FOR IMMEDIATE RELEASE

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772-234-2787

NOTE: This news release is a summary extract of content from the 1st Quarter 2024 editions Foote Partners’ 2024 IT Skills Demand and Pay Trends Report and 2023 IT Skills and Certification Pay Volatility Index, two market intelligence trend reports updated every 3 months from data contributed by HR departments at 4,314 U.S. and Canadian employers. It contains IT jobs, skills and certifications data trends published in the firm’s IT Skills and Certifications Pay Index™ and deep-dive supply/demand benchmark analysis from Foote Partners’ research group.

Volatility in cash pay premiums for 1,333 IT skills and certifications reported in Foote Partners’ IT Skills and Certification Pay Index spiked upwards again from October to December, similar to 2nd quarter 2023 which reached a 3-year volatility high.

Highest volatility was recorded in skills and certifications related to Data/Database; Architecture/Project Management/Methodology/Process; Networking; Systems; Applications Development; and Info/Cybersecurity.

Average market value for 704 non-certified IT skills increased slightly in 4Q 2023, with 211 skills changing in value compared to 183 in the prior quarter. Three groups recorded pay gains: Data/Database, Management/Methodology/Process, and Operating Systems skills.

For 629 IT certifications, average market value recorded a larger increase, up 0.7 percent, led by gains in Applications Development & Programming Languages, Data/Database, Systems Administration/Engineering, and Networking & Communications certification categories. 133 certifications changed value compared to only 97 in the prior quarter, with 70 gaining market value versus only 32 rising in 3Q 2023.

January 29, 2024 – Vero Beach, FL. Extra pay awarded by employers to talented tech professionals for 704 non-certified IT skills---also known as cash pay premiums---increased 0.2 percent in the final quarter after three consecutive quarterly declines in 2023. Despite lackluster performance for the year in which average pay premiums declined one-half percent overall, the current average cash pay premium bonus for a single skill in the 4th quarter was the equivalent of 9.5 percent of base salary, well above the 6.5 average pay premium for IT certifications.

Average market value for 629 IT certifications increased 0.7 percent in the final quarter of 2023 for only the second time in the calendar year despite poor performance for the entire calendar year(similar to non-certified IT skills) in which the average pay premium for certifications declined nearly one percent overall.

This according to the latest quarterly update of Foote Partners’ IT Skills and Certifications Pay Index™ (ITSCPI) based on compensation data provided by 4,314 private and public-sector employers in 83 U.S. and Canadian cities who partner with our firm to report pay for their 422,770 technology professionals in the U.S. and Canada.

Since its launch in 1999, the IT Skills and Certifications Pay Index™ (ITSCPI) has continuously tracked cash premiums paid to tech professionals by their employers for an ever-increasing number of popular tech skills and certifications. Rigorously validated data and detailed market analyses are updated and published by Foote Partners every 90 days. Currently, premiums are reported for 1,333 certifications and non-certified skills.
“Short-term gains and losses in pay premiums for IT skills gives us more accurate insights into skills demand, tech workforce transition, and even business decision-making than any other data we collect from our more than 4,300 research partner employers,” insists David Foote, chief analyst and research officer of Foote Partners. “This is why we began collecting and reporting skills pay data in the late 1990s. The pay volatility spikes our research uncovered in the middle and end of 2023 are a strong indication of the struggles employers were facing in coming up with their own optimal staffing balances in the past year. For example, the deepening threat landscape and rapidly evolving high momentum technologies like A.I. are forcing organizations to move more quickly in filling specific gaps in their job architectures”, continues Foote. “We are able to segment skills supply and demand into more than a hundred specializations, and to do it over very short timelines, something our salary surveys cannot do even though they are also updated every 3 months.”

“For instance, lately employers have been investing heavily in A.I. in both salaried jobs and skills premiums. In the last two quarters of 2023 we were able to add seven new A.I. and machine learning job titles to our IT Professional Salary Survey and several A.I. related skills to the ITSCPI including: Convolutional Neural Network; Artificial Intelligence Model Optimization; Computer Vision; Stable Diffusion; AI Chatbot, Midjourney; ChatGPT; and Large Language Model/LLM tuning. All of these are averaging cash pay premiums equivalent to between 12 percent to 20 percent of base salary,” notes Foote. “And six A.I. certifications were just added this month averaging between 6 percent and 12 percent in cash pay premiums. We are also seeing data privacy skills and certifications surging in market value for the first time, signaling concerns about escalating cyber attacks and concerns about compliance with new laws and regulations.”

Pay Performance, 3/12/24/24/36 months
Certified vs. Noncertified Tech Skills
(96,014 IT professionals, data through 1/1/2024)

Source: Foote Partners, IT Skills and Certifications Pay Index™ (4Q2020 – 4Q2023 datasets)
MULTI-YEAR PAY PREMIUM TRENDS: Certified versus Noncertified IT Skills

Average median cash pay premiums for a single certified or noncertified IT skill. \( N = 96,014 \) IT Professionals
IT Skills & Certifications Pay Data Trend Charts & Analysis

IT Skills and Certifications Pay Index™ – 4th Quarter 2023 data edition*

- Noncertified IT Skills (Page 6)
- IT Certifications (Page 19)

IT Skills and Certifications Pay Volatility Index™ – 4th Quarter 2023 data edition*

- Summary (Page 31)
- IT certifications (page 34)
- Non-certified IT skills (page 35)

*All data collected through January 1, 2024
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.
Noncertified IT Skills Data Trend Charts & Analysis

(Data collected through January 1, 2024)
704 Non-Certified IT Skills Reported

Foote Partners News Release – January 29, 2024

Apps Dev. Tools/Platforms
Adobe Analytics
Agile software development
AI Chatbot
Amazon Kinesis
Amazon SageMaker (ML)
Amazon Web Services
Amazon Web Services CDK
Apache Airflow
Apache Ant
Apache Camel
Apache Cloudstack
Apache Cordova
Apache Flex
Apache Hadoop
Apache Lucene
Apache Maven
Apache Pig
Apache Spark
Apache Struts/Struts2
Apache Tomcat
Apache Zookeeper
Appium
Automated Testing
AWS CloudFormation
AWS CloudFront/CloudFront Functions
AWS CodeDeploy
AWS Lambda
Azure Stack
Bamboo/BambooHR
Behavior-Driven Development
Bitbucket
Boost C++
Business Objects
C
C#
C++/CLI
CA PPM (Clarity PPM)
Cerner Millennium
ChatGPT
CircleCI
Cloudepa software
Cloud Foundry PaaS
COBOL

Cognos
Confluence
Continuous Delivery
Cucumber
Datadog
Delphi
Eclipse
Elixir
Epic Systems applications
Erlang
Ethereum
F#
Flutter
Full Stack Development
Git/GitHub
GitLab
Go
GoCD
Gradle
Groovy/Grails
Grunt
Hibernate/NHibernate
HP ALM (App. Lifecycle Mgt)
HP Unified Functional Testing
IBM MQ/WebSphere MQ
Integration Testing
iRise
Jasmine
Java
JBehave
Jenkins
JIRA
JUnit
Kotlin
MapReduce
MATLAB
Microsoft Azure
Microsoft Azure Logic Apps
Microsoft PowerApps
Microsoft Power Platform
Microsoft SQL Server Mgt Studio
Midjourney
Mokito
NetWeaver
Next.js
NIM
NUnit
Objective-C
Objective Caml (Ocaml)
Octopus Deploy
OpenShift
Oracle APEX
Oracle Apps Developer Framework
PL/SQL
Powerbuilder
Progress 4GL/Development tools
R
R language
RapidMiner
Red Hat Fuse
Rstudio
Ruby
Ruby on Rails
Rust
Saas
SAS
SAS Enterprise Guide
Scala
Scrum
Selenium
Semaphore CI/CD
ServiceNow ITSM
Sonatype Nexus
SpecFlow
SPSS
SQL
Stable Diffusion
Swift
Tcl
TeamCity
TestNG
Transact-SQL/T-SQL
Travis CI
ULM (unified modeling language)
Visual Basic 6.0
Visual C++
Vue.js
VMware Cloud Foundry PaaS
Xcode

Web/e-Commerce Development
Active Server Pages
ActiveX
Adobe Experience Manager
Ajax
Amazon Cloudwatch
AngularJS
Apache Solr
Apache Velocity
Apache web server
Apache Wicket
Apex Code
Backbone.js
CGI
Cold Fusion MX
Content management systems
CSS/CSS3
Cypress
Django
Docker/Docker Swarm
Documentum
Elasticsearch/Elastic Stack
Ember.js Figma
Front End Development
GatsbyJS
Google Analytics
Google App Engine
Google Cloud Platform
Gradio
GraphQL
HTML5
JavaBeans/EJB 3.0
JavaFX
JavaScript
Java Server Pages
JBoss/Wildfly
Jetty
Joomla!
jQuery
JSON
Julia
KnockoutJS
Laravel PHP
Magento/Adobe Commerce
Magnolia
Microsoft .NET
Microsoft BizTalk Server
Microsoft Blazor
Microsoft Commerce Server
Microsoft Identity Integration
Server
Microsoft Internet Information Services
Microsoft Forefront Threat Management Gateway (ISA)
Microsoft SharePoint/SharePoint Server
Microsoft Silverlight
Microsoft Visual Studio
Mobile applications development
Mule/MuleESB
Node.js
Oracle Fusion
Oracle WebLogic/
Oracle Workflow
Pandas
Perl
PHP (all)
PySpark
Python
React
Redux
REST
RESTful
SailPoint
Scalable Vector Graphics (SVG)
Secure coding/SW development
Sitecore CMS
SOAP/Soap UI
Social Media/Networks
Spring Framework
Spring Boot
Spring Cloud
Spring Integration
Spring MVC
Spring Security
TIBCO
UDDI
Unbraco
VBS
Video/Graphics editing
Visual Interdev
VoiceXML

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### Web/e-Commerce – cont’d

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<th>Application</th>
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<td>Web collaboration appliances</td>
<td>SAP Ariba</td>
<td>SAP HR-PA</td>
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<tr>
<td>Web Content Development</td>
<td>SAP Auto-ID infrastructure (SAP RF)</td>
<td>SAP HR-PR (Payroll)</td>
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<td>Web Design</td>
<td>SAP Basis Components</td>
<td>SAP Hybris</td>
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<tr>
<td>WebSphere</td>
<td>SAP BI / SAP BW</td>
<td>SAP IBP (Integrated Business Planning)</td>
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<td>WebSphere Datapower</td>
<td>SAP BO Data Services</td>
<td>SAP IS-U (Utilities)</td>
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<td>Wikis</td>
<td>SAP BODI</td>
<td>SAP ITS</td>
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<td>WSDL</td>
<td>SAP BO XI</td>
<td>SAP Leonardo</td>
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<td>XAML/XACML</td>
<td>SAP BO Dashboard Design</td>
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<td>XHTML MP</td>
<td>SAP BPC</td>
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<td>XML (all variants)</td>
<td>SAP BSP</td>
<td>SAP Lumira</td>
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<td><strong>SAP &amp; Enterprise Business</strong></td>
<td>SAP Business One</td>
<td>SAP Manufacturing</td>
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<td><strong>Applications</strong></td>
<td>SAP Business Workflow/Webflow</td>
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<td>ABAP (all modules)</td>
<td>SAP CA</td>
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<td>Accelerated SAP (SLM)</td>
<td>SAP CAF</td>
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<td>Baan (Infor LN ERP)</td>
<td>SAP CAR</td>
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<td>Enterprise Application Integration</td>
<td>SAP CCM</td>
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<td>SAP NetWeaver Visual Composer</td>
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<td>Oracle BPM</td>
<td>SAP Crystal Reports</td>
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<td>Oracle E-Business suite</td>
<td>SAP CX</td>
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<td>SAP Digital Banking</td>
<td>SAP PI (NetWeaver Process Integration)</td>
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<td>SAP Exchange Infrastructure (XI)</td>
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<td>Oracle Retail</td>
<td>SAP FI (Financial Accounting)</td>
<td>SAP QM</td>
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<td>SAP FI – CA</td>
<td>SAP for Retail</td>
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<td>Oracle SOA Suite</td>
<td>SAP FI – CO</td>
<td>SAP SAM (Service &amp; Asset Mgt)</td>
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<td>SAP FI – FSCM</td>
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<td>PeopleSoft (CRM/Financials/ HCM)</td>
<td>SAP FI - Travel Management</td>
<td>SAP SCM</td>
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### Data/Database

