

FOR IMMEDIATE RELEASE

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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)

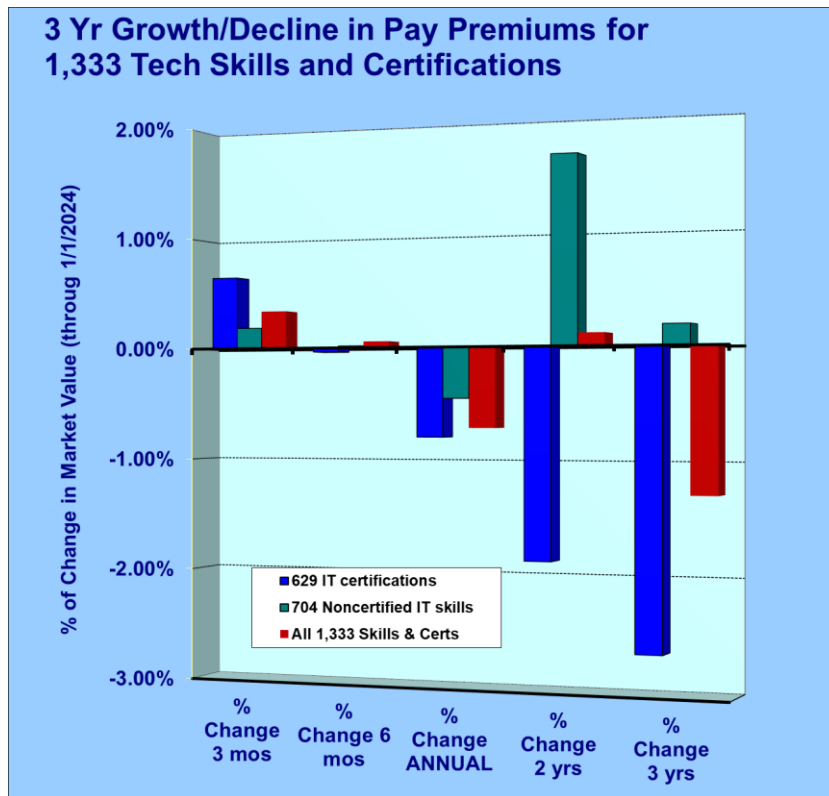


Figure 1

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

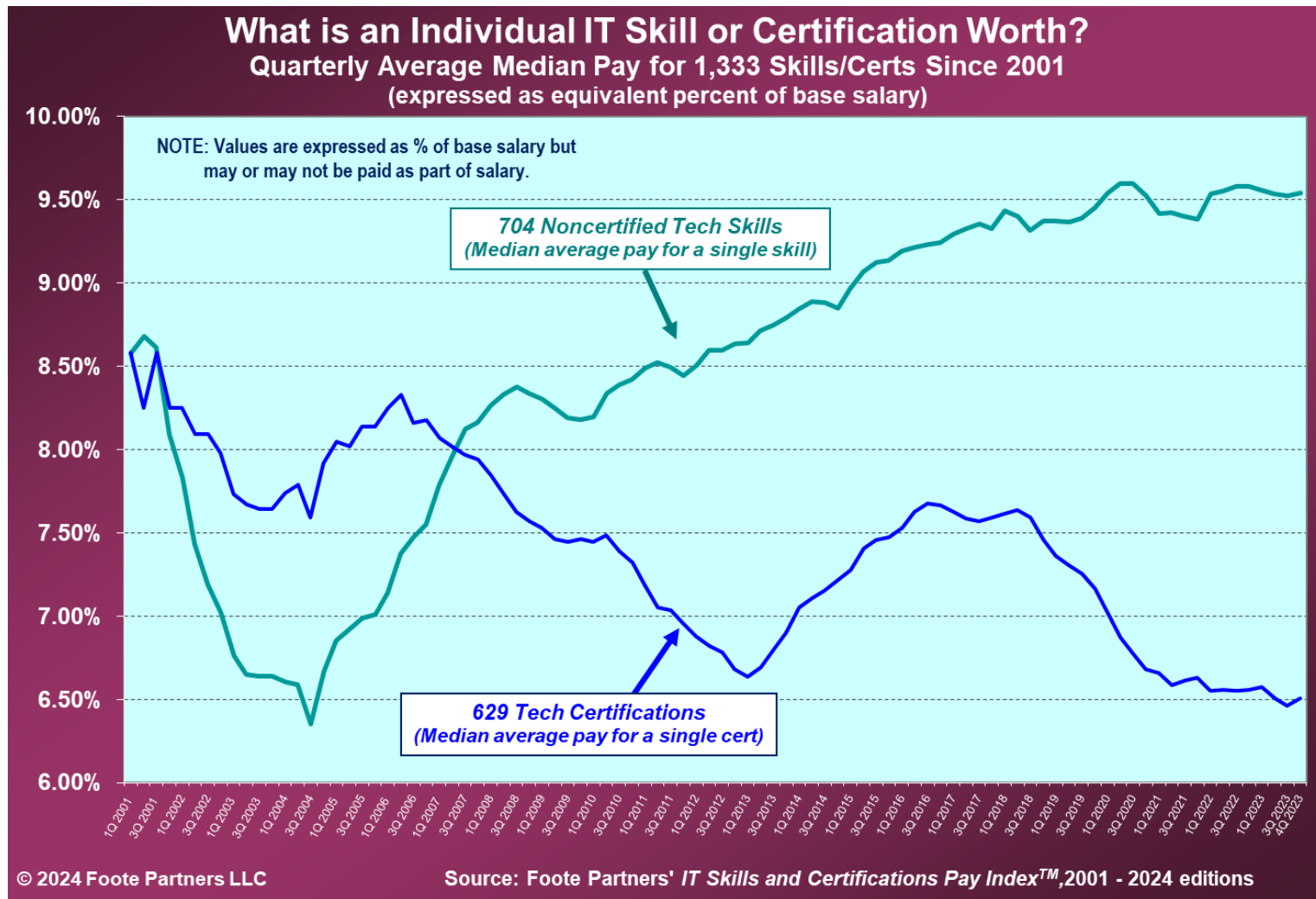


Figure 2

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)

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++
C++ /CLI
CA PPM (Clarity PPM)
Cerner Millennium
ChatGPT
CircleCI
Clojure
Cloudera software
Cloud Foundry PaaS
COBOL

Cognos
Confluence
Continuous Delivery
Cucumber
Datadog
Delphi
Drupal
Eclipse
Elixir
Epic Systems applications
Erlang
Ethereum
F#
Flutter
Full Stack Development
Git/GitHub
GitLab
GitOps
Go language (Golang)
GoCD
Gosu/Guidewire
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 Stack
Microsoft Azure Logic Apps
Microsoft PowerApps
Microsoft Power Platform
Microsoft SQL Server Mgt Studio
Microsoft Team Foundation Server
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 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
UML (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
Umbraco
VBScript
Video/graphics editing
Visual Interdev
VoiceXML

Web/e-Commerce – cont'd.

Web collaboration appliances
 Web Content Development
 Web Design
 WebSphere
 WebSphere Datapower
 Wikis
 WSDL
 XAML/XACML
 XHTML MP
 XML (all variants)

SAP Ariba
 SAP Auto-ID infrastructure (SAP RF)
 SAP Basis Components
 SAP BI / SAP BW
 SAP BO Data Services
 SAP BODI
 SAP BOXI
 SAP BO Dashboard Design
 SAP BPC
 SAP BSP
 SAP Business One
 SAP Business Workflow/Webflow

SAP HR-PA
 SAP HR-PY (Payroll)
 SAP Hybris
 SAP IBP (Integrated Business Planning)
 SAP IS-U (Utilities)
 SAP ITS
 SAP Leonardo
 SAP LES
 SAP BSP
 SAP Lumira
 SAP Manufacturing

SAP Solution Manager
 SAP SRM
 SAP TM
 SAP UI5 (UI development toolkit for HTML5)
 SAP Web Application Server
 SAP WEBI
 SAP WM
 SAP WM – EWM
 Siebel/Siebel Analytics
 Software AG webMethods
 SuccessFactors
 Web Dynpro
 Workday HCM

Informatica
 Java Database Connectivity
 Kibana
 Looker
 Master data management
 Microsoft Access
 Microsoft Exchange Server 2010/2013
 Microsoft SQL Server 2019/2016/2014/2012
 Microsoft SQL Server Integration Services
 Microsoft SQL Server Reporting Services
 MongoDB
 MySQL
 NewSQL
 NoSQL
 OpenEdge ABL
 Oracle Application Server
 Oracle Business Intelligence Enterprise Edition Plus
 Oracle Coherence
 Oracle DB 9i/10g/11i/12c
 Oracle Enterprise Manager
 Oracle Exadata
 Oracle Forms
 Oracle Reports
 PostgreSQL
 Power Query
 Redis
 Riak
 Riak
 Smart Contracts
 Snowflake/Snowflake Schema
 Sqoop
 Sybase Adaptive Server
 Teradata
 TIBCO Spotfire
 Visual SQL

