Payroll)
 SAP QM
 SAP Retail
 SAP RF/Auto-ID
 SAP SAM
 SAP SCM
 SAP SD

SAP/Enterprise Bus. Apps, cont'd.

SAP SD - GTS
 SAP Security
 SAP SEM
 SAP SM
 SAP Smart Forms
 SAP Solution Manager
 SAP SRM
 SAP TM
 SAP Web Application Server
 SAP WM
 SAP WM – EWM
 SAP xMII
 SAP Xcelsius
 Siebel
 Web Dynapro

Networking/Systems

10Base-T Switching
 APPC
 ATM
 Business continuity and disaster recovery planning
 Cisco UCCE/IPPC
 Cisco ICM
 Citrix XenApp
 Citrix XenServer
 DHCP
 EIGRP
 Ethernet
 Ethernet Switching
 Gigabit Ethernet
 HTTP
 Infrastructure architecture
 Intrusion prevention/detection systems
 IPX/SPX
 LAN
 LTE/WiMAX
 Microsoft Hyper-V
 Microsoft NT Server
 Microsoft Virtual Server

Networking/Systems, cont'd.

Multiprotocol Label Switching
 Network access control/Identity mgt sys.
 NAS/Network Attached Storage
 Network security management
 Novell Netware
 Puppet
 RFID
 Routing (e.g. OSPF)
 SAN/Storage Area Networks
 Security skills (project-based)
 SIP
 SMTP
 SNA
 Storage administration
 TCP/IP
 Tivoli
 vCloud
 VoIP/IP telephony
 Virtualization
 VMware Server
 VPN/OpenVPN
 WAN/3G/4G services
 WAP
 WiMAX
 Wireless Network Mgmt
 Wireline Networking/ Telecomm.
 WML

Messaging & Communications

Lotus Notes/Domino
 Message-oriented Middleware (Wave, XMPP/Jabber, etc.)
 Microsoft Exchange
 Novell Groupwise
 Outlook/cc:mail/various clients
 Oracle Communications Messaging Exchange (was Sun JMS)
 TIBCO Enterprise Message Service
 Unified Communications/Messaging

300 Noncertified IT Skills Surveyed

(NEW THIS QUARTER IN RED)

IT Skills and Certifications Pay

IT Skills and Certifications Pay Index™ (data through July 2012)

Web/e-Commerce Development

Active Server Pages
 ActiveX
 AJAX
 Apache HTTP web server
 Apache Solr
 CGI
 Cold Fusion MX
 CSS (Cascading Style Sheets)
 Documentum
 Google App Engine
 HTML5
 Microsoft Internet Information Server
 Microsoft Internet Security and Acceleration Server (ISA)
 JavaServer Pages
 JavaBeans/EJB 3.0
 JavaFX
 JBoss Enterprise
 Joomla!
 jQuery
 JSON
 Microsoft BizTalk Server
 Microsoft Commerce Server
 Microsoft Sharepoint Server
 Microsoft Silverlight
 Microsoft Internet Information Services (IIS)
 Microsoft Identity Lifecycle Manager (Integration) Server
 Microsoft .NET
 Mobile applications development
 Oracle (BEA) WebLogic
 Oracle Workflow
 Perl
 PHP (all)
 Python
 Scripting languages (VBScript, Java Script, Jscript)
 SOAP
 Social Media/Networks
 Spring Framework
 TIBCO
 Visual Interdev

Web/e-Commerce Development cont'd.

VoiceXML
 Web collaboration appliances
 WebSphere
 Wikis
 WSDL
 XAML
 XHTML
 XML (all variants)

Management, Methodology and Process

Big Data analytics
 Business process management/modeling/improvement
 Business Analysis
 Business intelligence
 Change management
 Collaboration software
 Complex Event Processing/Event Correlation
 Business performance management (software/systems)
 CRM
 Cryptography (encryption, VPN, SSL/TLS, Hybrids)
 E-Procurement
 ERP
 Information risk management
 IT Governance
 ITIL V3
 Microsoft Visio
 Predictive Analytics and Modeling
 Product lifecycle management software
 Project management
 Quality management/TQM
 Quantitative Analysis
 Requirements Engineering/Analysis
 Risk assessment
 Risk management
 Security architecture and models
 Six Sigma (incl. Lean)
 Social media marketing
 SEO
 TOGAF (Enterprise Architecture)

