

# { IT Skills Required for Business Innovation



 Synoptek®

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## What Skills are needed in today's IT landscape?

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# People, Process, Technology

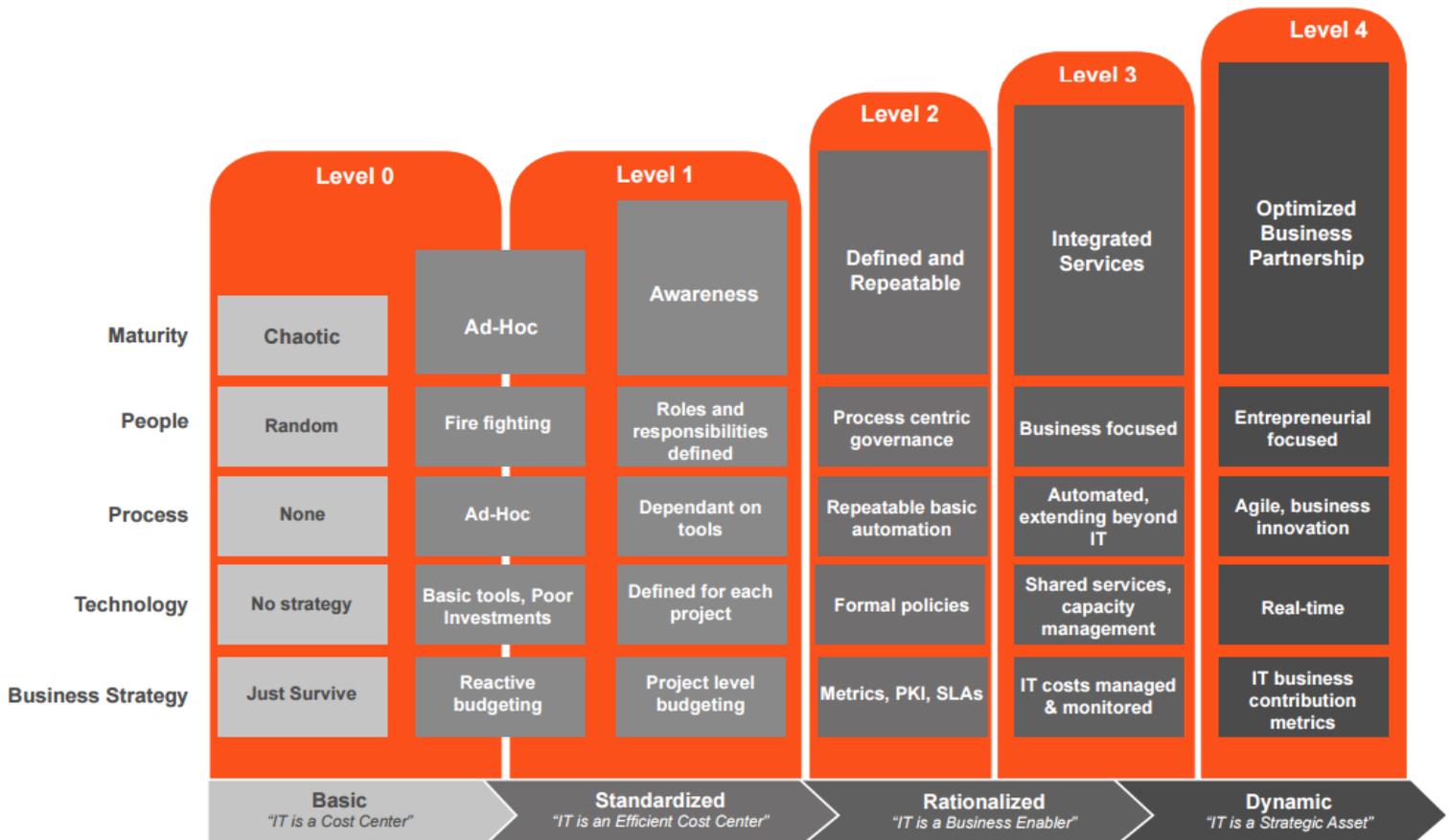
## Intro: The role of IT in Business Transformation

74% of organizations report technology as being a primary factor in reaching business objectives, while only 2% cite technology as being a non-factor. IT is being recognized by business leaders as a key contributor to revenue growth and improving customer service. A firm's ability to adapt to market and customer driven changes is increasingly constrained by their IT department's ability to adopt new technology solutions to bear more quickly and support them. Implementing new systems or work processes to enhance efficiencies was a top business priority for firms in 2017. Hiring skilled IT workers to properly configure, manage, and use these new technologies to drive strategic goals is still a challenge for most mid-size firms.