SAP & Enterprise Business Applications

ABAP (all modules)
 Accelerated SAP (SLM)
 Baan (Infor LN ERP)
 Enterprise Application Integration
 IBM Sterling
 J.D. Edwards/Oracle
 Lawson
 Microsoft Dynamics/Dynamics 365
 NetWeaver
 NetWeaver Portal (SAP EP)
 Oracle BPM
 Oracle CRM
 Oracle E-Business suite
 Oracle Eloqua
 Oracle ERP
 Oracle Financials
 Oracle HFM (Hyperion Fin. Mgt)
 Oracle HRMS
 Oracle NetSuite
 Oracle Payables
 Oracle Payroll
 Oracle Retail
 Oracle SCM
 Oracle SOA Suite
 Pega
 PeopleSoft (CRM/Financials/ HCM)
 Remedy ITSM
 Salesforce
 Salesforce Sales Cloud
 Salesforce Service Cloud
 SAP AFS
 SAP ALE
 SAP APO

SAP CA
 SAP CAF
 SAP CAR
 SAP CCM
 SAP CE
 SAP CFM
 SAP CO
 SAP CO-PA
 SAP Commerce Cloud
 SAP CRM
 SAP Crystal Reports
 SAP CS
 SAP CX
 SAP Digital Banking
 SAP EBP
 SAP EDI
 SAP EHS
 SAP EPM
 SAP ERP
 SAP ESA
 SAP Exchange Infrastructure (XI)
 SAP FI (Financial Accounting)
 SAP FI – CA
 SAP FI - CO
 SAP FI – FSCM
 SAP FI - Travel Management
 SAP Fiori
 SAP F&R (Forecasting/Replenish)
 SAP FS (Insurance)
 SAP GRC
 SAP GTS
 SAP HANA
 SAP HCM (SAP HR)
 SAP HCM ESS/MSS

SAP MDG
 SAP MDM
 SAP MDX
 SAP MI
 SAP MII
 SAP MM
 SAP MRO
 SAP MRS
 SAP Netweaver Applications Server
 SAP Netweaver BW (BIW)
 SAP NetWeaver Visual Composer
 SAP NWDI
 SAP NWDS
 SAP Oil & Gas
 SAP PI (NetWeaver Process Integration)
 SAP PLM
 SAP PM
 SAP POSDM
 SAP PP
 SAP PS
 SAP PSCD
 SAP Public Sector Management
 SAP QM
 SAP for Retail
 SAP SAM (Service & Asset Mgt)
 SAP S/4HANA
 SAP SCM
 SAP SD
 SAP SD - GTS
 SAP Security
 SAP SEM
 SAP SM
 SAP Smart Forms

Data/Database

Alteryx Designer
 Amazon Athena
 Amazon DynamoDB
 Amazon RedShift
 Apache Cassandra
 Apache CouchDB
 Apache Hive
 Apache Ignite
 Apache Impala
 Apache Spark SQL
 Azure Cosmos DB
 Azure Data Factory
 Azure SQL Data Warehouse
 Azure SQL Database
 Azure Synapse Analytics
 Base SAS
 Big Data
 Blockchain
 Cloudera Impala
 Couchbase Server
 Data mining
 Data security
 Database management
 DB2
 dBASE/xBASE
 ETL (Extract, transform, load)
 GIS
 Google BigQuery
 Google Data Studio
 Hbase

MongoDB
 MySQL
 NewSQL
 NoSQL
 OpenEdge ABL
 Oracle Application Server
 Oracle Business Intelligence Enterprise Edition Plus
 Oracle Coherence
 Oracle DB 9i/10g/11i/12c
 Oracle Enterprise Manager
 Oracle Exadata
 Oracle Forms
 Oracle Reports
 PostgreSQL
 Power Query
 Redis
 Riak
 Riak
 Smart Contracts
 Snowflake/Snowflake Schema
 Sqoop
 Sybase Adaptive Server
 Teradata
 TIBCO Spotfire
 Visual SQL

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/Opsscode
Cisco ASA
Cisco CUCM
Cisco ICM
Cisco IPCC
Cisco ISE/Identity Services Engine
CiscoNexus
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 SCCM
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
Caffe
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

DevSecOps
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/ Assess-
ment/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)

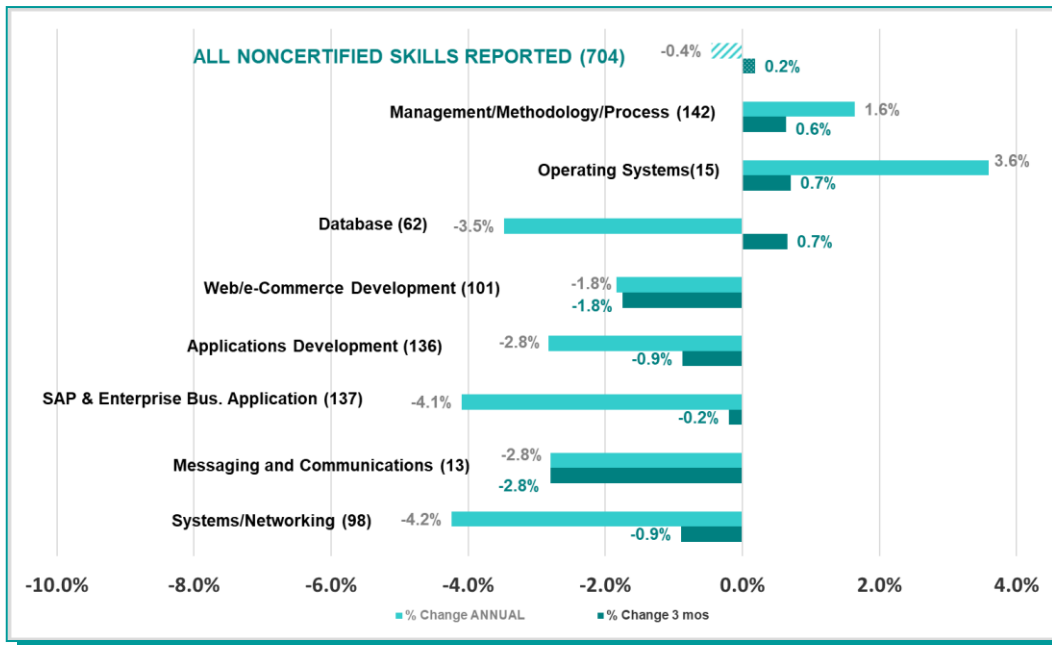


Figure 3

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)

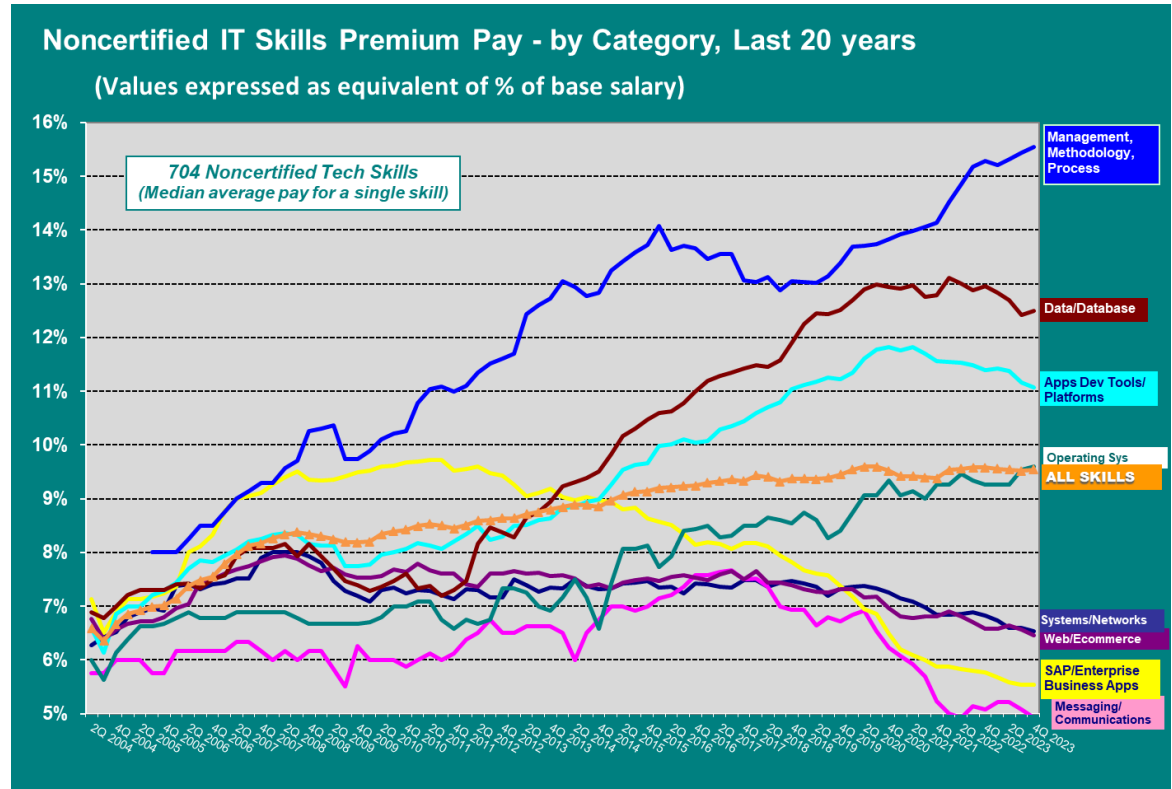
NONCERTIFIED IT SKILLS CATEGORIES	# of skills surveyed	Change in Average Premium Pay by Category					
		% Change 3 mos	% Change 6 mos	% Change ANNUAL	% Change 2 yrs	% Change 3 yrs	% Change 4 yrs
Systems/Networking	98	-0.9%	-1.1%	-4.2%	-4.4%	-10.0%	-11.0%
Messaging and Communications	13	-2.8%	-5.5%	-2.8%	-5.8%	-20.9%	-26.6%
SAP & Enterprise Business Applications	137	-0.2%	-1.0%	-4.1%	-5.7%	-14.6%	-25.1%
Apps Development Tools & Platforms	136	-0.9%	-2.7%	-2.8%	-4.2%	-6.4%	-1.4%
Web/e-Commerce Development	101	-1.8%	-2.7%	-1.8%	-5.1%	-7.4%	-11.7%
Data/Database	62	0.7%	-1.5%	-3.5%	-2.3%	-3.4%	-0.1%
Operating Systems	15	0.7%	3.6%	3.6%	3.6%	2.9%	14.3%
Management/Methodology/Process	142	0.6%	1.5%	1.6%	9.9%	12.3%	16.1%
ALL NONCERTIFIED SKILLS REPORTED	704	0.2%	0.02%	-0.4%	1.7%	0.2%	0.9%