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### Systems/Networking
- Active Directory
- Amazon AWS CloudTrail
- Amazon Elastic Kubernetes Service
- Ansible
- Apache Flume
- Arista
- ATM
- AWS Fargate
- Azure Active Directory
- Azure Logic Apps
- Azure Sentinel
- Azure Storage
- Business continuity and disaster recovery planning
- CA Endevor
- Chef/Opscode
- Cisco ASA
- Cisco CUCM
- Cisco ICM
- Cisco IPCC
- Cisco ISE/Identity Services Engine
- Cisco Nexus
- Cisco Prime
- Cisco UCCE
- Cisco UCCX
- Citrix Hypervisor (XenServer)
- Citrix NetScaler
- Citrix Virtual Apps (XenApp)
- Cloud architecture
- Cloud security
- DHCP
- EIGRP
- Ethernet
- Fast Ethernet
- Gigabit Ethernet
- Grafana
- HP ConvergedSystem
- HP Quality Center
- HTTPS
- IaaS (Infrastructure as a Service)
- Infrastructure architecture
- Infrastructure as code(IaC)
- Intrusion prevention/detection sys IPX/SPX
- Juniper
- Kubernetes
- LAN
- Microsoft Application Virtualization
- Microsoft Azure Sentinel
- Microsoft Hyper-V
- Microsoft SCOM
- Microsoft SCVMM
- Microsoft Virtual Server
- Mobile device management
- Mobile security
- Multiprotocol Label Switching
- NAS/Network Attached Storage
- Network access control/Identity mgt systems
- Network security management
- NGFW(next-generation firewall)
- Novell Netware
- PaaS
- Performance Analysis/Tuning
- Performance Management/Metrics
- Performance Testing
- Prometheus
- Puppet
- Rackspace Cloud
- RedHat OpenShift
- Routing (e.g. OSPF)
- Salt
- SAN/Storage Area Networks
- Security skills (project-based)
- Security Information and Event Management
- SMTP
- SNA
- Software-Defined Networking
- SolarWinds Orion
- Storage
- virtualization/administration
- TCP/IP
- Terraform
- Tivoli
- Vagrant
- vCenter Server
- vCloud
- Virtualization (various)
- Virtual security
- VMware ESXi Server
- VMware NSX
- VoIP/IP telephony
- VPN/OpenVPN
- WAN/3G/4G services
- Web Infrastructure
- Web services security
- Wireless Network Mgmt
- Wireless security
- Wireless sensors/RFID
- Wireline Networking/Telecomm.
- WML

### Operating Systems
- AIX
- CoreOS
- HP-UX
- Linux
- Mac OS X
- Mobile operating systems (iOS, Android)
- OpenStack
- Red Hat Enterprise Linux
- Solaris
- SUSE
- Unix (all)
- VMware vSphere
- Windows 10/11
- Windows NT
- Windows Server 2019/2016/2012

### Management, Methodologies and Process
- Artificial Intelligence
- Artificial Intelligence for IT Operations (AIOps)
- Artificial Intelligence Model Optimization
- AWS Codebuild
- Azure DevOps
- Azure Key Vault
- Azure Machine Learning
- Azure Monitor
- Azure OpenAI
- Azure Service Fabric
- Big Data Analytics
- Bioinformatics
- Business Analysis
- Business Analytics
- Business Intelligence
- Business performance mgt
- Business process management/modeling/improvement SW
- CAfe
- Capacity Planning/Management
- Change management
- COBIT
- Collaboration software
- Complex Event Processing/
- Event Correlation
- Computer Vision
- Configuration Management
- Continuous Improvement
- Continuous Integration
- Convolutional Neural Network
- CRM
- Cryptography (encryption, VPN)
- Customer Experience
- Cyber Threat Intelligence
- Cybersecurity
- Data Acquisition and Control Systems
- Data Analytics
- Data Architecture
- Data Cleansing
- Data Engineering
- Data Governance
- Data Integration
- Data Management
- Data Migration
- Data Modelling
- Data Privacy
- Data Protection
- Data Quality
- Data Science
- Data Security
- Data Strategy
- Data Transformation
- Data Visualization
- DataOps
- DataRobot Enterprise AI Platform
- Deep Learning
- Deployment Automation
- DevOps
- DaveSecOps
- Digital Analytics
- Digital Forensics
- Digital Marketing
- E-Discovery
- E-Procurement
- ERP
- Flink
- ForgeRock/Ping Identity
- Functional Programming
- Functional Testing
- Game
- Development/Gamification
- General Data Protection Regulation
- Google TensorFlow
- Governance, Risk management and Compliance
- H2O.ai
- HL7
- Hyperautomation
- Identity access management
- Incident Management
- Information management
- IT Audit
- IT Governance
- ITIL V3
- IT Service Management/ITSM
- Kanban
- Keras
- Large Language Model/LLM
- Tuning
- Machine Learning
- Marketo
- Metadata design and development
- Microservices
- Microsoft SQL Server Analysis Services
- Microsoft Visio
- MLops
- Model Tuning
- Natural language processing
- Network Architecture
- Neural Networks
- NIST/NIST 800
- Object Detection/YOLO
- Penetration testing
### Management, Methodologies and Process – cont’d.

- Power BI
- Predictive Analytics and Modeling
- Prescriptive Analytics
- Program Management
- Project management/governance
- Prompt Engineering
- PyTorch
- QlikSense
- Quality Assurance/QA Automation
- Quality management/TQM
- Quantitative Analysis/Regression
- Razor
- Requirements Engineering/
  Analysis
- Risk analytics/assessment
- Robotic Process Automation
- Scaled Agile Framework (SAFe)
- Security architecture and models
- Security auditing
- Security management
- Security testing
- SEO
- Site Reliability Engineering
- Six Sigma/Lean Six Sigma
- Social media analysis/analytics
- Software development lifecycle management
- Splunk
- Test Driven Development/ Scripting
- Threat Detection/Modelling/Mgt
- TIBCO BusinessWorks
- TOGAF
- Unit Testing
- Usability Research/Human Factors Research
- User Acceptance Testing
- User-Centered Design
- User Experience/User Interface
- Vulnerability Scanning/ Assessment/Management
- Waterfall
- Web Analytics
- Webtrends analytics
- Zachman Framework

### Messaging & Communications

- ActiveMQ
- Apache Camel
- Apache Kafka
- HCL Domino
- Java Messaging Service
- Message-oriented Middleware (Wave, XMPP/Jabber, etc.)
- Microsoft Exchange
- Novell Groupwise
- Oracle Comm Messaging Server
- RabbitMQ
- TIBCO Enterprise Message Service
- TIBCO Rendezvous
- Unified
- Communications/Messaging
IT NONCERTIFIED SKILLS PAY SUMMARY – Through January 1, 2024

A. NONCERTIFIED TECH SKILLS PAY PERFORMANCE: By Category

NON-CERTIFIED TECH SKILLS. 211 of 694 non-certified tech skills changed cash market value from October 1, 2023 to January 1, 2024 compared to 183 of 682 skills in the prior calendar quarter. The average cash pay premium increased slightly in the final quarter following declines in the first three quarters in 2023. This follows increases (or flat performance) in all four quarters of 2022.

Noncertified IT Skills - % Growth/Decline
3 months & 12 months
(704 skills, data through 1/1/2024)

Figure 3

Source: Foote Partners IT Skills & Certifications Pay Index™, 4th Quarter data edition
4-YEAR NON-CERTIFIED IT SKILLS PAY TRENDS
(Through 1/1/2024 – 96,014 IT Professionals)

17-YEAR NON-CERTIFIED IT SKILLS PAY TRENDS BY CATEGORY
% Change in Average Median Pay for a Single Non-certified IT Skill
(Through 1/1/2024 – 96,014 IT Professionals)

SOURCE: Foote Partners 2024 IT Skills & Certifications Pay Index™

Pay data supporting these charts available in the IT Skills and Certifications Pay Index™ - 4Q 2023 data edition

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**HIGHEST PAYING Non-certified IT Skills** (cash pay premiums, all 704 skills surveyed, ranked)

These non-certified IT skills are among those earning the highest pay premiums (data collected October 1, 2023 to January 1, 2024). Shown in alphabetical order by overall market value rank in descending order including ties. Green/Red = increased/decreased in market value this quarter. Purple = Made the list this quarter for first time.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Skill Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Risk analytics/assessment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Big Data analytics</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Apache Airflow</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Amazon Athena</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Amazon DynamoDB</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Amazon RedShift</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>Skill Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Apache Cassandra</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Apache Zoodeep</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Apache Kafka</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Apache Hive</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Apache Ignite</td>
<td></td>
</tr>
</tbody>
</table>

**SOURCE:** Foote Partners *IT Skills & Certifications Pay Index™*, 4Q 2023 data edition
NON-CERTIFIED TECH SKILLS TRENDS HIGHLIGHTS: Market Value Gainers & Highest Pay – 4th Quarter 2023 data

These non-certified tech skills gained 10% or more in market value in the three months ending January 1, 2024 vs. prior quarter (seen below grouped by segment). Listed in alphabetical order within each group. Highest paying skills listed on right in alphabetical order.