Database

Apache Cassandra
 Apache Hive
 Apache CouchDB
 Database management
 DB2
 dbase/xbase
 ETL (Extract, transform, load)
 Hbase
 Informatica
 Java Database Connectivity
 Master data management
 Microsoft Access
 Microsoft Exchange Server
 Microsoft SQL Server
 MongoDB
 MySQL
 NoSQL
 Oracle DB
 Oracle Exadata
 Oracle Application Server
 Progress/ODBMS
 Redis
 Riak
 Sybase Adaptive Server
 Visual SQL

Operating Systems

AIX
 Mac OS / OS X
 HP-UX
 Linux
 Mobile operating systems (Apple, Microsoft, Android, etc.)
 Red Hat Enterprise Linux
 Solaris
 Unix (all)
 VMware vSphere
 Windows XP/Vista
 Windows NT
 Windows Server 2008/2003

2-YEAR NONCERTIFIED IT SKILLS PAY TRENDS

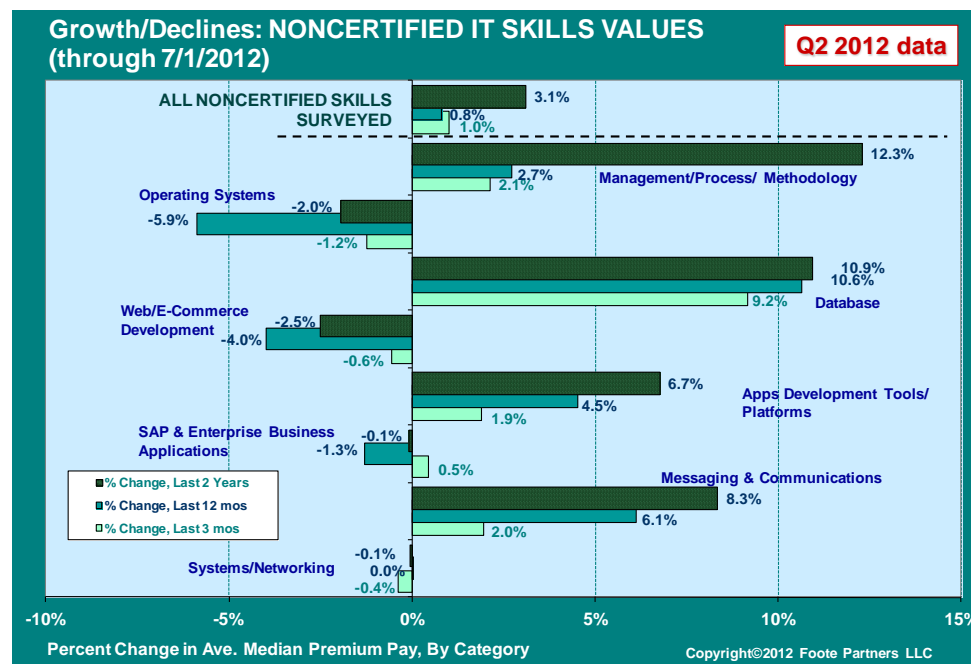
(Data collected 7/1/2012 – 38,533 participants)

NONCERTIFIED IT SKILLS CATEGORIES	# of skills surveyed	Change in Average Premium Pay by Category			
		% Change 3 mos	% Change 6 mos	% Change ANNUAL	% Change 2 yrs
Systems/Networking	48	-0.4%	2.2%	0.0%	-0.1%
Messaging and Communications	8	2.0%	6.1%	6.1%	8.3%
SAP & Enterprise Business Applications	94	0.5%	0.8%	-1.3%	-0.1%
Apps Development Tools & Platforms	36	1.9%	3.6%	4.5%	6.7%
Web/e-Commerce Development	48	-0.6%	-3.2%	-4.0%	-2.5%
Database	25	9.2%	11.9%	10.6%	10.9%
Operating Systems	12	-1.2%	1.3%	-5.9%	-2.0%
Management/Methodology/Process	29	2.1%	3.1%	2.7%	12.3%
ALL NONCERTIFIED SKILLS SURVEYED	300	1.01%	1.76%	0.80%	3.10%

3/12/24 MONTH NONCERTIFIED IT SKILLS PAY TRENDS BY CATEGORY

(% Change in Average Median Pay for a Single IT Certification)

(Data collected 7/1/2012 – 38,533 participants)



(Pay data supporting these charts is from the [IT Skills and Certifications Pay Index™](#).)