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

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.

1. Risk analytics/assessment	3.[Tie] Identity access management Machine Learning Microservices Prescriptive Analytics Splunk	5.[Tie] cont'd. AWS Codebuild Azure Machine Learning Behavior-Driven Development Clojure Cloud Foundry PaaS Complex Event Processing/Event Correlation Continuous Integration Cybersecurity Data Management Data Migration Data Modelling Data Quality Ethereum Kanban Master data management Object Detection/YOLO Robotic Process Automation Test automation Threat Detection/Modelling/ Management User Experience/User Interface	6.[Tie] cont'd Caffe Capacity Planning/Management Computer Vision Configuration Management Continuous Improvement Cyber Threat Intelligence Data Acquisition and Control Systems Data Protection Data Security Data Visualization ETL (Extract, transform, load) ForgeRock/Ping Identity Generative AI Google BigQuery IT Governance Java Database Connectivity (JDBC) Kotlin Microsoft SQL Server Analysis Services Network Architecture NoSQL Penetration testing Predictive Analytics and Modeling Program Management Prompt Engineering Quality Assurance/QA automation Rust Security management Six Sigma/Lean Six Sigma Software development lifecycle management Stable Diffusion Vulnerability Scanning/Assessment/Management Web Analytics
2.[Tie] Big Data analytics Convolutional Neural Network DevSecOps Large Language Model/LLM tuning Neural Networks Site Reliability Engineering Zachman Framework	4.[Tie] Apache Airflow COBIT Data Governance Data Integration Data Privacy Data Transformation DevOps E-Discovery Google TensorFlow Governance, Risk management and Compliance gRPC H2O.ai Informatica IT Audit Kibana Marketo Metadata design and development Natural language processing NIST/NIST 800 PyTorch Scaled Agile Framework (SAFe) Security architecture and models Security testing Test Driven Development/Scripting	6.[Tie] Amazon DynamoDB Amazon RedShift Apache CouchDB Apache Spark Apache Spark SQL Azure DevOps Azure OpenAI Big Data Business analysis Business analytics Business process mapping/modeling/ improvement	
2.[Tie] Apache Cassandra Apache Zookeeper Data Architecture DataOps Deep Learning Flink MLOps Smart Contracts	3.[Tie] Amazon Athena Artificial Intelligence Artificial Intelligence for IT Operations Artificial Intelligence Model Optimization AWS DevOps Azure Key Vault Azure Service Fabric Blockchain Cryptography (encryption, VPN, SSL/TLS, Hybrids) Data Engineering Data Science Data Strategy Deployment Automation Functional Programming Hyperautomation		
	5.[Tie] Apache Hive Apache Ignite Apache Impala		

SOURCE: Foote Partners [IT Skills & Certifications Pay Index™](#), 4Q 2023 data edition

NON-CERTIFIED TECH SKILLS TREND 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.*

IT SKILLS (non-certified)			Highest Paying – Cash Premiums (A-Z)
<p><u>Applications Development skills</u> Behavior-Driven Development gRPC Microsoft SQL Server Management Studio (SSMS) Red Hat Fuse RStudio SAS WebSphere MQ (MQSeries) Xcode</p> <p><u>SAP & Enterprise Business Applications skills</u> Enterprise Application Integration (EAI) Salesforce Commerce Cloud Salesforce Service Cloud SAP Business One SAP ERP Operations (multi-skills) SAP Hybris SAP MDG (Master Data Governance) SAP MDM (Master Data Management) SAP Oil & Gas SAP PP (Production Planning) SAP S/4HANA SAP Smart Forms SAP SRM (Supplier Relationship Management) SAP WM (Warehouse Management) SuccessFactors</p>	<p><u>Web/SOA/E-Commerce skills</u> Ajax (Asynchronous JavaScript and XML) ColdFusion/ColdFusion MX Cypress.io Ember.js Microsoft Identity Integration Server (MIIS) Pandas REST Spring Security WebSphere WebSphere Datapower</p> <p><u>Database Skills</u> Amazon Athena Apache Cassandra Apache Spark SQL Base SAS ETL (Extract, transform, load) Microsoft Exchange Server 2010/2013 Oracle Exadata TIBCO Spotfire</p> <p><u>Messaging & Communications Skills</u> Microsoft Exchange Unified communications/messaging</p> <p><u>Operating Systems skills</u> Mac OS X VMware vSphere</p>	<p><u>Systems/Networking skills</u> Azure Sentinel Cisco Prime Cisco UCCX HP Quality Center NAS/Network Attached Storage NGFW(next-generation firewall) Salt Software-Defined Networking SolarWinds Orion</p> <p><u>Management, Process & Methodology skills</u> Azure Key Vault Data Privacy E-Discovery Flink Large Language Model/LLM tuning Metadata design and development Predictive Analytics and Modeling Robotic Process Automation Webtrends analytics</p>	<ul style="list-style-type: none"> - 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

SOURCE: Foote Partners [IT Skills & Certifications Pay Index™](#), 4Q 2023 data edition

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.**

TECH SKILLS (Non-certified)

Applications Development skills

Amazon SageMaker (ML)
Apache Cordova
Apache Pig
Datadog
Delphi
Elixir
Erlang
Gosu/Guidewire
Mokito
JUnit
Oracle APEX
Travis CI

Data/Database

Azure SQL Data Warehouse
Google Data Studio
Hbase
Looker
Oracle Application Server
Oracle Business Intelligence Enterprise Edition Plus

Messaging & Communications Skills

ActiveMQ
Apache Kafka
Apache Pulsar

SAP & Enterprise Business App skills

J.D. Edwards (Oracle)
Microsoft Dynamics/Dynamics 365
Oracle CRM
Oracle ERP
Oracle NetSuite
Salesforce CRM
SAP ALE (Application Link Enabling)
SAP Basis Components
SAP CRM (Customer Relationship Management)
SAP CS (Customer Service)
SAP Data Services (SAP BODS)
SAP for Retail (IS-Retail)
SAP GTS (Global Trade Services)
SAP HR-PY (Payroll)
SAP IBP (Integrated Business Planning)
SAP LES (Logistics Execution System)
SAP PI (NetWeaver Process Integration)
SAP QM (Quality Management)
SAP SCM (Supply Chain Management)
SAP SM (Service Management)

Operating Systems skills

CoreOS

Systems/Networking skills

Amazon Elastic Kubernetes Service (Amazon EKS)
AWS Fargate
Chef/Opencode
Cloud security
Grafana
Microsoft Virtual Server
Performance management/metrics
Storage virtualization/administration
Vagrant
VMware NSX
VPN/OpenVPN
WAN 4G/5G services

Management, Process & Methodology skills

Artificial Intelligence for IT Operations (AIOps)
Customer Experience
Data Analytics
Digital Forensics
Keras
Microsoft Visio
Security architecture and models

Web/E-commerce Development skills

Adobe Analytics
Apache Solr
Apex Code
Docker/Docker Swarm
Documentum
GatsbyJS
Jetty
Magento/Adobe Commerce
Magnolia
Microsoft BizTalk Server
Mule/MuleESB
Oracle WebLogic/Portal
Oracle Workflow
PySpark
SailPoint
Sitecore CMS
Spring Boot
Spring Framework (Batch, Boot, Cloud, etc.)
Spring MVC

SOURCE: Foote Partners [IT Skills & Certifications Pay Index™](#), 4Q 2023 data edition

NON-CERTIFIED IT SKILLS ANALYSIS – Winners

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.