<table>
<thead>
<tr>
<th>IT SKILLS (non-certified)</th>
<th>Web/SOA/E-Commerce skills</th>
<th>Systems/Networking skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior-Driven Development</td>
<td>Ajax (Asynchronous JavaScript and XML)</td>
<td>Azure Sentinel</td>
</tr>
<tr>
<td>gRPC</td>
<td>ColdFusion/ColdFusion MX</td>
<td>Cisco Prime</td>
</tr>
<tr>
<td>Microsoft SQL Server Management</td>
<td>Cypress.io</td>
<td>Cisco UCCX</td>
</tr>
<tr>
<td>Studio (SSMS)</td>
<td>Ember.js</td>
<td>HP Quality Center</td>
</tr>
<tr>
<td>Red Hat Fuse</td>
<td>Microsoft Identity Integration Server (MIIS)</td>
<td>NAS/Network Attached Storage</td>
</tr>
<tr>
<td>RStudio</td>
<td>Pandas</td>
<td>NGFW(next-generation firewall)</td>
</tr>
<tr>
<td>SAS</td>
<td>REST</td>
<td>Salt</td>
</tr>
<tr>
<td>WebSphere MQ (MQSeries)</td>
<td>Spring Security</td>
<td>Software-Defined Networking</td>
</tr>
<tr>
<td>Xcode</td>
<td>WebSphere</td>
<td>SolarWinds Orion</td>
</tr>
<tr>
<td><strong>SAP &amp; Enterprise Business</strong></td>
<td><strong>Database Skills</strong></td>
<td><strong>Management, Process &amp; Methodology skills</strong></td>
</tr>
<tr>
<td>Applications skills</td>
<td>Amazon Athena</td>
<td>Azure Key Vault</td>
</tr>
<tr>
<td>Enterprise Application Integration (EAI)</td>
<td>Apache Cassandra</td>
<td>Data Privacy</td>
</tr>
<tr>
<td>Salesforce Commerce Cloud</td>
<td>Apache Spark SQL</td>
<td>E-Discovery</td>
</tr>
<tr>
<td>Salesforce Service Cloud</td>
<td>Base SAS</td>
<td>Flink</td>
</tr>
<tr>
<td>SAP Business One</td>
<td>ETL (Extract, transform, load)</td>
<td>Large Language Model/LLM tuning</td>
</tr>
<tr>
<td>SAP Hybris</td>
<td>Microsoft Exchange Server 2010/2013</td>
<td>Metadata design and development</td>
</tr>
<tr>
<td>SAP ERP Operations (multi-skills)</td>
<td>Oracle Exadata</td>
<td>Predictive Analytics and Modeling</td>
</tr>
<tr>
<td>SAP MDG (Master Data Governance)</td>
<td>TIBCO Spotfire</td>
<td>Robotic Process Automation</td>
</tr>
<tr>
<td>SAP MDM (Master Data Management)</td>
<td><strong>Messaging &amp; Communications Skills</strong></td>
<td>Webtrends analytics</td>
</tr>
<tr>
<td>SAP Oil &amp; Gas</td>
<td>Microsoft Exchange</td>
<td><strong>Operating Systems skills</strong></td>
</tr>
<tr>
<td>SAP PP (Production Planning)</td>
<td>Unified communications/messaging</td>
<td>Mac OS X</td>
</tr>
<tr>
<td>SAP S/4HANA</td>
<td><strong>Operational Systems skills</strong></td>
<td>VMware vSphere</td>
</tr>
<tr>
<td>SAP Smart Forms</td>
<td><strong>Operational Systems skills</strong></td>
<td><strong>Operational Systems skills</strong></td>
</tr>
<tr>
<td>SAP SRM (Supplier Relationship Management)</td>
<td>Mac OS X</td>
<td>VMware vSphere</td>
</tr>
<tr>
<td><strong>Operational Systems skills</strong></td>
<td>VMware vSphere</td>
<td>VMware vSphere</td>
</tr>
<tr>
<td>SAP WM (Warehouse Management)</td>
<td><strong>Operational Systems skills</strong></td>
<td>VMware vSphere</td>
</tr>
<tr>
<td>SuccessFactors</td>
<td><strong>Operational Systems skills</strong></td>
<td>VMware vSphere</td>
</tr>
</tbody>
</table>

SOURCE: Foote Partners IT Skills & Certifications Pay Index™, 4Q 2023 data edition

Highest Paying – Cash Premiums (A-Z)

- Amazon Athena
- Apache Cassandra
- Apache Zookeeper
- Artificial Intelligence
- Artificial Intelligence for IT Operations (AIOps)
- Artificial Intelligence Model Optimization
- AWS DevOps
- Azure Key Vault
- Azure Service Fabric
- Big Data analytics
- Blockchain
- Convolutional Neural Network
- Cryptography (encryption, VPN, SSL/TLS, Hybrids)
- Data Architecture
- Data Engineering
- Data Science
- Data Strategy
- DataOps
- Deep Learning
- Deployment Automation
- DevSecOps
- Flink
- Functional Programming
- Hyperautomation
- Identity access management
- Large Language Model/LLM tuning
- Machine Learning
- Microservices
- MLops
- Neural Networks
- Prescriptive Analytics
- Risk analytics/assessment
- Site Reliability Engineering
- Smart Contracts
- Splunk
- Zachman Framework

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### NON-CERTIFIED IT SKILLS TREND HIGHLIGHTS: Market Value Losers – 4th Quarter 2023 data

These non-certified IT skills *declined 10% or more in market value in the three months ending January 1, 2024* vs. prior quarter (seen below grouped by segment). *Listed in alphabetical order within each group.*

<table>
<thead>
<tr>
<th>TECH SKILLS (Non-certified)</th>
<th>SAP &amp; Enterprise Business App skills</th>
<th>Systems/Networking skills</th>
<th>Web/E-commerce Development skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applications Development skills</strong></td>
<td>J.D. Edwards (Oracle)</td>
<td>Amazon Elastic Kubernetes Service (Amazon EKS)</td>
<td>Adobe Analytics</td>
</tr>
<tr>
<td>Amazon SageMaker (ML)</td>
<td>Microsoft Dynamics/Dynamics 365</td>
<td>AWS Fargate</td>
<td>Apache Solr</td>
</tr>
<tr>
<td>Apache Cordova</td>
<td>Oracle CRM</td>
<td>Chef/Opscode</td>
<td>Apex Code</td>
</tr>
<tr>
<td>Apache Pig</td>
<td>Oracle ERP</td>
<td>Cloud security</td>
<td>Docker/Docker Swarm</td>
</tr>
<tr>
<td>Datadog</td>
<td>Oracle NetSuite</td>
<td>Grafana</td>
<td>Documentum</td>
</tr>
<tr>
<td>Delphi</td>
<td>Salesforce CRM</td>
<td>Microsoft Virtual Server</td>
<td>GatsbyJS</td>
</tr>
<tr>
<td>Elixir</td>
<td>SAP ALE (Application Link Enabling)</td>
<td>Performance management/metrics</td>
<td>Jetty</td>
</tr>
<tr>
<td>Erlang</td>
<td>SAP Basis Components</td>
<td>Storage virtualization/administration</td>
<td>Magento/Adobe Commerce</td>
</tr>
<tr>
<td>Gosu/Guidewire</td>
<td>SAP CRM (Customer Relationship Management)</td>
<td>Vagrant</td>
<td>Magnolia</td>
</tr>
<tr>
<td>Mokito</td>
<td>SAP CS (Customer Service)</td>
<td>VMware NSX</td>
<td>Microsoft BizTalk Server</td>
</tr>
<tr>
<td>NuGet</td>
<td>SAP Data Services (SAP BODS)</td>
<td>VPN/OpenVPN</td>
<td>Mule/MuleESB</td>
</tr>
<tr>
<td>Oracle APEX</td>
<td>SAP for Retail (IS-Retail)</td>
<td>WAN 4G/5G services</td>
<td>Oracle WebLogic/Portal</td>
</tr>
<tr>
<td>Travis CI</td>
<td>SAP GTS (Global Trade Services)</td>
<td></td>
<td>Oracle Workflow</td>
</tr>
<tr>
<td><strong>Data/Database</strong></td>
<td>SAP HR-PP (Payroll)</td>
<td></td>
<td>PySpark</td>
</tr>
<tr>
<td>Azure SQL Data Warehouse</td>
<td>SAP IBP (Integrated Business Planning)</td>
<td></td>
<td>SailPoint</td>
</tr>
<tr>
<td>Google Data Studio</td>
<td>SAP LES (Logistics Execution System)</td>
<td></td>
<td>Sitecore CMS</td>
</tr>
<tr>
<td>Hbase</td>
<td>SAP PI (NetWeaver Process Integration)</td>
<td></td>
<td>Spring Boot</td>
</tr>
<tr>
<td>Looker</td>
<td>SAP QM (Quality Management)</td>
<td></td>
<td>Spring Framework (Batch, Boot, Cloud, etc.)</td>
</tr>
<tr>
<td>Oracle Application Server</td>
<td>SAP SCM (Supply Chain Management)</td>
<td></td>
<td>Spring MVC</td>
</tr>
<tr>
<td>Oracle Business Intelligence Enterprise Edition Plus</td>
<td>SAP SM (Service Management)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Messaging &amp; Communications Skills</strong></td>
<td>Operating Systems skills</td>
<td>Management, Process &amp; Methodology skills</td>
<td></td>
</tr>
<tr>
<td>ActiveMQ</td>
<td>CoreOS</td>
<td>Artificial Intelligence for IT Operations (AIOps)</td>
<td></td>
</tr>
<tr>
<td>Apache Kafka</td>
<td></td>
<td>Customer Experience</td>
<td></td>
</tr>
<tr>
<td>Apache Pulsar</td>
<td></td>
<td>Data Analytics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Digital Forensics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Keras</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Microsoft Visio</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Security architecture and models</td>
<td></td>
</tr>
</tbody>
</table>

**SOURCE:** Foote Partners [IT Skills & Certifications Pay Index™](https://www.footepartners.com), 4Q 2023 data edition

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A. NON-CERTIFIED TECH SKILLS EARNING HIGH PAY--AND STILL GROWING IN VALUE

The following non-certified tech skills meet two prerequisites:

- They **earned workers cash pay premiums well above the average** of all 704 skills reported in our IT Skills and Certifications Pay Index™ in quarter ending January 1, 2024.
- They **recorded gains in cash market value** in the six months ending January 1, 2024.

No skill below is earning less than the equivalent of 16 percent of base salary—significant considering the average for all skills reported is 9.6 percent of base—and are listed in descending ranked order of cash premium and market value increases (including ties). Not surprising, the list contains a number of security, coding, database, analytics and artificial intelligence related skills.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Average Pay Premium</th>
<th>Market Value Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon Athena</td>
<td>21 percent</td>
<td>10.5 percent</td>
</tr>
<tr>
<td>Apache Cassandra</td>
<td>20 percent</td>
<td>17.6 percent</td>
</tr>
<tr>
<td>Apache Flink</td>
<td>19 percent</td>
<td>11.1 percent</td>
</tr>
<tr>
<td>Apache Cassandra</td>
<td>19 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Apache Impala</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Apache Zookeeper</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Azure Key Vault</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Azure Machine Learning</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Azure Service Fabric</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Behavior-Driven Development</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Cloud Foundry PaaS</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Cryptography Data Governance</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Data Privacy</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Data Science</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Deep Learning</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>E-Discovery</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Flink</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>gRPC</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>H2O.ai</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Identity access management</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Informatica</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Kibana</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Large Language Model/LLM tuning</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Machine Learning</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Marketo</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Master data management</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Metadata design and development</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Neural Networks</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Neural Networks</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Risk analytics/assessment</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Robotic Process Automation</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Smart Contracts</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
<tr>
<td>Test automation</td>
<td>18.8 percent</td>
<td>11.8 percent</td>
</tr>
</tbody>
</table>

Below is the same list, but in **descending ranked order of cash premium first and market value increase second** (including ties).
7. Apache Zookeeper
   Smart Contracts
   Average Pay Premium: 19 percent of base salary equivalent
   Market Value Increase: 5.6 percent (in the six months through January 1, 2024)

9. Amazon Athena
   Cryptography (encryption, VPN, SSL/TLS, Hybrids)
   Average Pay Premium: 18 percent of base salary equivalent
   Market Value Increase: 20 percent (in the six months through January 1, 2024)