The most innovative and profitable organizations recognize the importance of establishing strategic IT maturity goals. As an organization achieves

a higher level of IT maturity and stabilizes at it, user satisfaction and business productivity will increase. It is important to note, however, any change is challenging and moving from one level of IT maturity to the next is no exception. Making the transformation from "IT as a cost center" to "IT as a strategic asset", requires organizations to do new things, manage technology in new ways, learn new skills and processes, and sometimes "unlearn" the ones they replace.

The role of IT is not a separate matter from people. The two go hand-in-hand, needing each other to reach higher levels of business maturity than either could single-handedly. And with the evolving nature of technology and digital transformation, so is the nature of IT skills. This whitepaper will look at the top business priorities and the IT skills required to achieve them.



# Key Findings Summary – lack of IT skills overview

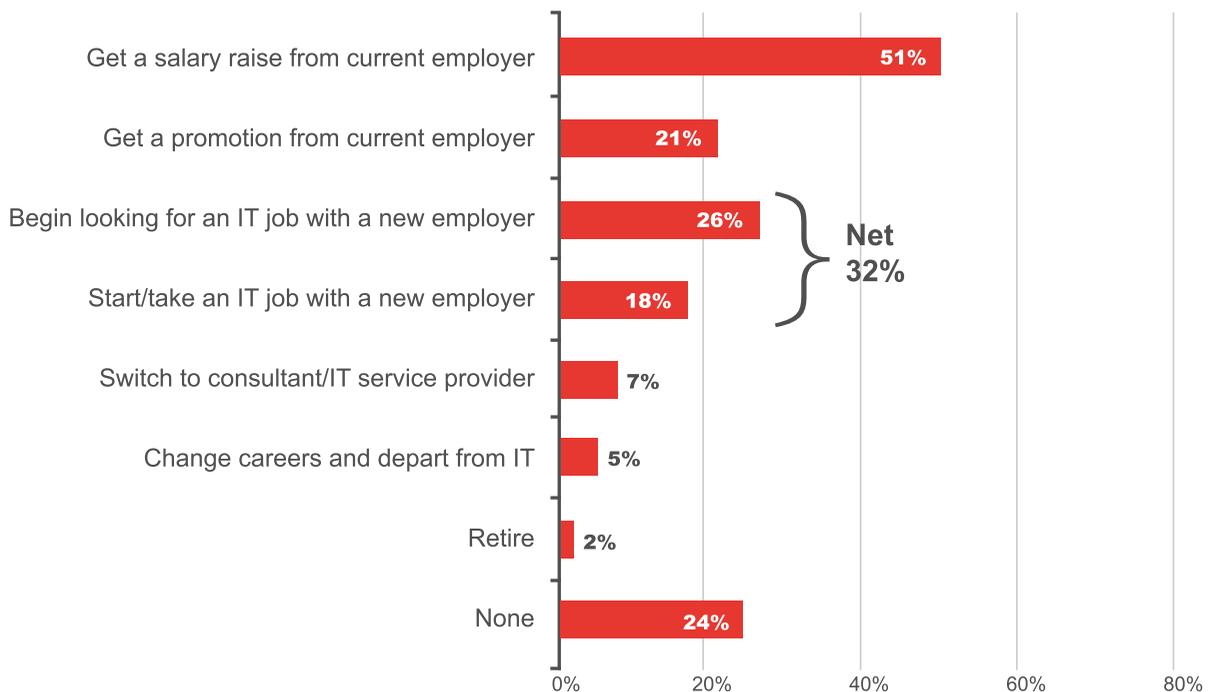
## DEMAND FOR IT TALENT EXCEEDS CURRENT SUPPLY

According to CompTIA, 41% of technology firms across the United States report having position openings and are actively recruiting candidates. Among hiring qualified workers, more than half indicate it's due to growth, while a similar percentage indicate the need for new tech skills in areas such as software development, IoT, or data. IT talent does not stay for long. 38% of firms report replacement hires, which is not surprising during a tech boom economy. IT workers confidence is at an all time high and this is driving many to pursue new opportunities.