Here is the list of noncertified IT skills pay premiums meeting the above criteria (in alphabetical order):

Amazon Athena	Data Privacy	Large Language Model/LLM tuning
Apache Cassandra	Data Science	Machine Learning
Apache Hive	Deep Learning	Marketo
Apache Impala	E-Discovery	Master data management
Apache Zookeeper	Flink	Metadata design and development
Azure Key Vault	gRPC	Neural Networks
Azure Machine Learning	H2O.ai	Risk analytics/assessment
Azure Service Fabric	Identity access management	Robotic Process Automation
Behavior-Driven Development	Informatica	Smart Contracts
Cloud Foundry PaaS	IT Audit	Test automation
Cryptography Data Governance	Kibana	

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

* * * *

- 1. Risk analytics/assessment**
Average Pay Premium: 21 percent of base salary equivalent
Market Value Increase: 10.5 percent (in the six months through January 1, 2024)
- 2. Neural Networks**
Average Pay Premium: 20 percent of base salary equivalent
Market Value Increase: 17.6 percent (in the six months through January 1, 2024)
- 3. Large Language Model/LLM tuning**
Average Pay Premium: 20 percent of base salary equivalent
Market Value Increase: 11.1 percent (in the six months through January 1, 2024)
- 4. Apache Cassandra**
Average Pay Premium: 19 percent of base salary equivalent
Market Value Increase: 18.8 percent (in the six months through January 1, 2024)
- 5. Apache Flink**
Deep Learning
Average Pay Premium: 19 percent of base salary equivalent
Market Value Increase: 11.8 percent (in the six months through January 1, 2024)

NON-CERTIFIED IT SKILLS ANALYSIS – Winners, cont'd.

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)

NON-CERTIFIED IT SKILLS ANALYSIS – Winners, cont'd.

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)

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 Design Specialist
 Avaya Certified Implementation Specialist
 Avaya Certified Integration 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 SysOpsAdministrator-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 (CBPA)
 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/DRE)
 Certified Enterprise Coach (Scrum/Agile)
 Certified Forensic Computer Examiner (CFCE)
 Certified Fraud Examiner
 Certified Healthcare Information Security and Privacy
 Practitioner (HCISPP)
 Certified in Convergent Network Technologies (CCNT)
 Certified in Emerging Technology(CET-ISACA)
 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 Technologist- 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 (CMSQ)
 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 (CDE)
 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 (CCNA Routing and
 Switching)
 Cisco Certified Network Associate (Network Security)
 Cisco Certified Network Associate (Networking automation
 and programmability)
 Cisco Certified Network Associate (was CCNA Cloud)
 Cisco Certified Network Associate (was CCNA
 Collaboration)
 Cisco Certified Network Associate (was CCNA Wireless)
 Cisco Certified Network Associate (was Design Associate)
 Cisco Certified Network Professional - Collaboration
 Cisco Certified Network Professional - Data Center
 Cisco Certified Network Professional - Service Provider
 Cisco Certified Network Professional - Enterprise/Design
 Cisco Certified Network Professional - Enterprise/Routing
 and Services
 Cisco Certified Network Professional - Enterprise/Wireless
 Networks
 Cisco Certified Network Professional (CCNP-all)
 Cisco Certified Network Professional - Security
 Cisco Certified Systems Instructor (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 Design Professional
 CIW Web Development Professional
 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 A+
 CompTIA Advanced Security Practitioner
 CompTIA Certified Technical Trainer
 CompTIA Cloud Essentials

CompTIA Cloud+
 CompTIA Cybersecurity Analyst+
 CompTIA Linux+
 CompTIA Mobile App Security+
 CompTIA Mobility+
 CompTIA Network+
 CompTIA Penetration Tester
 CompTIA Project+
 CompTIA Security+
 CompTIA Server+
 CompTIA Storage+
 Convergence Technologies Professional (CTP)
 CSX CyberSecurity Practitioner (CSXP)
 CWNP Certified Wireless Security Professional (CWSP)
 CWNP/Certified Wireless Analysis Professional (CWAP)
 CWNP/Certified Wireless Design Professional (CWDP)
 CWNP/Certified Wireless Network Administrator
 (CWNA)
 CWNP/Certified Wireless Network Trainer (CWNT)
 CWNP/Certified Wireless Network Expert (CWNE)
 CWNP/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 (ECDE)
 EC-Council Certified Encryption Specialist v2(ECES)
 EC-Council Certified Ethical Hacker (CEH)
 EC-Council Certified Incident Handler V2 (ECIH)
 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

Fortinet Network Security Expert (NSE) Level 1
 Fortinet Network Security Expert (NSE) Level 2
 Fortinet Network Security Expert (NSE) Level 3
 Fundamentals of Google AI for Web-Based Machine Learning
 GIAC Assessing and Auditing Wireless Networks
 GIAC Certified Defending Advanced Threats (GDAT)
 GIAC Certified Detection Analyst (GCDA)
 GIAC Certified Enterprise Defender (GCED)
 GIAC Certified Forensics Analyst (GCFA)
 GIAC Certified Forensics Examiner
 GIAC Certified Incident Handler (GCIH)
 GIAC Certified Intrusion Analyst (GCIA)
 GIAC Certified Project Manager (GCPM)
 GIAC Certified Web Application Defender
 GIAC Certified Windows Security Administrator (GCWN)
 GIAC Cloud Forensic Responder (GCFR)
 GIAC Cloud Penetration Tester (GCPN)
 GIAC Cloud Security Automation (GCSA)
 GIAC Cloud Security Essentials (GCLD)
 GIAC Continuous Monitoring Certification (GMON)
 GIAC Critical Controls Certifications (GCCC)
 GIAC Cyber Threat Intelligence (GCTI)
 GIAC Defending Advanced Threats (GDAT)
 GIAC Defensible Security Architecture (GDSA)
 GIAC Enterprise Vulnerability Assessor (GEVA)
 GIAC Exploit Researcher and Advanced Penetration Tester (GWAPT)
 GIAC Information Security Fundamentals (GISF)
 GIAC Information Security Professional (GISP)
 GIAC Mobile Device Security Analyst (GMOB)
 GIAC Network Forensic Analyst (GNFA)
 GIAC Penetration Tester (GPEN)
 GIAC Public Cloud Security (GPCS)
 GIAC Python Coder (GPYC)
 GIAC Reverse Engineering Malware (GREM)
 GIAC Security Essentials (GSEC)
 GIAC Security Leadership (GSLC)
 GIAC Security Operations Certified (GSOC)
 GIAC Security Operations Manager (GSOM)
 GIAC Systems and Network Auditor (GSNA)
 GIAC Web Application Penetration Tester (GWAPT)
 Global Industrial Cyber Security Professional (GICSP)
 Google Cloud - Professional Cloud Architect
 Google Cloud - Professional Data Engineer
 Google Cloud - Professional Network Engineer
 Google Cloud Associate - Cloud Engineer
 Google Cloud DevOps Engineer
 Google Professional Cloud Developer
 Google Professional Machine Learning Engineer

Google Cloud - Professional Cloud Security Engineer
 HDI Customer Service Representative
 HDI Desktop Support Manager
 HDI Desktop Support Technician
 HDI Support Center Analyst
 HDI Support Center Director
 HDI Support Center Manager
 HDI Support Center Team Lead
 HDI Technical Support Professional
 Help Desk Analyst: Tier 1 Support Specialist/Ed2Go
 Help Desk Team Lead/RCCSP
 Hitachi Qualified Professional - Storage Administration
 HP Accredited Solutions Expert (ASE - all)
 HP Accredited Technical Professional (ATP - all)
 HP ASE - Storage Solutions V4
 HP ATP - Hybrid IT Solutions V2
 HP ATP - Storage Solutions V1 /V2
 HP Master Accredited Solutions Expert (MASE - all)
 Huawei Certified Network Professional (all)
 Huawei Certified Network Expert (all)
 IAPP Certified Information Privacy Professional
 HP Master ASE – Hybrid IT Solutions Architect V1
 HP Master ASE - Storage Solutions Architect V3
 Huawei Certified Network Associate (all)
 IBM Advanced Systems Administrator (all)
 IBM AI Engineering Professional Certificate
 IBM Certified Administrator - Cognos Analytics
 IBM Certified Application Developer - Cloud Solutions v3
 IBM Certified Application Developer - DB2 9.7 for Linux, Unix and Windows
 IBM Certified Application Developer (all)
 IBM Certified Data Architect - Big Data
 IBM Certified Data Engineer - Big Data
 IBM Certified Database Administrator - DB2 11.1 for Linux, UNIX and Windows
 IBM Certified Developer - Cognos Analytics
 IBM Certified Professional Developer - Cloud v4
 IBM Certified Professional SRE - Cloud v1
 IBM Cloud Security Engineer Specialty
 IBM Certified Solution Advisor - Blockchain Platform V2
 IBM Certified Solution Advisor - DevOps V2
 IBM Certified Solution Architect – Cloud v4
 IBM Certified Solution Architect - Data Warehouse V1
 IBM Certified Solution Designer (all)
 IBM Certified Specialist - AI Enterprise Workflow V1
 IBM Certified Systems Administrator: WebSphere Application Server Network Deployment
 IBM Certified Systems Administrator (all)
 IBM Cloud Security Engineer Specialty