11. Azure Key Vault
    Average Pay Premium: 18 percent of base salary equivalent
    Market Value Increase: 12.5 percent (in the six months through January 1, 2024)

12. Azure Service Fabric
    Data Science
    Identity access management
    Machine Learning
    Average Pay Premium: 18 percent of base salary equivalent
    Market Value Increase: 5.9 percent (in the six months through January 1, 2024)

16. Data Privacy
    Average Pay Premium: 17 percent of base salary equivalent
    Market Value Increase: 41.7 percent (in the six months through January 1, 2024)

17. Marketo
    E-Discovery
    Average Pay Premium: 17 percent of base salary equivalent
    Market Value Increase: 21.4 percent (in the six months through January 1, 2024)

19. gRPC
    IT Audit
    Metadata design and development
    Average Pay Premium: 17 percent of base salary equivalent
    Market Value Increase: 13.3 percent (in the six months through January 1, 2024)

22. Data Governance
    H2O.ai
    Informatica
    Kibana
    Average Pay Premium: 17 percent of base salary equivalent
    Market Value Increase: 6.3 percent (in the six months through January 1, 2024)

26. Behavior-Driven Development
    Average Pay Premium: 16 percent of base salary equivalent
    Market Value Increase: 23.1 percent (in the six months through January 1, 2024)

27. Cloud Foundry PaaS
    Robotic Process Automation
    Average Pay Premium: 16 percent of base salary equivalent
    Market Value Increase: 14.3 percent (in the six months through January 1, 2024)
29. Apache Impala
   Apache Hive
   Azure Machine Learning
   Master data management
   Test automation

   Average Pay Premium: 16 percent of base salary equivalent
   Market Value Increase: 6.7 percent (in the six months through January 1, 2024)
IT Certification Data Trend Charts & Analysis

(Data collected through January 1, 2024)
629 Tech Certifications Reported

Foote Partners News Release – January 29, 2024

AccessData Certified Examiner
Adobe/Magento 2 Certified Developer-Associate
Adobe/Magento 2 Certified Developer-Professional
Arcitura Certified Cloud Security Specialist
Artificial Intelligence Engineer (AIE)
Avaya Certified Development Specialist
Avaya Certified Implementation Specialist
Avaya Certified Solution Specialist
Avaya Professional Design Specialist
AWS Certified Advanced Network – Specialty
AWS Certified Data Analytics – Specialty
AWS Certified Developer - Associate
AWS Certified DevOps Engineer - Professional
AWS Certified Security - Specialty
AWS Certified Solutions Architect - Associate (Cloud)
AWS Certified Solutions Architect - Professional (Cloud)
AWS Certified SysOps Administrator (Associate (Cloud)
AXELOS ITIL 4 certifications
BICSI ITS Technician
BICSI Technician and Registered Communications Distribution Designer
Brocade Certified Network Engineer
Brocade Certified Network Professional
Brocade Certified Fabric Designer
Brocade Certified Fabric Professional (BCFP)
BTA Certified Blockchain Security Professional (CBSP)
Certificate in Information Security Management Principles (CISMP)
Certificate of Cloud Security Knowledge (CCSK)
Certificate of Cloud Auditing Knowledge (CCAK)
Certification Authorization Professional (CAP)
Certification of Capability in Business Analysis (CCBA)
Certified Analytics Professional (CAP)
Certified Artificial Intelligence Scientist (CAIS)
Certified Business Analysis Professional (CBAP)
Certified Business Continuity Manager/ISO 22301 (CBCM)
Certified Business Continuity Professional (CBCP)
Certified Business Process Associate (CPBA)
Certified Business Process Leader (CBPL)
Certified Business Process Professional (CBPP)
Certified Cisco Systems Instructor (CCSI)
Certified Cloud Architect
Certified Cloud Security Professional (CCSP)
Certified Cloud Technology Professional
Certified Compliance Professional
Certified Computer Examiner (CCE)
Certified Computing Professional (CCP-ISC2)
Certified Data Centre Management Professional (CDCMP)
Certified Data Privacy Solutions Engineer/ISACA(CDPSE)
Certified Data Professional (CDP)
Certified Disaster Recovery Engineer (C/DORE)
Certified Enterprise Coach (Scrum/Agile)
Certified Forensic Computer Examiner (CFCE)
Certified Franchisee
Certified Healthcare Information Security and Privacy Practitioner (HCISPP)
Certified in Convergent Network Technologies (CCNT)
Certified in Emerging Technology (CERT-ISSA)
Certified in Governance, Risk and Compliance (CGRC)
Certified in Risk and Information Systems Control (CRISC)
Certified in the Governance of Enterprise IT (CGEIT)
Certified Information Privacy Manager- all countries
Certified Information Privacy Professional- all countries
Certified Information Privacy Technician- all countries
Certified Information Security Manager (CISM)
Certified Information Systems Auditor (CISA)
Certified Information Systems Risk Manager/Mile2
Certified Information Systems Security Professional (CISSP)
Certified IP Telecom Network Specialist (CIPTS)
Certified IT Architect (IASA CITA)
Certified Kubernetes Administrator (CKA)
Certified Kubernetes Security Specialist (CKS)
Certified Manager of Software Quality (CMQS)
Certified Penetration Testing Engineer (CPTE)
Certified Protection Professional
Certified Scrum Developer
Certified Scrum Product Owner
Certified Scrum Product Owner - Advanced
Certified Scrum Professional - ScrumMaster
Certified Scrum Team Coach
Certified Scrum Trainer
Certified ScrumMaster
Certified ScrumMaster – Advanced
Certified Secure Software Lifecycle Professional (CSSLP)
Certified Software Quality Analyst (CSQA)
Certified Telecommunications Network Specialist (CTNS)
Check Point Certified Security Administrator (CCSA)
Check Point Certified Security Expert (CCSE)
Check Point Certified Security Master (CCSM)
Cisco Certified CyberOps Associate
Cisco Certified CyberOps Professional
Cisco Certified Design Expert (CCDE)
Cisco Certified DevNet Associate
Cisco Certified DevNet Professional
Cisco Certified DevNet Expert
Cisco Certified Entry Network Technician (CCENT)
Cisco Certified Internetwork Expert (CCIE, all variations)
Cisco Certified Network Associate - Data Center
Cisco Certified Network Associate - Network Security
Cisco Certified Network Associate (Networking automation)
Cisco Certified Professional
Cisco Certified Networking Associate (was CCNA Cloud)
Cisco Certified Networking Associate (was CCNA)
Cisco Certified Networking Collaboration
Cisco Certified Networking Design Associate (was CCNA Wireless)
Cisco Certified Networking Design Associate (was Design Associate)
Cisco Certified Networking Professional - Collaboration
Cisco Certified Networking Professional - Data Center
Cisco Certified Networking Professional - Service Provider
Cisco Certified Networking Professional - Enterprise/Design
Cisco Certified Networking Professional - Enterprise/Routing and Services
Cisco Certified Networking Professional - Enterprise/Wireless Networks
Cisco Certified Networking Professional (CCNP-all)
Cisco Certified Network Professional - Security
Cisco Certified Systems Administrator (CCSA)
Cisco Certified Systems System (CCSI)
Cisco Data Center Unified Computing Design Specialist
Cisco Data Center Unified Fabric Support Specialist
Citrix Certified Associate - Networking
Citrix Certified Associate - Virtualization
Citrix Certified Expert – Networking
Citrix Certified Expert - Virtualization
Citrix Certified Instructor (CCI - Virtualization, Networking, or Mobility)
Citrix Certified Professional - Networking
Citrix Certified Professional - Virtualization (CCP-V)
Citrix XenServer Certified (CC-XenServer)
CIW Advanced HTML5 and CSS3 Specialist
CIW Certified Database Design Specialist
CIW Web Development Professional
CIW Web Development Foundation
CIW Web Foundations Associate
CIW Web Security Professional
Cloud U (Rackspace)
Cloudera Certified Associate Administrator
Cloudera Certified Associate Data Analyst
Cloudera Certified Associate Spark and Hadoop Developer
Cloudera Certified Professional: Data Engineer
CompTIA Cloud+ Certified
CompTIA Cybersecurity Analyst+ Certified
CompTIA Linux+ Certified
CompTIA Mobile App Security+ Certified
CompTIA Mobility+ Certified
CompTIA Network+ Certified
CompTIA Penetration Tester Certified
CompTIA Project+ Certified
CompTIA Security+ Certified
CompTIA Server+ Certified
CompTIA Storage+ Certified
Convergence Technologies Professional (CTP)
CSX Cybersecurity Practitioner (CSXP)
CVNP Certified Wireless Security Professional (CWSW)
CVNP/Certified Wireless Analysis Professional (CWA)
CVNP/Certified Wireless Design Professional (CWD)
CVNP/Certified Wireless Network Administrator (CWN)
CVNP/Certified Wireless Network Trainer (CWN)
CVNP/Certified Wireless Network Expert (CWN)
CVNP/Certified Wireless Technology Specialist (CWTS)
Cyber Security Forensic Analyst
Dell Cloud Infrastructure - Specialist
Dell Cloud Services Architect - Expert
Dell Data Science Associate
Dell Data Science Specialist - Advanced Analytics
Dell EMC Technology Architect - Expert
Dell EMC Technology Architect - Specialist
Dell Implementation Engineer - Expert
Dell Implementation Engineer - Specialist
Dell Information Storage and Management Associate
Dell Information Storage and Management Expert
Dell Information Storage and Management Specialist
Dell Platform Engineer/PowerScale - Specialist
EC-Council Certified Application Security Engineer (CASE)
EC-Council Certified Cloud Security Engineer (CCSE)
EC-Council Certified DevSecOps Engineer (ECDES)
EC-Council Certified Encryption Specialist v2(ECES)
EC-Council Certified Ethical Hacker (CEH)
EC-Council Certified Incident Handler v2 (EICH)
EC-Council Certified Network Defender
EC-Council Certified Penetration Testing Professional
EC-Council Certified SOC Analyst (ECSA)
EC-Council Computer Hacking Forensic Investigator
EC-Council Disaster Recovery Professional (EDRP)
EC-Council Web Application Hacking and Security Testing

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Foote Partners News Release – January 29, 2024