## Top 6 Factors Contributing to a More Challenging Hiring Landscape:

1. Finding workers with expertise in emerging technology
2. Competing with other firms for talent
3. Finding workers with the right soft skills
4. Rising salary expectations
5. Insufficient pool of talent in a given region
6. Unemployment rate for skilled IT personnel is 2.5% (Dice)

## IT Career Changes Expected in 2018



## INDEX OF IT SKILLS IMPORTANCE BY FIRM SIZE

**How to Read an Index:** The higher the number, the greater the interest relative to the overall score. A score of 90 means the respondent is 10% less likely than average to rate the IT skill as important. A score of 110 means the respondent is 10% more likely than average to rate the IT skill as important.

Index of IT Skills Rated Very Important	Micro Firms	Small Firms	Medium Firms	Large Firms	IT Firms	Non-IT Firms
<b>Infrastructure / En-points</b>						
Networks / Infrastructure(LANs, WANs, etc)	74	108	116	110	105	98
Server / data center management	79	107	110	112	102	99
Storage / data back-up	90	107	104	102	104	99
Help Desk / IT support	79	86	128	116	110	97
Telecommunucations - VoIP, UC, etc.	74	87	131	117	78	108
Printers, copiers,multifunction devices	89	114	112	86	67	112
Mobile phones / smartphones	115	89	104	86	106	98
Tablets	81	81	113	136	102	99
A/V - projectors, digital displays, etc.	58	59	158	143	68	111
<b>Informaton</b>						
Security / Cybersecurity	83	86	112	127	108	97
Database / Information management	92	94	98	120	110	97
Customer relationship management (CRM)	105	98	94	102	120	93
Data analytics / Business intelligence	90	74	97	149	112	96
Enterprise resource planning (ERP)	46	81	111	189	113	95
"Big data" (Hadoop, NoSQL, etc.)	66	77	124	151	164	77
<b>Applications / Internet</b>						
Virtualization	69	85	113	149	122	92
Application development / programming	87	81	109	132	141	85
SQL	80	89	123	118	132	89
Web design / development	106	96	101	94	129	90
HTML	104	89	112	92	116	94
Web infrastructure	86	106	108	105	134	88
Search engine optimization (SEO)	123	105	77	87	126	91
Sharepoint	46	74	130	177	99	100
Java	75	50	136	156	141	85
Javascript	97	46	134	129	144	84
Mobile app mgt, development, etc.	89	112	95	108	135	88
Linux	76	90	122	122	150	82
Cloud computing - SaaS related	97	94	98	113	172	74
Cloud computing - IaaS or PaaS related	109	84	99	107	146	84
Apple devices / OS / iOS	123	77	101	92	120	93
PHP	115	59	123	100	160	78