Information Systems Security Architecture Professional (ISSAP/CISSP)
 Information Systems Security Engineering Professional (ISSEP/CISSP)
 InfoSys Security Management Professional (ISSMP/CISSP)
 ITIL Expert Certification
 ITIL Foundation Certification
 ITIL Intermediate Certification
 ITIL Master Certification
 JBoss Certified Developer (Seam, Persistence, ESB)
 Juniper Networks Certified Internet Associate
 Juniper Networks Certified Internet Expert
 Juniper Networks Certified Internet Professional
 Juniper Networks Certified Internet Specialist
 Linux Foundation Certified Engineer
 Linux Foundation Certified System Administrator
 Linux Professional Institute certification (LPIC- 2)
 Linux Professional Institute certification (LPIC- 3)
 MCSE: Core Infrastructure
 Microsoft Certified Azure Administrator
 Microsoft Certified Azure Administrator Associate
 Microsoft Certified Azure AI Engineer Associate
 Microsoft Certified Azure Data Engineer Associate
 Microsoft Certified Azure Data Scientist Associate
 Microsoft Certified Azure Developer Associate
 Microsoft Certified Azure Fundamentals
 Microsoft Certified Azure Security Engineer Associate
 Microsoft Certified Azure Solutions Architect
 Microsoft Certified Azure Solutions Architect Expert
 Microsoft Certified DevOps Engineer Expert
 Microsoft Certified Professional
 Microsoft Certified Solutions Associate(all)
 Microsoft Certified Power BI Data Analyst Associate
 Microsoft Certified Solutions Associate: SQL 2016 DBA
 Microsoft Certified Solutions Associate: Windows Server 2012/2016
 Microsoft Certified Solutions Developer (MCSD)
 Microsoft Certified Dynamics 365 Associate(all business applications)
 Microsoft Certified Solutions Expert: Data Platform
 Microsoft Certified Solutions Expert: Desktop Infrastructure
 Microsoft Certified Trainer (MCT)
 Microsoft MTA: Windows OS
 Microsoft Office Specialist
 Mile2 Certified Cloud Security Officer(C)CSO)
 Mongo DB Certified DBA
 Mongo DB Certified Developer
 MongoDB Certified Developer Associate

NetApp Certified Data Administrator, ONTAP (NCDA)
 NetApp Certified Hybrid Cloud Architect
 NetApp Certified Implementation Engineer (NCIE)
 NetApp Certified Storage Associate – Hybrid Cloud
 NetScout/nGenius Certified Analyst (nCA)
 NetScout/nGenius Certified Associate (nCA)
 NetScout/nGenius Certified Expert (nCE)
 NetScout/nGenius Certified Specialist (nCS)
 Novell Certified Administrator (CNA)
 Novell Certified Novell Engineer (CNE)
 Novell Certified Instructor
 Novell Certified Linux Engineer (Novell CLE)
 Novell Certified Linux Professional (Novell CLP)
 Novell Identity Manager Administrator
 Offensive Security Defense Analyst (OSDA)
 Offensive Security Certified Expert
 Offensive Security Experienced Penetration Tester
 Offensive Security Exploit Developer (OSED)
 Offensive Security Exploitation Expert (OSEE)
 Offensive Security Professional (OSCP)
 Offensive Security Web Assessor (OSWA)
 Offensive Security Web Expert (OSWE)
 Offensive Security Wireless Professional (OSWP)
 Okta Certified Administrator
 Okta Certified Consultant
 Okta Certified Developer
 Okta Certified Professional
 Open Group Certified Architect (Open CA)
 Open Group Certified IT Specialist (Open CITS)
 Oracle Business Intelligence Foundation Suite 11G Certified Implementation Specialist
 Oracle Certified Associate - DBA (OCA)
 Oracle Certified Associate - Java SE 8 Programmer
 Oracle Certified Associate - MySQL 5
 Oracle Certified Associate - WebLogic Server 12c Admin
 Oracle Certified Expert - Java SE Developer
 Oracle Certified Expert - MySQL 5.1 Cluster Database Administrator
 Oracle Certified Expert - Siebel CRM Business Analyst
 Oracle Certified Expert - Solaris 10 Network Administrator for Solaris
 Oracle Certified Master - DBA (OCM)
 Oracle Certified Master - Java EE Enterprise Architect
 Oracle Certified Master - Java SE Developer
 Oracle Certified Professional - Advanced PL/SQL Developer
 Oracle Certified Professional - Application Server Administrator

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 Decisioning Consultant
 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 (PfMP)
 PMI Professional in Business Analysis (PMI-PBA)
 PMI Program Management Professional (PgMP)
 PMI Project Management Professional (PMP)
 PMI Risk Management Professional (PMI-RMP)
 Prince2 Foundation
 Prince2 Practitioner
 Professional Certified Investigator
 Professional in Project Management (GAQM)
 Qlik Sense Business Analyst
 Qlik Sense Data Architect
 Qualified Information Security Professional Q/ISP
 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 (RHCSA)
 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 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: AI 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
 Virtualization 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

IT CERTIFICATIONS PAY SUMMARY – Through October 1, 2023

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
3 months & 12 months**

(629 certifications, data through 1/1/2024)

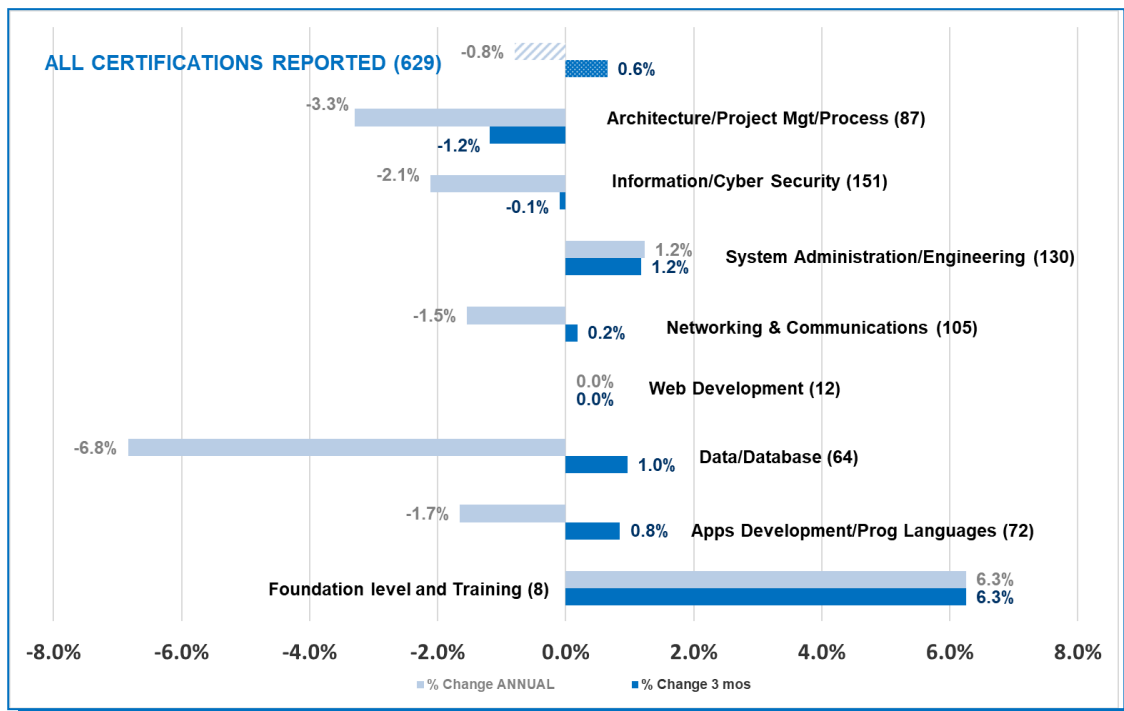


Figure 5

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)