629 Tech Certifications Reported

Oracle Certified Professional - Database Cloud Administrator
Oracle Certified Professional - DBA (OCP)
Oracle Certified Professional - Fusion Middleware 11g/12c Forms Developer
Oracle Certified Professional - Java EE Web Component Developer
Oracle Certified Professional - Java EE Web Services Developer
Oracle Certified Professional - Java SE Programmer
Oracle Certified Professional - MySQL 5.x Database Administrator
Oracle Certified Professional - MySQL 5.x Developer
Oracle Certified Professional - Solaris 10 Systems Administrator
Oracle Certified WebLogic Server 12c Administrator
Oracle Cloud Infrastructure 2022/2023 Certified Architect Professional
Oracle Database PL/SQL Developer Certified Professional
Oracle E-Business Suite 12 Certified Implementation Specialist
Oracle Linux Certified Administrator (OCA)
Oracle SOA Suite 12c Implementation Specialist
Oracle VM 3.0 for x86 Certified Implementation Specialist
Pegasystems Certified Data Scientist
Pegasystems Certified Lead System Architect
Pegasystems Certified Senior Systems Architect
Pegasystems Certified System Architect
Pegasystems Certified Pega Business Architect
Pegasystems Certified Robotics System Architect
PHP Certification
Pivotal Application Architect
Pivotal Cloud Foundry Operator certification
Pivotal Developer
PMI Agile Certified Practitioner (PMI-ACP)
PMI Certified Associate in Project Management (CAPM)
PMI Portfolio Management Professional (PMP)
PMI Professional in Business Analysis (PMI-PBA)
PMI Program Management Professional (PgMP)
PMI Project Management Professional (PMP)
PMI Risk Management Professional (PMI-RMP)
Princo² Foundation
Princo² Practitioner
Professional Certified Investigator
Professional in Project Management (GAQM)
Qlik Sense Business Analyst
Qlik Sense Data Architect
Qlikview Certified Security Professional QISP
Rackspace Certified Technician
Red Hat Certified Architect (RHCA)
Red Hat Certified Architect: Cloud
Red Hat Certified Architect: Enterprise Applications
Red Hat Certified Architect: Infrastructure
Red Hat Certified Engineer (RHCE)
Red Hat Certified Enterprise Application Developer
Red Hat Certified Specialist in Business Process Design
Red Hat Certified Specialist in Cloud Infrastructure
Red Hat Certified Specialist in Linux Performance Tuning
Red Hat Certified Specialist in Messaging Administration
Red Hat Certified Systems Administrator (RHCSD)
RSA Certified Administrator (RSA/CA)
RSA Certified Instructor (RSA/CI)
SAFE Certification
Salesforce B2C Commerce Developer
Salesforce Certified Administrator
Salesforce Certified Advanced Administrator
Salesforce Certified Application Architect
Salesforce Certified Data Architect
Salesforce Certified Integration Architecture Designer
Salesforce Certified Platform Developer
Salesforce Certified Systems Architect
Salesforce Certified Technical Architect
Salesforce Certified User Experience Designer
Salesforce Identity and Access Management Architect
Salesforce Platform App Builder
SAS Certified Big Data Professional Using SAS 9
SAS Certified Big Data Integration Developer for SAS 9
SAS Certified Data Scientist Using SAS 9
SAS Certified Predictive Modeler - SAS Enterprise Miner
SAS Certified Professional: Advanced Programming/SAS 9.4
SAS Certified Specialist Base Programming/SAS 9.4
SAS Certified Statistical Business Analyst - SAS 9
SAS Certified Advanced Analytics Professional Using SAS 9
SAS Certified Data Quality Steward for SAS®
SAS Certified Professional: Al and Machine Learning
SAS Certified Professional: Data Curation for SAS Data Scientists
SAS Certified Specialist: Visual Business Analytics
ServiceNow Certified Application Developer (CAD)
ServiceNow Certified Implementation Specialist (CIS)
ServiceNow Certified Systems Administrator (CSA)
Siebel 8 Consultant Certified Expert
Six Sigma Black Belt
Six Sigma Green Belt
Six Sigma Master Black Belt
Six Sigma Yellow Belt
SNIA Certified Storage Architect
SNIA Certified Storage Networking Expert (SCSN-E)
SNIA Certified Storage Professional
SNIA Certified Systems Engineer Sniffer Certified Expert
SolarWinds Certified Professional (SCP)
SonicWall Network Security Administrator
Splunk Core Certified User
SUSE Certified Administrator
SUSE Enterprise Engineer (SCE)
SUSE Enterprise Architect or (SEA)
Systems Security Certified Practitioner (SSCP)
Tableau Desktop Certified Professional
Tableau Server Certified Professional
Teradata 14 Certified Associate
Teradata 14 Certified Database Administrator
Teradata 14 Certified Database Developer
Teradata 14 Certified Enterprise Architect
Teradata 14 Certified Master
Teradata 14 Certified Professional
Teradata 14 Certified Solutions Developer
Teradata 14 Certified Technical Specialist
TIBCO Certified Professional
TIBCO Certified SOA Architect
TOGAF 9 Certified
Virtualized Decision Council Master Infrastructure Architect
VMware Certified Advanced Professional - Digital Workspace
VMware Certified Advanced Professional 6.5 - Data Center Virtualization Design
VMware Certified Advanced Professional - Network Virtualization
VMware Certified Advanced Professional (all)
VMware Certified Advanced Professional 6 - Data Center Virtualization Deployment
VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Deployment
VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Design
VMware Certified Design Expert – Network Virtualization
VMware Certified Design Expert - Cloud Mgt and Automation
VMware Certified Design Expert (all)
VMware Certified Design Expert 6 - Data Center Virtualization
VMware Certified Professional - Digital Workspace
VMware Certified Professional – Desktop Management 2021
VMware Certified Professional - Network Virtualization
VMware Certified Professional - Security 2021
VMware Certified Professional 6 - Data Center Virtualization (VCP6-DCV)
VMware Certified Professional 6.5 - Data Center Virtualization (VCP6.5-DCV)
VMware Certified Professional 6/6.5
VMware Certified Professional 6/7 - Cloud Mgt and Automation
VMware Certified Technical Associate - Data Center Virtualization
Zachman Certified - Enterprise Architect

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A. **CERTIFIED IT SKILLS PAY PERFORMANCE: By Category**

**TECH CERTIFICATIONS.** 133 of 619 IT certifications changed cash market value in 4Q 2023 compared to 97 of 614 certification in the prior quarter. The average cash pay premium for IT certifications declined overall in 2023 even though just under one percent in the final quarter of the year.

![IT Certifications - % Growth/Decline](image)

**Figure 5**

*Source: Foote Partners IT Skills & Certifications Pay Index™, 4th Quarter 2023 data*
4-YEAR IT CERTIFICATIONS PAY TRENDS
(Through 1/1/2024 – 96,014 IT Professionals)

<table>
<thead>
<tr>
<th>IT CERTIFICATIONS CATEGORIES</th>
<th># of certs surveyed</th>
<th>Change in Average Premium Pay by Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% Change 3 mos</td>
</tr>
<tr>
<td>Training and Beginner/Foundation level</td>
<td>8</td>
<td>6.3%</td>
</tr>
<tr>
<td>Apps Development/Prog. Languages</td>
<td>72</td>
<td>0.8%</td>
</tr>
<tr>
<td>Data/Database</td>
<td>64</td>
<td>1.0%</td>
</tr>
<tr>
<td>Web Development</td>
<td>12</td>
<td>0.0%</td>
</tr>
<tr>
<td>Networking &amp; Communications</td>
<td>105</td>
<td>0.2%</td>
</tr>
<tr>
<td>System Administration/Engineering</td>
<td>130</td>
<td>1.2%</td>
</tr>
<tr>
<td>Information/Cyber Security</td>
<td>151</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Architecture/Project Management/Process</td>
<td>87</td>
<td>-1.2%</td>
</tr>
<tr>
<td>ALL CERTIFICATIONS REPORTED</td>
<td>629</td>
<td>0.05%</td>
</tr>
</tbody>
</table>

17-YEAR IT CERTIFICATIONS PAY TRENDS BY CATEGORY
% Change in Average Median Pay for a Single IT Certification
(Through 1/1/2024 – 96,014 IT Professionals)

SOURCE: Foote Partners 2024 IT Skills & Certifications Pay Index™

Pay data supporting these charts available in the IT Skills and Certifications Pay Index™ – 4Q 2023 data edition
### HIGHEST PAYING IT Certifications (cash pay premiums for all 629 certs surveyed, ranked)

These IT certifications are among those earning the highest pay premiums (data collected July 1, 2023 to October 1, 2023). **Shown in alphabetical order by overall rank in descending order including ties.** **Green/Red** = increased/decreased in market value this quarter. **Purple** = Made the list this quarter for first time.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Certification</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GIAC Security Leadership</td>
<td>CompTIA Advanced Security Practitioner</td>
</tr>
<tr>
<td>2</td>
<td>GIAC Strategic Planning, Policy, and Leadership</td>
<td>EC-Council Certified Encryption Specialist v2</td>
</tr>
<tr>
<td>3</td>
<td>Certificate of Cloud Security Knowledge</td>
<td>GIAC Certified Enterprise Defender</td>
</tr>
<tr>
<td>4[Tie]</td>
<td>Certified Business Process Leader</td>
<td>GIAC Exploit Researcher and Advanced Penetration Tester</td>
</tr>
<tr>
<td>5[Tie]</td>
<td>Certified in the Governance of Enterprise IT</td>
<td>Google Cloud - Professional Cloud Architect</td>
</tr>
<tr>
<td>6.1</td>
<td>PMI Program Management Professional</td>
<td>InfoSys Security Architecture Professional (ISSAP/CISSP)</td>
</tr>
<tr>
<td>6.2</td>
<td>Zachman Certified - Enterprise Architect</td>
<td>InfoSys Security Engineering Professional (ISSEP/CISSP)</td>
</tr>
<tr>
<td>6.3</td>
<td>TIBCO Certified Architect</td>
<td>InfoSys Security Management Professional (ISSMP/CISSP)</td>
</tr>
<tr>
<td>6.4</td>
<td>Systems Security Certified Practitioner (SSCP)</td>
<td>Microsoft Certified: Azure AI Engineer Associate</td>
</tr>
<tr>
<td>6.5</td>
<td>Salesforce Certified Technical Architect</td>
<td>Mile2 Certified Cloud Security Officer</td>
</tr>
<tr>
<td>6.6</td>
<td>Six Sigma Master Black Belt</td>
<td>Oracle Certified Master - DBA</td>
</tr>
<tr>
<td>6.7</td>
<td>TOGAF 9 Certified</td>
<td>Pegasystems Certified Lead System</td>
</tr>
<tr>
<td>6.8</td>
<td>Check Point Certified Security Master</td>
<td>PMI Project Management Professional</td>
</tr>
<tr>
<td>6.9</td>
<td>CyberSecurity Forensic Analyst</td>
<td>PMI Risk Management Professional</td>
</tr>
<tr>
<td>6.10</td>
<td>GIAC Security Operations Manager</td>
<td>Cybersecurity Forensic Analyst</td>
</tr>
<tr>
<td>6.11</td>
<td>GIAC Web Application Penetration Tester</td>
<td>Certified Cloud Security Professional</td>
</tr>
<tr>
<td>6.12</td>
<td>Offensive Security Exploitation Expert</td>
<td>Certified Computer Examiner</td>
</tr>
<tr>
<td>6.13</td>
<td>Okta Certified Developer</td>
<td>Certified Data Privacy Solutions Engineer</td>
</tr>
<tr>
<td>6.14</td>
<td>Salesforce Certified Technical Architect</td>
<td>Certified Enterprise Coach (Scrum/Agile)</td>
</tr>
<tr>
<td>6.15</td>
<td>Six Sigma Master Black Belt</td>
<td>Certified Fraud Examiner</td>
</tr>
<tr>
<td>7[Tie]</td>
<td>Certified in Information Security Management Principles</td>
<td>Certified in Risk and Information Systems Control</td>
</tr>
<tr>
<td>7.1</td>
<td>Open Group Certified Architect</td>
<td>Certified Information Systems Auditor</td>
</tr>
<tr>
<td>7.2</td>
<td>Oracle Certified Master - Java SE Developer</td>
<td>Certified Information Systems Risk Manager/Mile2</td>
</tr>
<tr>
<td>7.3</td>
<td>Pegasystems Certified Data Scientist</td>
<td>Certified Kubernetes Security Specialist</td>
</tr>
<tr>
<td>7.4</td>
<td>Pegasystems Certified Senior Systems Architect</td>
<td>Certified Penetration Testing Engineer</td>
</tr>
<tr>
<td>7.5</td>
<td>Pivotal Application Architect</td>
<td>Certified Scrum Product Owner - Advanced</td>
</tr>
<tr>
<td>7.6</td>
<td>PMI Portfolio Management Professional</td>
<td>Certified Scrum Professional - ScrumMaster</td>
</tr>
<tr>
<td>7.7</td>
<td>Red Hat Certified Specialist in Business Process Design</td>
<td>Certified ScrumMaster</td>
</tr>
<tr>
<td>7.8</td>
<td>SAFe Certification</td>
<td>Six Sigma Black Belt</td>
</tr>
<tr>
<td>7.9</td>
<td>Systems Security Certified Practitioner (SSCP)</td>
<td>Tera54 Certified Master</td>
</tr>
<tr>
<td>7.10</td>
<td>TIBCO Certified Architect</td>
<td>TIBCO Certified Architect</td>
</tr>
</tbody>
</table>