# Key Findings Summary – lack of IT skills overview

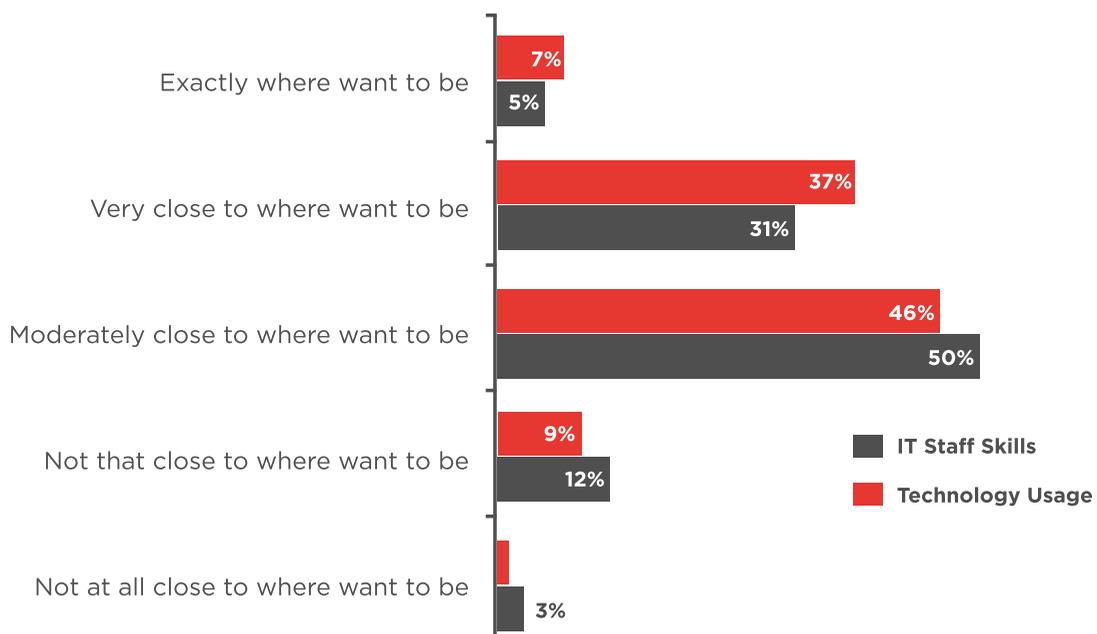
## HOW LACK OF IT SKILLS IMPACTS YOUR BUSINESS

As technology evolves, new skills are brought to the playing field and businesses that seek to innovate faster than their competitors are scrambling to find the right qualified talent. Gaps in technology skills can hold a business back from achieving further success. Negative business impacts are also a condition suffered by 94% of organizations of all sizes that lack the IT talent required to keep up. Top areas influenced by shortcomings in IT skills are: staff productivity (52%), customer service & engagement (38%), and security (32%). Smaller companies report feeling the punch in profitability more so than larger firms (23% vs. 15%).

## Way Skills Gap Negatively Impact Business



## Majority of Organizations Want to Improve their IT Staff's Skills



# The many paths of Cloud and the skills required

Just as the experts predicted: Cloud computing is dominating enterprise IT. Nearly all organizations (95%) are using cloud, and 85% have a strategy to use multiple clouds. By 2020, corporate “no-cloud” policies will be as rare as “no internet” policies are today. “Cloud first” strategies are now ubiquitous in the enterprise.

Why? Because the cloud delivers greater flexibility and agility. It increases IT performance and scalability, while enabling new efficiencies and cost savings. And the cloud provides a robust platform with security and compliance that’s better in most cases than on-premises standards.

But what if these kinds of promises aren’t being realized from your cloud deployment strategy? What if you can’t seem to get your cloud to deliver? You’re not alone.

## LACK OF CLOUD SKILLS COST FIRMS MILLIONS REPORTS

In 2017, Rackspace and the London School of Economics and Political Science, conducted a study

that interviewed 1,900 IT and business executives on the enterprise cloud expertise gap. The study found that on average, missing cloud expertise is costing firms \$258,188,279 annually. The reality is, when you consume something as a service without expert oversight, it’s easy to abuse it, like forgetting to turn off the light after you leave the room.

### The cloud skills gap reveals itself in three key ways:

- Inability to assess current environment accurately (34%)
- Lack of Migration and project management experience (35%)
- Inability to secure the Cloud (35%)

Given the rapid pace of cloud change and innovation, it’s difficult for enterprises to get ahead of the skills gap problem, even as it becomes increasingly critical to do so.

1. **Database & Big Data** - Big data systems - delivered through the cloud - are starting to tap into this potential resource and the sector is predicted to grow at a rate of 60% annually, report IDC.
2. **Application Security** - With only 2% of cloud applications ready for EU’s General Data Protection Regulation (GDPR), there’s a massive amount of work ahead for cloud security professionals.
3. **Enterprise Cloud Migration** - Businesses require cloud professionals with knowledge of their chosen cloud platform to oversee migration projects in an organized and secure way.
4. **Containers** - 81% of businesses suggested that they will increase use of containers in the near future, according to a survey from Robin Systems.
5. **Enterprise Application Development** - As more businesses launch public and private cloud initiatives, the importance of application development and testing in the cloud is increasing.