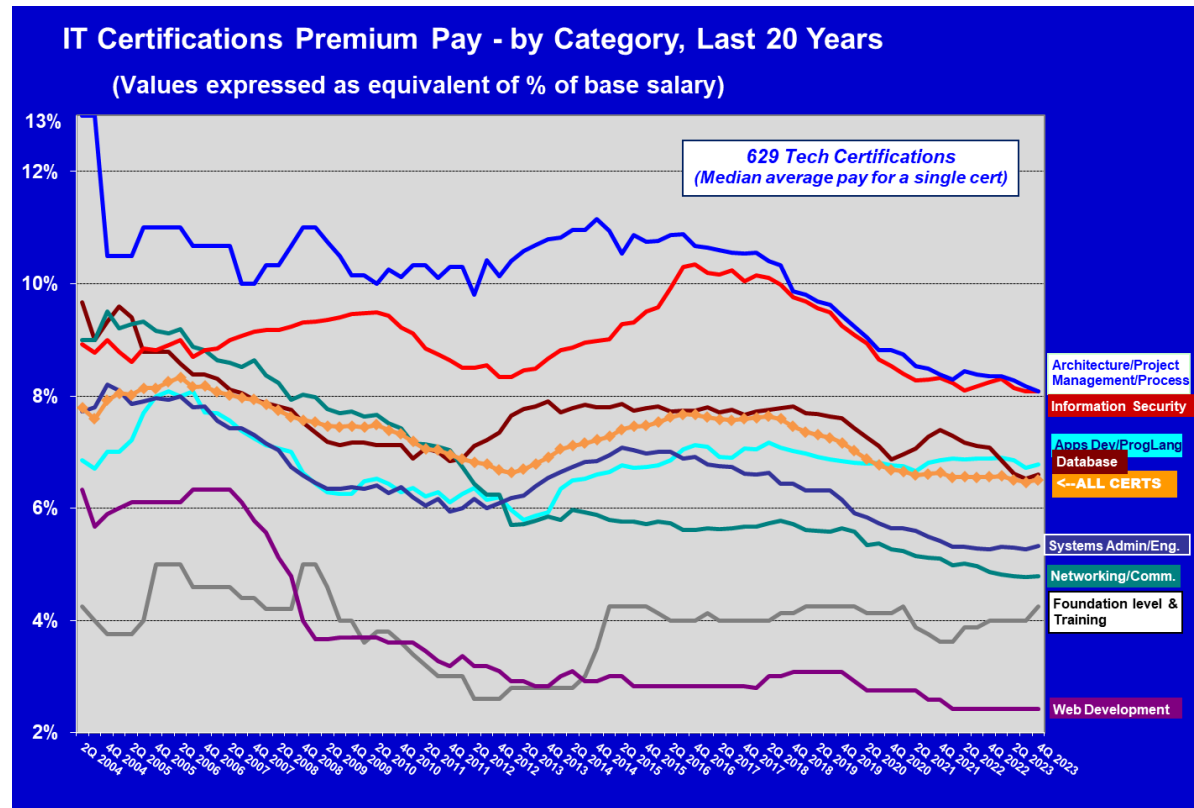
IT CERTIFICATIONS CATEGORIES	# of certs surveyed	Change in Average Premium Pay by Category						4 yrs
		% Change 3 mos	% Change 6 mos	% Change ANNUAL	% Change 2 yrs	% Change 3 yrs	% Change	
Training and Beginner/Foundation level	8	6.3%	6.3%	6.3%	17.2%	3.0%	0.0%	
Apps Development/Prog. Languages	72	0.8%	-1.2%	-1.7%	-1.2%	0.3%	-0.9%	
Data/Database	64	1.0%	-0.2%	-6.8%	-10.9%	-4.0%	-13.2%	
Web Development	12	0.0%	0.0%	0.0%	-6.4%	-12.1%	-21.6%	
Networking & Communications	105	0.2%	0.0%	-1.5%	-6.1%	-9.2%	-15.1%	
System Administration/Engineering	130	1.2%	0.7%	1.2%	-1.6%	-5.4%	-13.3%	
Information/Cyber Security	151	-0.1%	-0.8%	-2.1%	-3.0%	-5.3%	-12.7%	
Architecture/Project Management/Process	87	-1.2%	-2.4%	-3.3%	-3.7%	-8.3%	-14.3%	
ALL CERTIFICATIONS REPORTED	629	0.65%	-0.03%	-0.79%	-1.87%	-2.65%	-9.16%	

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.

1.	GIAC Security Leadership	6.[Tie] cont'd.	7.[Tie] cont'd.
2.	GIAC Strategic Planning, Policy, and Leadership	CompTIA Advanced Security Practitioner	Check Point Certified Security Expert
3.	Certificate of Cloud Security Knowledge	EC-Council Certified Encryption Specialist v2	Cisco Certified Network Professional - Security
4.[Tie]	Certified Business Process Leader	GIAC Certified Enterprise Defender	CompTIA Cybersecurity Analyst+
	Certified in the Governance of Enterprise IT	GIAC Exploit Researcher and Advanced Penetration Tester	EC-Council Certified DevSecOps Engineer
	PMI Program Management Professional	Google Cloud - Professional Cloud Architect	EC-Council Certified Ethical Hacker
	Zachman Certified - Enterprise Architect	InfoSys Security Architecture Professional (ISSAP/CISSP)	EC-Council Certified Penetration Testing Professional
5.[Tie]	AWS Certified Security - Specialty	InfoSys Security Engineering Professional (ISSEP/CISSP)	Fortinet Network Security Expert--Level 3
	Certified Professional Scrum Product Owner	InfoSys Security Management Professional (ISSMP/CISSP)	GIAC Cloud Forensic Responder
	Certified Secure Software Lifecycle Professional	Microsoft Certified: Azure AI Engineer Associate	GIAC Defending Advanced Threats
	Certified Software Quality Manager	Mile2 Certified Cloud Security Officer	GIAC Experienced Cyber Security
	Check Point Certified Security Master	Oracle Certified Master - DBA	GIAC Experienced Incident Handler
	CyberSecurity Forensic Analyst	Pegasystems Certified Lead System	GIAC Penetration Tester
	GIAC Security Operations Manager	PMI Project Management Professional	Google Cloud - Professional Cloud Security Engineer
	GIAC Web Application Penetration Tester	PMI Risk Management Professional	IBM Certified Data Engineer - Big Data
	Offensive Security Exploitation Expert	7.[Tie] Certificate in Information Security Management Principles	Okta Certified Professional
	Okta Certified Developer	Certificate of Cloud Auditing Knowledge	Open Group Certified Architect
	Salesforce Certified Technical Architect	Certificate of Cloud Auditing Knowledge	Oracle Certified Master - Java SE Developer
	Six Sigma Master Black Belt	Certified Business Continuity Manager/ISO 22301	Pegasystems Certified Data Scientist
	TOGAF 9 Certified	Certified Business Continuity Professional	Pegasystems Certified Senior Systems Architect
6.[Tie]	AWS Certified DevOps Engineer - Professional	Certified Business Process Professional	Pivotal Application Architect
	Certified Artificial Intelligence Scientist	Certified Cloud Security Professional	PMI Portfolio Management Professional
	Certified Forensic Computer Examiner	Certified Computer Examiner	Red Hat Certified Specialist in Business Process Design
	Certified in Governance, Risk and Compliance	Certified Data Privacy Solutions Engineer	SAFe Certification
	Certified Information Privacy Manager- all countries	Certified Enterprise Coach (Scrum/Agile)	Six Sigma Black Belt
	Certified Information Privacy Technologist- all countries	Certified Fraud Examiner	Systems Security Certified Practitioner (SSCP)
	Certified Information Security Manager	Certified in Risk and Information Systems Control	Teradata 14 Certified Master
	Certified Information Systems Security Professional	Certified Information Systems Auditor	TIBCO Certified Architect
	Certified ScrumMaster - Advanced	Certified Information Systems Risk Manager/Mile2	
		Certified Kubernetes Security Specialist	
		Certified Penetration Testing Engineer	
		Certified Scrum Product Owner - Advanced	
		Certified Scrum Professional - ScrumMaster	
		Certified ScrumMaster	

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 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.*

IT CERTIFICATION Gainers

Info/Cyber Security certifications

Certified Information Privacy Manager- all countries
 Certified Information Privacy Professional - all countries
 Certified Information Privacy Technologist- all countries
 Certified Information Systems Security Professional
 Check Point Certified Security Master
 Cisco Certified Network Professional - Security
 GIAC Certified Enterprise Defender
 GIAC Certified Incident Handler
 GIAC Defending Advanced Threats
 GIAC Defensible Security Architect
 GIAC Security Operations Certified
 Google Cloud - Professional Cloud Security Engineer
 InfoSys Security Architecture Professional (ISSAP/CISSP)
 Microsoft Certified: Azure Security Engineer Associate
 Systems Security Certified Practitioner

Systems Administration certifications

Citrix Certified Expert - Networking
 Citrix Certified Professional-Virtualization
 IBM Certified Solution Architect – Cloud v4
 Microsoft Certified Azure Solutions Architect
 Microsoft Certified Solutions Associate(all)
 Red Hat Certified Specialist in Cloud Infrastructure
 VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Deployment
 VMware Certified Advanced Professional 6/7 - Cloud Mgt and Automation Design
 VMware Certified Professional - Digital Workspace
 VMware Certified Professional 6 - Data Center Virtualization
 VMware Certified Professional 6/7 - Cloud Mgt and Automation
 VMware Certified Technical Associate - Data Center Virtualization

Application Development/Programming Languages certifications

IBM Certified Application Developer - Cloud Solutions v3
 IBM Certified Application Developer (all)
 IBM Certified Solution Designer (all)
 Oracle Certified Associate - Java SE 8 Programmer
 Oracle Certified Expert - Java SE Developer (all)
 Oracle Certified Master - Java SE Developer
 Oracle Cloud Platform Application Integration Certified Professional
 Pegasystems Certified Data Scientist
 Pegasystems Certified Lead System Architect
 Red Hat Certified Enterprise Application Developer

Networking & Communications certifications

Cisco Certified Network Associate - Data Center
 Cisco Certified Network Associate (was CCNA Cloud)
 CWNP/Certified Wireless Network Expert
 CWNP/Certified Wireless Network Trainer
 CWNP/Certified Wireless Technology Specialist
 Huawei Certified Network Associate (all)
 Huawei Certified Network Expert (all)
 Huawei Certified Network Professional(all)
 NetScout/nGenius Certified Analyst
 NetScout/nGenius Certified Expert
 NetScout/nGenius Certified Specialist
 SolarWinds Certified Professional

Architecture, Project Management, and Process Certifications

ITIL Foundation Certification
 Microsoft Certified: Azure AI Engineer Associate
 PMI Certified Associate in Project Management
 PMI Portfolio Management Professional
 PMI Professional in Business Analysis
 PMI Project Management Professional
 PMI Risk Management Professional
 SAS® Certified Specialist: Visual Business Analytics
 Six Sigma Yellow Belt

Data/Database certifications

IBM Certified Data Architect - Big Data
 IBM Certified Specialist - AI Enterprise Workflow V1
 Microsoft Certified Solutions Expert: Data Platform
 Oracle Certified Associate - DBA
 Oracle Certified Master - DBA
 Oracle Certified Professional - DBA
 Oracle Certified Professional - MySQL 5.x/8.x Database Administrator
 SAS Certified Advanced Analytics Professional Using SAS 9
 Tableau Desktop Certified Professional
 Tableau Server Certified Professional

Source: Foote Partners [IT Skills & Certifications Pay Index™](#), 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.