Source: Foote Partners [IT Skills & Certifications Pay Index™](https://www.footepartners.com), 4Q2023 data edition
IT CERTIFICATION PAY TREND HIGHLIGHTS: Market Value Gainers & Highest Paying – 4th Quarter 2023 data

These tech certifications **gained 10% or more in market value in the three months ending January 1, 2024** vs. prior quarter (seen below grouped by segment). **Listed in alphabetical order within each group.** Highest paying skills listed on right in alphabetical order.

<table>
<thead>
<tr>
<th>IT CERTIFICATION Gainers</th>
<th>Application Development/Programming Languages certifications</th>
<th>Architecture, Project Management, and Process Certifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Info/Cyber Security certifications</strong></td>
<td>IBM Certified Application Developer - Cloud Solutions v3</td>
<td>ITIL Foundation Certification</td>
</tr>
<tr>
<td>Certified Information Privacy Manager- all countries</td>
<td>IBM Certified Application Developer (all)</td>
<td>Microsoft Certified: Azure AI Engineer Associate</td>
</tr>
<tr>
<td>Certified Information Privacy Professional - all countries</td>
<td>Oracle Certified Associate - Java SE 8 Programmer</td>
<td>PMI Certified Associate in Project Management</td>
</tr>
<tr>
<td>Certified Information Systems Security Professional</td>
<td>Oracle Certified Expert - Java SE Developer (all)</td>
<td>PMI Portfolio Management Professional</td>
</tr>
<tr>
<td>Check Point Certified Security Master</td>
<td>Oracle Certified Master - Java SE Developer</td>
<td>PMI Professional in Business Analysis</td>
</tr>
<tr>
<td>Cisco Certified Network Professional - Security</td>
<td>Oracle Cloud Platform Application Integration Certified Professional</td>
<td>PMI Project Management Professional</td>
</tr>
<tr>
<td>GIAC Certified Enterprise Defender</td>
<td>Pegasystems Certified Data Scientist</td>
<td>PMI Risk Management Professional</td>
</tr>
<tr>
<td>GIAC Certified Incident Handler</td>
<td>Pegasystems Certified Lead System Architect</td>
<td>SAS® Certified Specialist: Visual Business Analytics</td>
</tr>
<tr>
<td>GIAC Defending Advanced Threats</td>
<td>Red Hat Certified Enterprise Application Developer</td>
<td>Six Sigma Yellow Belt</td>
</tr>
<tr>
<td>GIAC Defensible Security Architect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GIAC Security Operations Certified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Google Cloud - Professional Cloud Security Engineer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>InfoSys Security Architecture Professional (ISSAP/CISSP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microsoft Certified: Azure Security Engineer Associate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systems Security Certified Practitioner</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Systems Administration certifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citrix Certified Expert - Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citrix Certified Professional-Virtualization</td>
<td></td>
<td></td>
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<tr>
<td>IBM Certified Solution Architect – Cloud v4</td>
<td></td>
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<tr>
<td>Microsoft Certified Azure Solutions Architect</td>
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</tr>
<tr>
<td>Microsoft Certified Solutions Associate(all)</td>
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<tr>
<td>Red Hat Certified Specialist in Cloud Infrastructure</td>
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<tr>
<td>VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Design</td>
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<td>VMware Certified Advanced Professional 6/7 - Cloud Mgt</td>
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<tr>
<td>VMware Certified Professional - Digital Workspace</td>
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<td>VMware Certified Professional 6 - Data Center Virtualization</td>
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<td>VMware Certified Professional 6/7 - Cloud Mgt and Automation</td>
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<tr>
<td>VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Design</td>
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<tr>
<td>VMware Certified Technical Associate - Data Center Virtualization</td>
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<td></td>
</tr>
<tr>
<td><strong>Networking &amp; Communications certifications</strong></td>
<td></td>
<td></td>
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<tr>
<td>Cisco Certified Network Associate - Data Center</td>
<td></td>
<td></td>
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<tr>
<td>Cisco Certified Network Associate (was CCNA Cloud)</td>
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<tr>
<td>CWNP/Certified Wireless Network Expert</td>
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<tr>
<td>CWNP/Certified Wireless Network Trainer</td>
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<tr>
<td>CWNP/Certified Wireless Technology Specialist</td>
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<tr>
<td>Huawei Certified Network Associate (all)</td>
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<td>Huawei Certified Network Expert (all)</td>
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<tr>
<td>Huawei Certified Network Professional(all)</td>
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<tr>
<td>NetScout/InGenius Certified Analyst</td>
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<tr>
<td>NetScout/InGenius Certified Expert</td>
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<tr>
<td>NetScout/InGenius Certified Specialist</td>
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<td>SolarWinds Certified Professional</td>
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</tr>
<tr>
<td><strong>Data/Database certifications</strong></td>
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<td></td>
</tr>
<tr>
<td>IBM Certified Data Architect - Big Data</td>
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<tr>
<td>IBM Certified Specialist - AI Enterprise Workflow V1</td>
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</tr>
<tr>
<td>Microsoft Certified Solutions Expert: Data Platform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle Certified Associate - DBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle Certified Master - DBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle Certified Professional - DBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oracle Certified Professional - MySQL 5.x/8.x Database Administrator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAS Certified Advanced Analytics Professional Using SAS 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tableau Desktop Certified Professional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tableau Server Certified Professional</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Foote Partners [IT Skills & Certifications Pay Index™](https://www.footepartners.com), 4th Quarter 2023 data edition
**IT CERTIFICATION PAY TREND HIGHLIGHTS: Market Value Losers – 4th Quarter 2023 data**

These IT certifications *declined 10% or more in market value in the three months ending January 1, 2024* vs. prior quarter (seen below grouped by segment). *Listed in alphabetical order within each group.*

<table>
<thead>
<tr>
<th>TECH CERTIFICATIONS Losers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Application Development/Programming Languages</strong></td>
</tr>
<tr>
<td>Adobe/Magento 2 Certified Developer-Associate</td>
</tr>
<tr>
<td>Adobe/Magento 2 Certified Developer-Professional</td>
</tr>
<tr>
<td>AWS Certified Developer - Associate</td>
</tr>
<tr>
<td>Microsoft Certified Solutions Developer (MCSD)</td>
</tr>
<tr>
<td>Microsoft Certified: Azure Developer Associate</td>
</tr>
<tr>
<td>Salesforce Certified Systems Architect</td>
</tr>
<tr>
<td><strong>Data/Database certifications</strong></td>
</tr>
<tr>
<td>AWS Certified Data Analytics – Specialty.</td>
</tr>
<tr>
<td>MongoDB Certified DBA</td>
</tr>
<tr>
<td>MongoDB Certified Developer</td>
</tr>
<tr>
<td>Teradata 14 Certified Associate</td>
</tr>
<tr>
<td>Teradata 14 Certified Database Developer</td>
</tr>
<tr>
<td><strong>Architecture, Project Management, and Process Certifications</strong></td>
</tr>
<tr>
<td>Certified Scrum Developer</td>
</tr>
<tr>
<td>Certified Scrum Professional - ScrumMaster</td>
</tr>
<tr>
<td>Certified Scrum Team Coach</td>
</tr>
<tr>
<td>CompTIA Cloud+</td>
</tr>
<tr>
<td>HDI Support Center Director</td>
</tr>
<tr>
<td>HDI Support Center Manager</td>
</tr>
<tr>
<td>HDI Support Center Team Lead</td>
</tr>
<tr>
<td>Microsoft Certified: DevOps Engineer Expert</td>
</tr>
<tr>
<td>Microsoft MTA: Windows OS</td>
</tr>
<tr>
<td>SAFe Certification</td>
</tr>
<tr>
<td>Salesforce Certified Data Architect</td>
</tr>
<tr>
<td>Salesforce Certified Integration Architecture Designer</td>
</tr>
</tbody>
</table>

| **Systems Administration certifications** |
| HP Master ASE – Hybrid IT Solutions Architect V1 |
| Red Hat Certified Engineer(RHCE) |
| ServiceNow Certified Systems Administrator (CSA) |
| SUSE Certified Administrator |

| **Networking and Communications** |
| Avaya Certified Integration Specialist (ACIS) |
| AWS Certified Advanced Network - Specialty |
| BICSI ITS Technician |
| BICSI Technician and Registered Communications |
| Brocade Certified Fabric Designer (BCSD) |
| Brocade Certified Fabric Professional (BCFP) |
| Brocade Certified Network Engineer |
| Brocade Certified Network Professional |
| Cisco Certified Network Professional - Collaboration |
| Cisco Certified Network Professional - Service Provider |
| Dell Cloud Infrastructure - Specialist (DCS - CA) |
| Dell EMC Technology Architect - Specialist (DCS-TA) |
| Dell Implementation Engineer - Expert (DCE - IE) Distribution Designer |
| Juniper Networks Certified Professional (JNCIP - all specializations) |

| **Info/Cyber Security certifications** |
| Certified in Risk and Information Systems Control (CRISC) |
| Certified Information Systems Auditor (CISA) |
| EC-Council Certified Incident Handler V2 (ECIH) |
| GIAC Certified Forensics Examiner (GCFE) |
| GIAC Experienced Intrusion Analyst (GX-IA) |
| GIAC Penetration Tester (GPEN) |
| Offensive Security Certified Expert |
| Offensive Security Defense Analyst (OSDA) |
| Offensive Security Experienced Penetration Tester (OSEP) |
| Offensive Security Exploit Developer (OSED) |
| Offensive Security Web Assessor (OSWA) |
| Offensive Security Web Expert (OSWE) |
| Offensive Security Wireless Professional (OSWP) |
| Okta Certified Professional |
| Salesforce Identity and Access Management Architect |

Source: Foote Partners [IT Skills & Certifications Pay Index™](https://www.footepartners.com), 4th Quarter 2023 data edition
IT CERTIFICATIONS ANALYSIS – Winners

A. IT CERTIFICATIONS: Paying well above average + gaining the most in market value

As a group, the 629 IT certifications tracked in our IT Skills and Certifications Pay Index™ have decreased in market value in two of the last three calendar quarters but gained almost one percent in the 4th quarter. Let’s examine those certifications that have helped drive up average cash pay premiums at the end of the 2023. The following IT certifications meet two prerequisites:

- They earned workers cash pay premiums well above the average of all certifications in our IT Skills and Certifications Pay IndexTM in quarter ending January 1, 2024.
- They recorded substantial gains in cash market value in the six months ending January 1, 2024.