SOURCE: Foote Partners IT Skills & Certifications Pay Index™, 2nd Quarter 2012 data edition

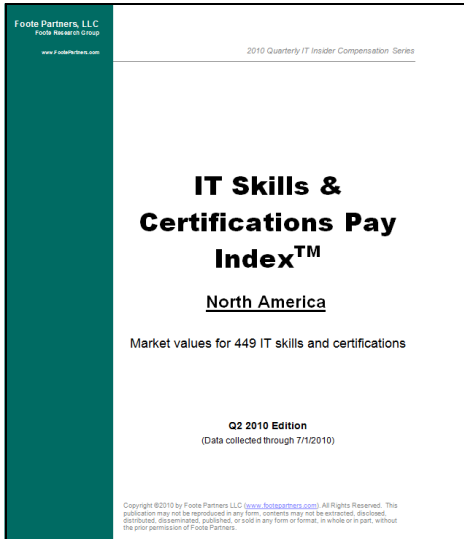
ABOUT THIS RESEARCH

Foote Partners' primary research survey for tracking IT skills and certifications pay and supply/demand volatility is the industry-leading *IT Skills and Certifications Pay Index™ (ITSCPI)*, first published in 1999 and updated every three months since. 135,000 IT professionals in the 83 U.S. and Canada cities (2,400 employers) are reported for IT salaries and skills pay earned for 160 positions and 565 certified and noncertified technical and business skills. Verified and validated pay data for 38,533 IT workers has been included in the 2nd Quarter 2012 ITSCPI data edition, compiled from data collected through July 1, 2012.

Demographics of the participating organizations for our latest update are as follows, measured most appropriately for the type of business, by revenues, assets, total premiums and operating budgets:

- 18% of participating organizations have \$3 billion+ in sales/\$15+ billion in total assets
- 28% of participating organizations earn more than \$1 billion in annual revenues or more than \$3 billion in total assets
- 46% of participating organizations have \$500+ million in sales/\$1+ billion in total assets/\$500+ million in premiums/\$500+ million operating budget (government, educational, not-for-profit)
- 54% of participating organizations fall in the SMB (small-to-medium sized business) segment, generally defined as organization under \$500 million in sales.
- [Public sector] 5% have operating budgets of \$500 million or more, [nonprofit/educational sectors] 4% with operating budgets \$100 million to less than \$500 million

2012 IT Skills and Certifications Pay Index™



- 322 pages (Q2 2012 data edition)
- Pay premiums for 565 certified and noncertified IT skills
 - Three data points for each position: 10th, 50th, 90th percentile
- Verified and validated IT skills pay survey data from 34,350 IT professionals
- Current data collected through April 2012 (updated quarterly)
- Certifications Guide containing basic information about surveyed IT certifications (pre-requisites; costs; test content; lab requirements, etc.)

Pricing: \$3,500 single edition. \$13,750 annual subscription.

Definition of IT skills premium pay

- Pay that IT workers receive for possessing high-value IT and business skills used on the job
- Given in the form of a bonus, or embedded in base salary to adjust for the presence of a dominant vendor or technology central to job performance (examples: Cisco Network Engineer, Python Software Engineer, Redhat Linux Systems Administrator, or SAP Developer.)
- Often used to adjust either base pay or total pay in situations where job title does not match actual on-the-job duties and responsibilities, and changing the job title is not an attractive option
- May be used as a reward, recruiting inducement, retention tool, or as a guide for creating consulting rate cards

TO OBTAIN A COPY OF THE LATEST *IT SKILLS AND CERTIFICATIONS PAY INDEX™*

Please visit the Foote Partners web site: <http://www.footepartners.com/itcompensation.html>

ABOUT FOOTE PARTNERS

Foote Partners, LLC is a Vero Beach, FL based independent IT benchmarking research and advisory firm that targets the ‘execution’ side of managing IT organizations and capabilities and multiple facets of the human side of IT value creation. The firm's ground-breaking deep research and analysis on IT/business cross-skilling and the integration of technology and business management has earned it an unquestioned place on a short list of thought leaders in these areas.

A trusted advisor to more than 2,200 public and private sector organizations on six continents, the firm provides pragmatic and forward-thinking advice about managing the modern business/IT hybrid professional workforce that is deeply grounded in specialized proprietary benchmark research, surveys, and empirical intelligence collected from 2,400 North American employers with whom the firm as forged long term research partnerships.

Founded in 1997 and comprised of former Gartner and META Group industry analysts, McKinsey & Company and TowersWatson and Mercer senior consultants, and former corporate HR, IT, and business executives, the firm's research division publishes 140 quarterly-updated IT and HR decision support benchmark research products that help employers benchmark their IT professional compensation, solve difficult information technology management and workforce problems, and strengthen their ability to execute complex solutions to increasing revenues, improving profitability, and building customer satisfaction.

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Foote Partners 2012 IT Compensation Survey Product Map