TECH CERTIFICATIONS Losers

Application Development/Programming Languages

Adobe/Magento 2 Certified Developer-Associate
Adobe/Magento 2 Certified Developer-Professional
AWS Certified Developer - Associate
Microsoft Certified Solutions Developer (MCSD)
Microsoft Certified: Azure Developer Associate
Salesforce Certified Systems Architect

Data/Database certifications

AWS Certified Data Analytics – Specialty.
MongoDB Certified DBA
MongoDB Certified Developer
MongoDB Certified Developer Associate
Teradata 14 Certified Associate
Teradata 14 Certified Database Developer

Architecture, Project Management, and Process Certifications

Certified Scrum Developer
Certified Scrum Professional - ScrumMaster
Certified Scrum Team Coach
CompTIA Cloud+
HDI Support Center Director
HDI Support Center Manager
HDI Support Center Team Lead
Microsoft Certified: DevOps Engineer Expert
Microsoft MTA: Windows OS
SAFe Certification
Salesforce Certified Data Architect
Salesforce Certified Integration Architecture Designer

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™](#), 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 Index™ 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):

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

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)

IT CERTIFICATIONS ANALYSIS – Winners, cont'd.

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)

16. **Certificate in Information Security Management Principles (CISMP)**
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

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

TRENDS 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.

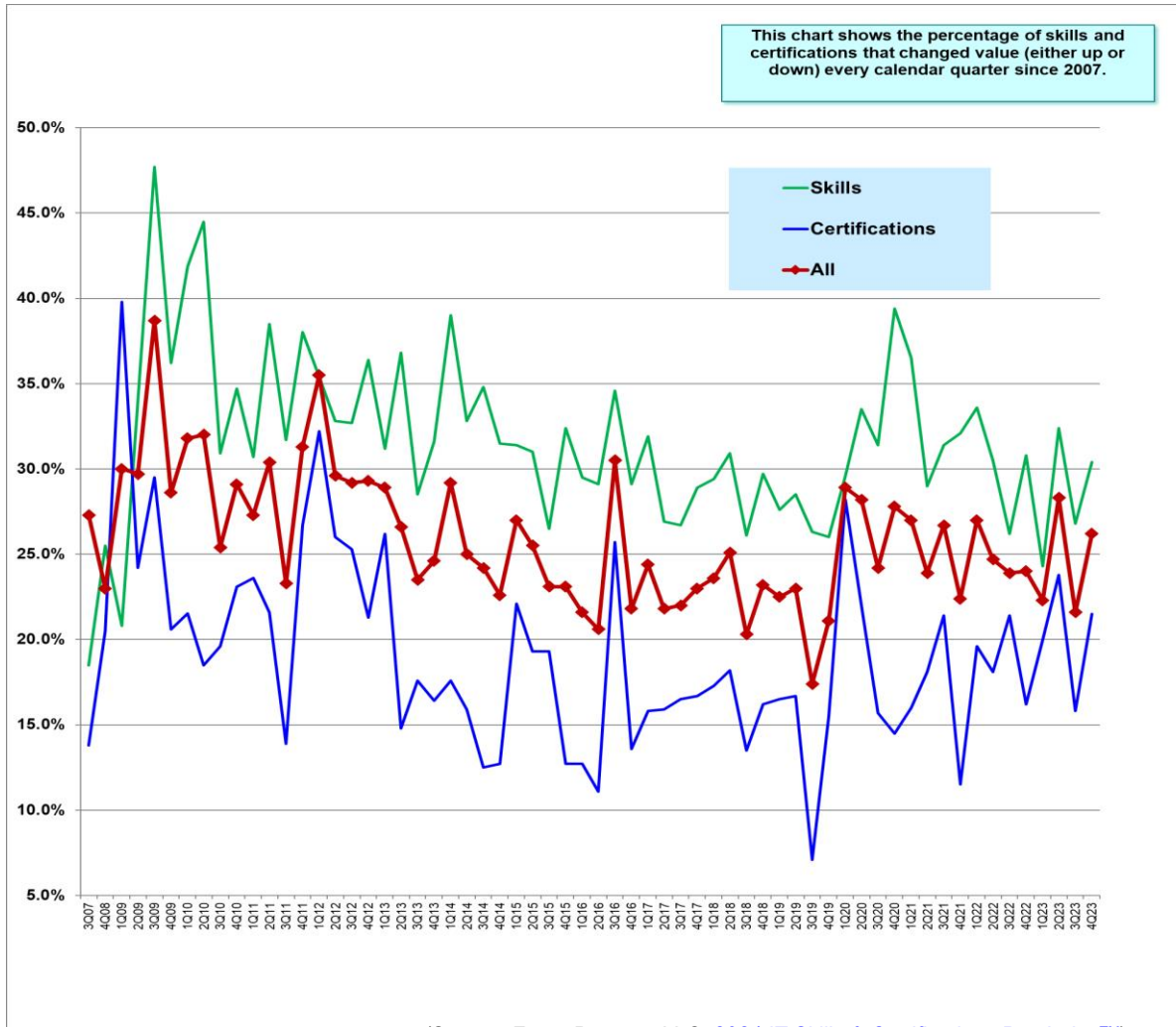
Similar to jobs, IT skills have broad skills categories that can be tracked (e.g., security, networking, systems, database, applications development). But unlike jobs, skills pay can be pinpointed to hundreds of niches and specialization. Also, unlike most job trends analyses, within skills categories 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



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

Recent IT skills and certifications volatility trends

QUARTERLY SUMMARY

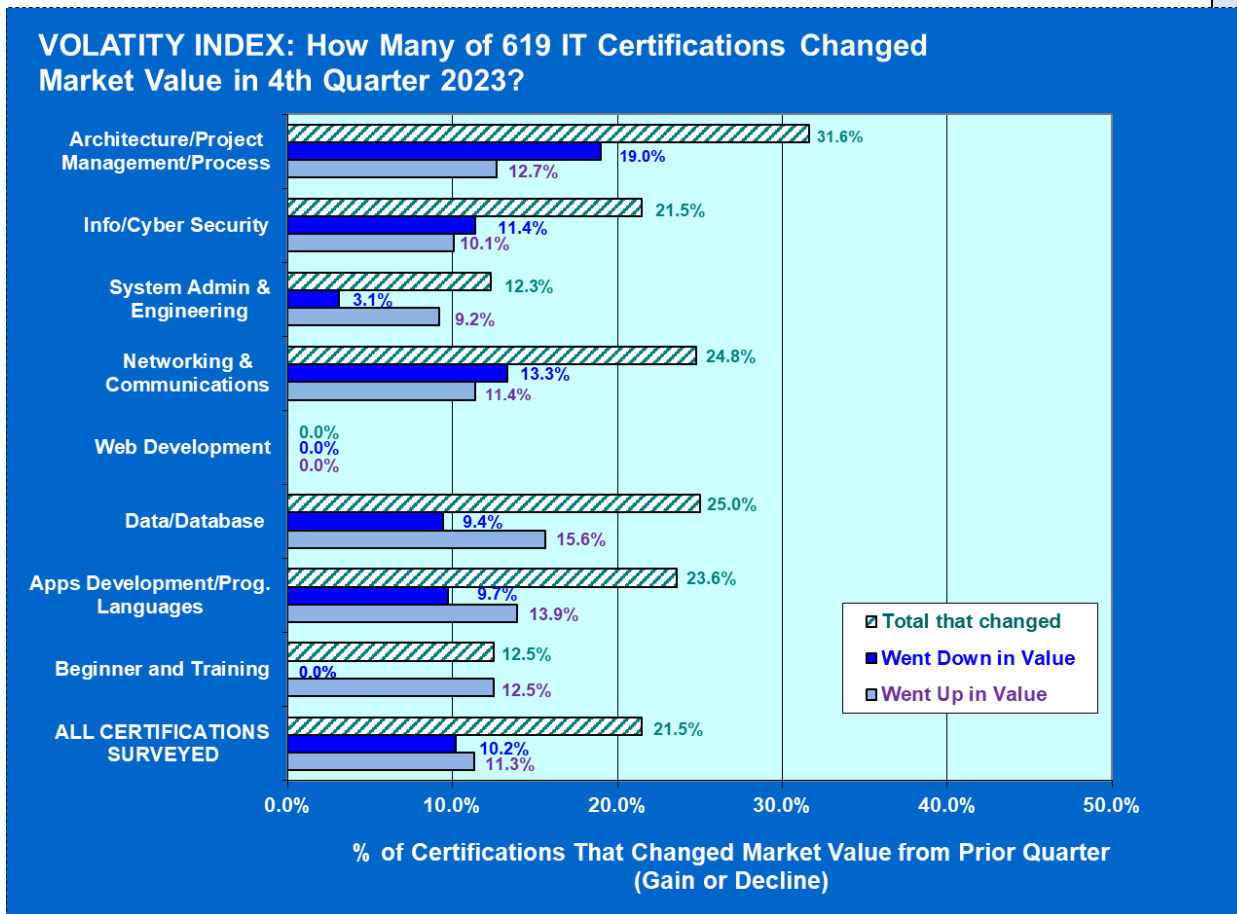
In the **4th Quarter 2023**, 26.2% of skills and certifications (344 of 1,313) recorded a change in cash pay premium, considerably higher than 21.6% the prior quarter in which only 280 of 1,296 changed market value. This is also higher than the 24.8% average quarterly volatility over the last two years.