None of the following IT certifications is earning less than the equivalent of 9 percent of base salary—significant considering the average for all skills reported is 6.5 percent of base—and every certification listed below grew somewhere in the 7 percent to 38 percent range in cash market value in the six months ending October 1st. They are listed in descending ranked order of market value gain (including ties).

Here is the list of IT certifications the meet the above criteria (in alphabetical order):

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Information Privacy Manager- all countries</td>
<td>IBM Certified Data Engineer - Big Data</td>
</tr>
<tr>
<td>Certified Information Privacy Technologist- all countries</td>
<td>InfoSys Security Architecture Professional</td>
</tr>
<tr>
<td>Certified Information Systems Security Professional</td>
<td>Microsoft Certified: Azure AI Engineer Associate</td>
</tr>
<tr>
<td>Check Point Certified Security Expert</td>
<td>Oracle Certified Master - DBA (OCM)</td>
</tr>
<tr>
<td>Check Point Certified Security Master</td>
<td>Oracle Certified Master - Java SE Developer</td>
</tr>
<tr>
<td>Cisco Certified Network Professional – Security</td>
<td>Pegaseystems Certified Data Scientist</td>
</tr>
<tr>
<td>GIAC Certified Enterprise Defender</td>
<td>Pegaseystems Certified Lead System Architect</td>
</tr>
<tr>
<td>GIAC Defending Advanced Threats</td>
<td>PMI Program Management Professional</td>
</tr>
<tr>
<td>GIAC Security Leadership</td>
<td>PMI Project Management Professional</td>
</tr>
<tr>
<td>GIAC Security Operations Manager</td>
<td>Salesforce Certified Technical Architect</td>
</tr>
<tr>
<td>Google Cloud - Professional Cloud Architect</td>
<td>Systems Security Certified Practitioner</td>
</tr>
</tbody>
</table>

Below is the same list, but in descending ranked order of cash premium first and market value increase second (including ties).

* * * * *

1. **GIAC Security Leadership (GSLC)**
   
   **Average Pay Premium:** 15 percent of base salary equivalent
   **Market Value Increase:** 7.1 percent (in the six months through January 1, 2024)

2. **PMI Program Management Professional (PgMP)**
   
   **Average Pay Premium:** 12 percent of base salary equivalent
   **Market Value Increase:** 9.1 percent (in the six months through January 1, 2024)

3. **Check Point Certified Security Master (CCSM)**
   
   **Average Pay Premium:** 11 percent of base salary equivalent
   **Market Value Increase:** 22.2 percent (in the six months through January 1, 2024)

4. **GIAC Security Operations Manager (GSOM)**
   
   **Salesforce Certified Technical Architect**
   **Average Pay Premium:** 11 percent of base salary equivalent
   **Market Value Increase:** 10 percent (in the six months through January 1, 2024)
6. Microsoft Certified: Azure AI Engineer Associate  
   Certified Information Privacy Manager - all countries  
   PMI Project Management Professional (PMP)  
   Average Pay Premium: 10 percent of base salary equivalent  
   Market Value Increase: 25 percent (in the six months through January 1, 2024)

9. Certified Information Privacy Technologist - all countries  
   Certified Information Systems Security Professional (CISSP)  
   GIAC Certified Enterprise Defender (GCED)  
   Google Cloud - Professional Cloud Architect  
   InfoSys Security Architecture Professional (ISSAP/CISSP)  
   Oracle Certified Master - DBA (OCM)  
   Pegasystems Certified Lead System Architect  
   Average Pay Premium: 10 percent of base salary equivalent  
   Market Value Increase: 11.1 percent (in the six months through January 1, 2024)

   Check Point Certified Security Expert (CCSE)  
   Cisco Certified Network Professional - Security  
   GIAC Defending Advanced Threats (GDAT)  
   Google Cloud - Professional Cloud Security Engineer  
   IBM Certified Data Engineer - Big Data  
   Oracle Certified Master - Java SE Developer  
   Systems Security Certified Practitioner (SSCP)  
   Average Pay Premium: 9 percent of base salary equivalent  
   Market Value Increase: 12.5 percent (in the six months through January 1, 2024)
IT CERTIFICATIONS ANALYSIS – Losers

IT CERTIFICATIONS THAT HAVE LOST THE MOST MARKET VALUE OVER TIME

LOSENG GROUND: Listed to the right are certifications in alphabetical order that have lost 30% to 50% percent of their cash pay premium market value in the 24-month period ending January 1, 2024. Some on this list are now retired or scheduled to be.

Why have more certifications been losing value than gaining value?

Certifications decline in market value for a number of obvious and not so obvious reasons. Pay premiums may diminish as a certification expires, is retired, or is replaced with other certifications as technology evolves. Also, there remains a lingering bias that taking a proctored exam does not confer expertise in a subject on the test taker, especially when the pass rate is 70 percent (or less) correct answers. The certification industry has fought back against this bias by adding laboratory requirements and even peer review panels that decide if the candidate has qualified to receive designation.

But just as often it is their popularity that drives down pay premiums for a certification: as interest in a certification escalates and more people attain the certification, the gap between supply and demand for the certification narrows, driving down its market value as the laws of scarcity would dictate. This has been frequently documented in the case of dozens of certifications over the 20+ years Foote Partners has been tracking and reporting their cash pay premiums in the IT Skills and Certifications Pay Index.

Avaya Certified Design Specialist
BICSI ITS Technician
BICSI Technician and Registered Communications Distribution Designer
Certified Scrum Developer
Check Point Certified Security Administrator
Cisco Certified Entry Network Technician
Cisco Certified Network Professional - Enterprise/Routing and Services
Cisco Data Center Unified Computing Design Specialist
Cisco Data Center Unified Fabric Support Specialist
CIV Certified Database Design Specialist
Cloudera Certified Associate Data Analyst
Cloudera Certified Professional: Data Engineer
CompTIA Linux+
CompTIA Server+
CSX CyberSecurity Practitioner
Dell Platform Engineer/PowerScale - Specialist
Dell EMC Technology Architect - Specialist
Dell Implementation Engineer - Specialist
Dell Information Storage and Management Associate
Dell Information Storage and Management Expert
Dell Information Storage and Management Specialist
GIAC Certified Forensics Analyst
GIAC Certified Intrusion Analyst
HP Accredited Solutions Expert (ASE - all)
HP Accredited Technical Professional (ATP - all)
HP ASE - Storage Solutions V4
HP ATP - Storage Solutions V1/V2
HP Master Accredited Solutions Expert (MASE - all)
HP Master ASE - Storage Solutions Architect V3
IBM Certified Application Developer - DB2 9.7 for Linux, Unix and Windows
IBM Certified Database Administrator - DB2 11.1 for Linux, UNIX and Windows
Microsoft MTA Windows OS
Novell Certified Administrator
Offensive Security Experienced Penetration Tester
Offensive Security Wireless Professional
Oracle PL/SQL Developer Associate
Red Hat Certified Architect
Red Hat Certified Architect: Cloud
Salesforce Platform App Builder
SAS Certified Big Data Professional Using SAS 9
SAS Certified Data Scientist Using SAS 9
SAS Certified Advanced Analytics Professional Using SAS 9
SAS Certified Professional: Data Curation for SAS Data Scientists
Six Sigma Yellow Belt
Teradata 14 Certified Database Administrator
2024 IT Skills & Certifications Pay Volatility Index™

Demand dynamics in benchmarked certified and non-certified IT skills pay

(Data collected through January 1, 2024)

**What is skills and certifications pay volatility?**

Skills volatility is defined as the incidence of gains or declines in premium pay earned by tech professionals for specific certified and noncertified technical and business skills. Tracking volatility is useful for both analyzing and forecasting demand for skills, for monitoring IT workforce transition, and for understanding IT management decision making. Volatility offers valuable insights that salary movements and hiring behavior do not. Important in this distinction is that skills can be segmented and benchmarked more meaningfully than jobs. Similar to IT positions, there are the broad categories (e.g., security, networking, systems, database, applications development). But also, more narrow areas, for example—web/e-commerce development, storage area networking, virtualization, architecture, business process, project management, methodology. But unlike most jobs, within categories or niche are very specific vendor-specific or vendor independent niches and skill specializations that provide more granular analysis (e.g., SAP, AJAX, Ruby on Rails, Microsoft Sharepoint, collaboration appliances, Oracle database).
Cash Pay Premium Volatility for IT Skills and Certifications

Volatility in market value for individual IT skills and certifications—defined as incidence of gains or declines over a period of time in premium pay earned by IT professionals for specific technical and business skills—spiked higher from October 1, 2023 to January 1, 2024 according to the latest update of Foote Partners’ long-running IT Skills and Certifications Pay Index™ of market values for tech skills. Market value is measured by tracking additional cash compensation paid to workers by their employers for specific certified and non-certified skills they possess.

Current Quarterly Recap (data collected through January 1, 2024)

TOTAL: All Skills and Certifications
- 26.2% of skills and certifications (344 of 1,313) recorded a change in cash pay premium in 4th Quarter 2023, dramatically higher than 21.6% the prior quarter when only 280 of 1,296 changed, and higher than the 24.8% average quarterly volatility over the last two years.
- 166 gained value while 178 declined in value in 4th Quarter 2023, significantly lower than the 108 and 172, respectively, in the prior quarter which ranked as the highest quarterly pay volatility in three years.

CERTIFIED SKILLS
- 21.5% of reported certifications (133 of 619) changed market value in 4th Quarter 2023, six points higher than the 15.8% (97 of 614) pay volatility in the prior quarter and also higher than the 19.6% average quarterly volatility in the last 24 months.
- 70 certifications gained market value while 63 declined in value in Q4 compared to a smaller 32 and 65, respectively, in the prior quarter.

NON-CERTIFIED SKILLS
- 30.4% of reported skills (211 of 694) changed value in 4th Quarter 2023, four points higher than the 26.8% (183 of 682) volatility in the prior quarter. This is slightly higher than the 28.5% twelve month average volatility and 29.4% two year average.
- 96 noncertified skills gained in market value while 115 declined in value in 4th Quarter 2023 compared to 76 and 107, respectively, in the prior quarter.

Tracking skills volatility is useful in many ways: analyzing and forecasting demand for skills; monitoring IT workforce transition; and understanding IT management decision making. In fact, we believe statistical volatility in IT skills pay offers a more complete story of true labor market conditions than salary movements and hiring behavior, among other common indicators. Important in this distinction is that skills can be segmented and benchmarked more meaningfully than jobs allowing to microanalyses. Similar to jobs, IT skills have broad skills categories that can be tracked (e.g., security, networking, systems, database, applications development). But unlike jobs, skills pay can be pinpointed to hundreds of niches and specialization. Also, unlike most job trends analyses, within skills categories and niches are vendor-specific and vendor independent skill specializations for more granular tracking, analysis, and forecasting.