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)

VOLATILITY HIGHLIGHTS IT Certifications – 4th Quarter 2023 datasets



IT Skills and Certifications Volatility Index™ 4Q 2023 data edition findings: Tech Certifications

Certifications Volatility Highlights

Among all 619 certifications reported in the prior quarter, highest quarterly volatility ($\geq 15\%$) 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
- Networking & Communication
- Info/Cybersecurity

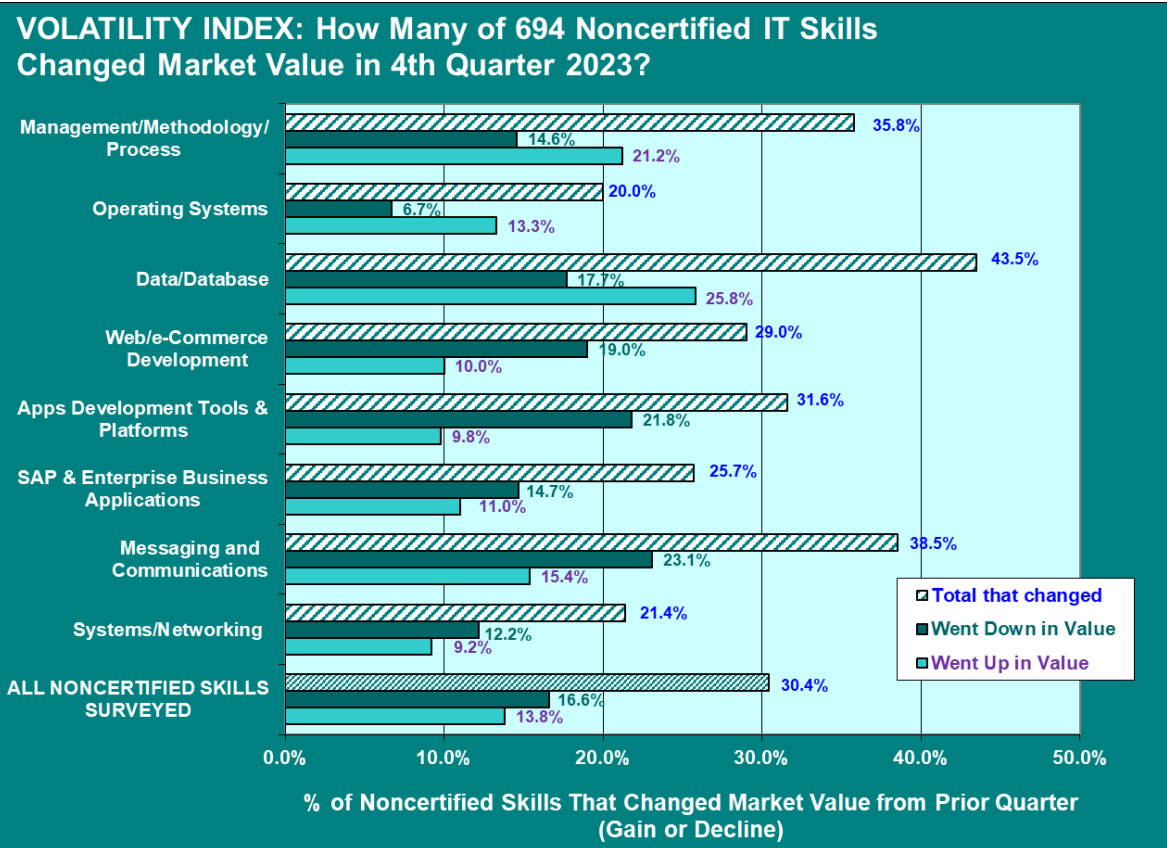
Within segments, notable upward volatility (value gains) occurred most in these:

- 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)

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

VOLATILITY HIGHLIGHTS Non-certified IT Skills – 4th Quarter 2023 datasets



(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.

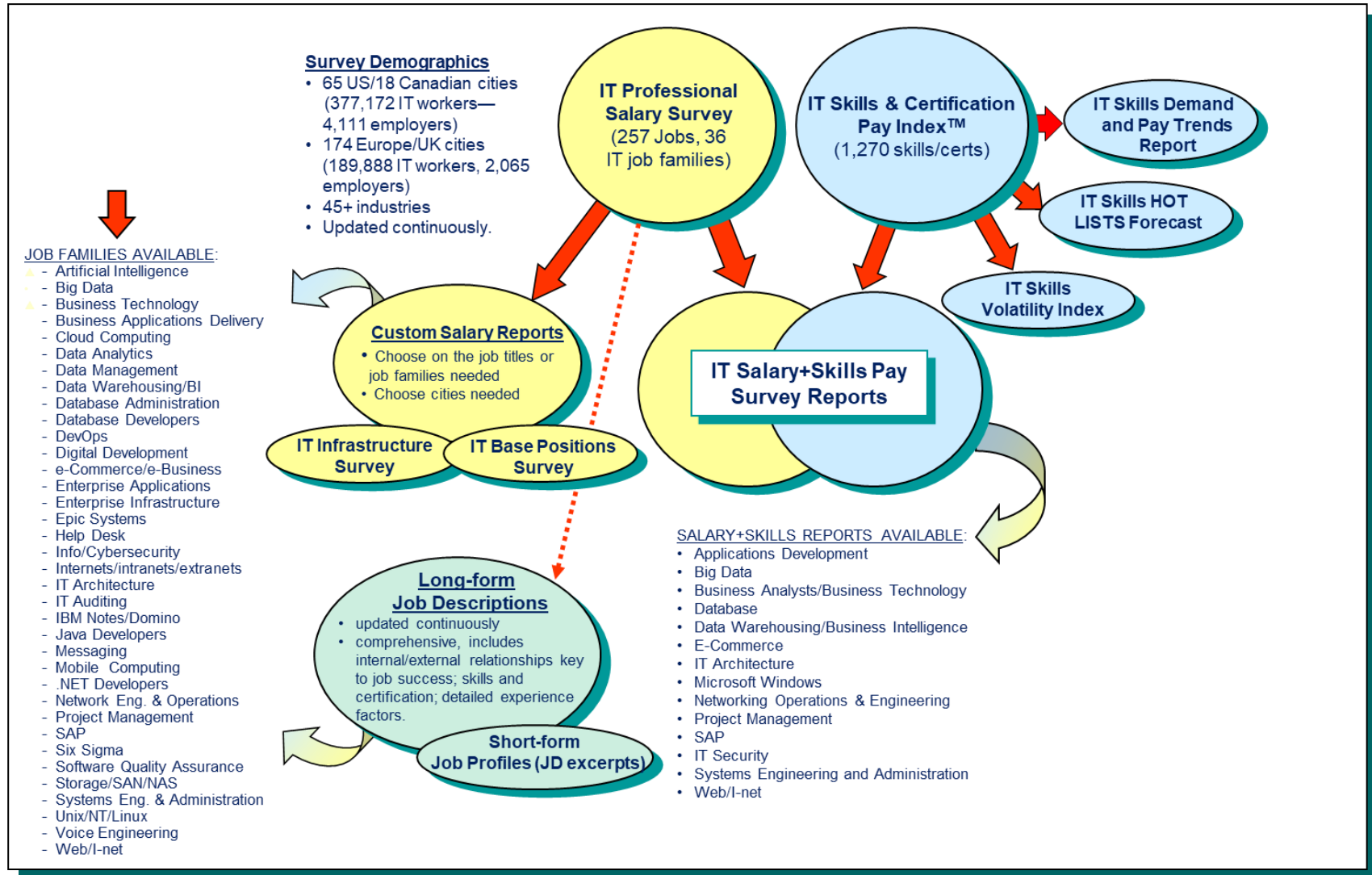
Demographics of the participating organizations for our latest update are as follows, measured most appropriately for the type of business, by revenues, assets, total premiums and operating budgets:

- 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



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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