Quarterly volatility for all 1,333 certified and non-certified skills in the last four years has been widely variable, in the 17% to 28% range. This is an important shift trend that we believe signals a move that employers are taking a more long-term view to building their tech workforces for evolving technologies such as AI/Machine Learning and a variety of digital solutions. Tech leaders right now are demanding more agility, faster reaction times, and more predictable execution; this is keeping volatility high as skills markets constantly adjust to meet surges in demand for specific certified and non-certified skills.

They will be able to achieve those capabilities through applying architecture principles and practices to people management.
**VOLATILITY HIGHLIGHTS - 17 Year Trending**

**IT Skills and Certifications Volatility Index™ – 1,333 Skills and Certifications**

This chart shows the percentage of skills and certifications that changed value (either up or down) every calendar quarter since 2007.

**Recent IT skills and certifications volatility trends**

**QUARTERLY SUMMARY**

In the 4th Quarter 2023, 26.2% of skills and certifications (344 of 1,313) recorded a change in cash pay premium, considerably higher than 21.6% the prior quarter in which only 280 of 1,296 changed market value. This is also higher than the 24.8% average quarterly volatility over the last two years.

**IT CERTIFICATIONS PAY VOLATILITY** in 4Q 2023 was 21.5% or 6 points higher than the prior quarter (15.8%) and also higher than the 19.6% average quarterly volatility in the last 24 months.

**NONCERTIFIED IT SKILLS PAY VOLATILITY** in 4Q 2023 was 30.4% four points higher than the 26.8% volatility in the prior quarter. This is slightly higher than the 28.5% twelve month average volatility and 29.4% two year average.

(Pay data supporting these charts available in the IT Skills and Certifications Pay Index™ – 4Q 2023 quarterly data edition)

(Source: Foote Partners LLC, 2024 IT Skills & Certifications Pay Index™)
VOLATILITY HIGHLIGHTS

IT Certifications – 4th Quarter 2023 datasets

VOLATILITY INDEX: How Many of 619 IT Certifications Changed Market Value in 4th Quarter 2023?

- Architecture/Project Management/Process: 12.7% went down, 19.0% went up, 31.6% total change
- Info/Cyber Security: 10.1% went down, 21.5% went up, 31.6% total change
- System Admin & Engineering: 3.1% went down, 12.3% went up, 15.4% total change
- Networking & Communications: 11.4% went down, 24.8% went up, 36.2% total change
- Web Development: 0.0% went down, 0.0% went up, 0.0% total change
- Data/Database: 11.4% went down, 25.0% went up, 36.4% total change
- Apps Development/Prog. Languages: 3.1% went down, 23.6% went up, 26.7% total change
- Beginner and Training: 12.5% went down, 12.5% went up, 25.0% total change
- ALL CERTIFICATIONS SURVEYED: 11.3% went down, 21.5% went up, 32.8% total change

(Source: Foote Partners LLC, 2024 IT Skills & Certifications Pay Index™)

IT Skills and Certifications Volatility Index™

4Q 2023 data edition findings: Tech Certifications Volatility Highlights

Among all 619 certifications reported in the prior quarter, highest quarterly volatility (>15%) occurred in these segments (ranked highest to lowest):

- Architecture/Project Mgt/Methodology
- Data/Database
- Networking & Communication
- Applications Development/Prog Languages
- Info/Cybersecurity

Within segments, notable downward volatility (value declines) occurred most in these (ranked):

- Architecture/Project Mgt/Methodology
- Data/Database
- Networking & Communication
- Info/Cybersecurity

Within segments, notable upward volatility (value gains) occurred most in these:

- Data/Database
- Applications Development/Prog Languages
- Architecture/Project Mgt/Methodology
- Networking & Communication
- Beginner/Training

(Pay data supporting these charts available in the IT Skills and Certifications Pay Index™ – 4Q 2023 quarterly data edition)
VOLATILITY HIGHLIGHTS Non-certified IT Skills – 4th Quarter 2023 datasets

VOLATILITY INDEX: How Many of 694 Noncertified IT Skills Changed Market Value in 4th Quarter 2023?

<table>
<thead>
<tr>
<th>IT Skill Category</th>
<th>% of Skills Changed</th>
<th>Total That Changed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management/Methodology/Process</td>
<td>14.6%</td>
<td>35.8%</td>
</tr>
<tr>
<td>Operating Systems</td>
<td>12.3%</td>
<td>42.5%</td>
</tr>
<tr>
<td>Data/Database</td>
<td>20.8%</td>
<td></td>
</tr>
<tr>
<td>Web/Commerce Development</td>
<td>25.8%</td>
<td></td>
</tr>
<tr>
<td>Apps Development Tools &amp; Platforms</td>
<td>29.0%</td>
<td></td>
</tr>
<tr>
<td>SAP &amp; Enterprise Business Applications</td>
<td>20.0%</td>
<td></td>
</tr>
<tr>
<td>Messaging and Communications</td>
<td>19.0%</td>
<td></td>
</tr>
<tr>
<td>Systems/Networking</td>
<td>20.0%</td>
<td></td>
</tr>
<tr>
<td>ALL NONCERTIFIED SKILLS SURVEYED</td>
<td>13.3%</td>
<td>30.4%</td>
</tr>
</tbody>
</table>

(Source: Foote Partners LLC, 2024 IT Skills & Certifications Pay Index™)

IT Skills and Certifications Volatility Index™

4Q 2023 data edition findings: Non-certified IT Skills

Non-certified IT Skill Pay Volatility Highlights

Among all 692 noncertified IT skills reported in the prior quarter, high volatility (>20%) occurred in all but one segments (ranked highest to lowest):

- Data/Database
- Messaging and Communications
- Management/Methodology/Process
- Applications Development Tools & Platforms
- Web/Ecommerce Development
- SAP & Enterprise Business Applications
- Systems/Networking

Within segments, notable downward volatility (value declines) occurred most in these (ranked):

- Messaging and Communications
- Applications Development Tools & Platforms

Within segments, notable upward volatility (value gains) occurred most in these (ranked):

- Data/Database
- Management/Methodology/Process

(Pay data supporting these charts available in the IT Skills and Certifications Pay Index™ – 4Q 2023 quarterly data edition)
2024 IT Skills and Certifications Pay Index™ (4th Quarter data edition)

- Pay premiums for 1,333 certified and noncertified IT skills
  - Three data points for each position: 10th, 50th, 90th percentile
- Verified and validated IT skills pay data from 96,014 IT professionals at 4,314 employers in US and Canada
- Current data collected through January 1, 2024 (updated quarterly)
- Excel format data tables allowing for data loading into third-party data analytics tools from PayScale, MarketPay, PayFactors, CompAnalyst, WillisTowersWatson, Mercer, et. al.
- Certifications Guide containing basic information about surveyed IT certifications (pre-requisites; costs; test content; lab requirements, etc.)

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
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), launched in 1999, and the IT Skills and Certifications Volatility Index, both updated every three months since that time. Data covering 422,770 tech professionals at 4,314 employers in 83 U.S. and Canada cities are reported for IT salaries and skills pay earned for 270 positions and 1,333 certified and noncertified technical and business skills. Verified and validated pay data for 96,014 tech workers has been included in the 4th Quarter 2023 data edition of the ITSCPI, compiled from data collected through January 1, 2024.

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 $5 billion+ in sales/$15+ billion in total assets
- 28% of participating organizations earn more than $1 billion in annual revenues or more than $5 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

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

Please visit the Foote Partners web site: IT Skills and Certifications Pay Index
Foote Partners 2023 IT Compensation Survey Product Map

**Survey Demographics**
- 65 US/18 Canadian cities (377,172 IT workers - 4,111 employers)
- 174 Europe/UK cities (189,888 IT workers, 2,065 employers)
- 45+ industries
- Updated continuously.

**IT Professional Salary Survey**
(257 Jobs, 36 IT job families)

**IT Skills & Certification Pay Index™**
(1,270 skills/certs)

**IT Skills Demand and Pay Trends Report**

**IT Skills HOT LISTS Forecast**

**IT Skills Volatility Index**

**Custom Salary Reports**
- Choose on the job titles or job families needed
- Choose cities needed

**IT Infrastructure Survey**

**IT Base Positions Survey**

**Long-form Job Descriptions**
- updated continuously
- includes internal/external relationships key to job success; skills and certification; detailed experience factors.

**Short-form Job Profiles (JD excerpts)**

**IT Salary+Skills Pay Survey Reports**

**Overview of Product Map**
- JOB FAMILIES AVAILABLE:
  - Artificial Intelligence
  - Big Data
  - Business Technology
  - Business Applications Delivery
  - Cloud Computing
  - Data Analytics
  - Data Management
  - Data Warehousing/BI
  - Database Administration
  - Database Developers
  - DevOps
  - Digital Development
  - e-Commerce/e-Business
  - Enterprise Applications
  - Enterprise Infrastructure
  - Epic Systems
  - Help Desk
  - Info/Cybersecurity
  - Internets/intranets/ extranets
  - IT Architecture
  - IT Auditing
  - IBM Notes/Domino
  - Java Developers
  - Messaging
  - Mobile Computing
  - .NET Developers
  - Network Eng. & Operations
  - Project Management
  - SAP
  - Six Sigma
  - Software Quality Assurance
  - Storage/SAN/NAS
  - Systems Eng. & Administration
  - Unix/NT/Linux
  - Voice Engineering
  - Web/I-net

**Salary+Skills Reports Available**
- Applications Development
- Big Data
- Business Analysts/Business Technology
- Database
- Data Warehousing/Business Intelligence
- E-Commerce
- IT Architecture
- Microsoft Windows
- Networking Operations & Engineering
- Project Management
- SAP
- IT Security
- Systems Engineering and Administration
- Web/I-net
ABOUT FOOTE PARTNERS

Foote Partners, LLC is a technology analyst firm and independent benchmark research organization focusing on the people (versus vendor) side of managing technology and technology value creation. A thought leader and trusted advisor to thousands of employers on five continents who purchase our products and services, our company provides pragmatic benchmark research and forward-thinking advice and market intelligence targeting the tech workforce in the modern highly integrated business/IT hybrid environment in which all private and public organizations now operate.

Our products are deeply grounded in specialized proprietary data-driven statistical and empirical research, benchmark surveys, and business intelligence collected from thousands of North American employers with whom we have deep longstanding research partnerships. These partnerships have been created and supported specifically to enable unique market intelligence views and difficult-to-find decision support research on the multiple facets of IT human capital management. As a group, these U.S., Canadian, and European partners were selected to meet strict criteria for what we believe is the most meaningful demographic representation for tech professionals in each local labor markets.

Founded in 1997 and comprised of former Gartner industry analysts, McKinsey & Company, Mercer and WillisTowersWatson senior consultants, and former corporate HR, IT, and business executives, the firm's research division publishes 70+ quarterly-updated benchmarking, analytical research and forecasting products that help employers benchmark their IT compensation, solve difficult information technology management and workforce problems, and strengthen their ability to execute complex business solutions.

Foote Partners tech compensation survey findings and labor market trend analyses are featured regularly in countless business, HR, and IT media sources and periodicals around the globe, including Bloomberg BusinessWeek, Forbes, Fortune, Wall Street Journal, New York Times, CIO Magazine, ComputerWorld, and WorldatWork’s Journal and Workspan Magazine; and in appearances on network and cable television, National Public Radio, and countless podcasts and webcasts.

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