# The many paths of Cloud and the skills required

## SPECIALIZED CLOUD PROVIDER SKILLS IN HIGH DEMAND & COSTLY

Organizations also have a growing need for more specialized cloud computing skills, such as those related to a specific provider or platform.

For example, with Amazon Web Services as the leading public cloud service provider, AWS-specific skills remain in high demand. AWS is in a league of its own with over 30% market share (IaaS, PaaS, Hosted Private Cloud - Q1 2017). Indeed.com reports more than 25,000 unfilled positions in the United States related to AWS skills. Hiring specialized AWS talent in-house to migrate and manage your AWS environment can be very expensive. The average salary of AWS-certified IT professionals is 27.5% higher than the norm, making on average \$113,932 a year. AWS Certified Solutions Architect (Associate) is the third highest paying certification in the United States and Canada.

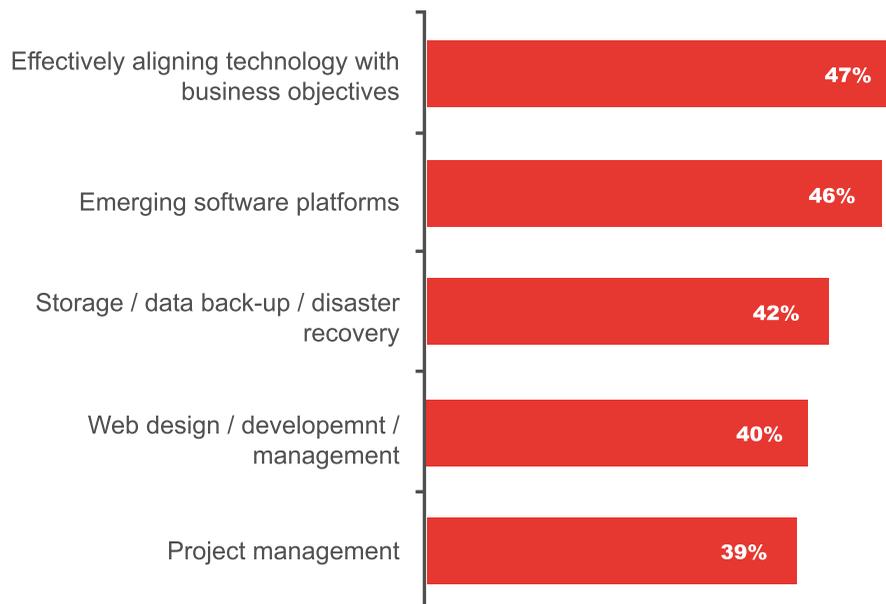
As Microsoft continues to evolve its public cloud offering, the number of jobs related to Azure has risen 40% year over year, according to Dice.com. The average salary for a certified Microsoft Azure

Engineer ranges from \$87,228 to \$121,201 per year. Since 2010, Microsoft has played an aggressive game of catch up, growing twice as fast as AWS (as of October 2017). One reason for the shift is that longtime users of Microsoft's ubiquitous software and servers are sticking with the company they've trusted for decades, especially now that Azure cloud is ready for enterprise use.

## HYBRID CLOUD CALLS FOR UNIQUE SKILLS

The availability of relevant skills, especially at the architectural level, is a major challenge when it comes to private and hybrid cloud implementations. A hybrid cloud plan requires expertise in infrastructure configuration, network architecture, application design, and business process automation. In addition to those skills, firms must check and test the compatibility between the private and public cloud platforms. Furthermore, understanding of security and compliance, bandwidth and availability, and SLAs should also be baked into a firm's hybrid plan. Based on these skill requirements and the IT staff at your disposal, it may make more sense to look for external support from a 3rd party firm.

## Top Digital Business Transformation Skills Gap Concerns



# Cyber Security Specializations – the growing skills chasm

Cisco estimates that there are currently one million open cybersecurity jobs worldwide. Why are there so many jobs unfilled? Today, firms require unique cybersecurity professionals whom combine technical skills specific to security as well as an understanding of how to mitigate business risk and adhere to their industry’s compliance regulations. Through hundreds of breaches over the past 12 months, the main lesson we should learn is – effective cybersecurity takes more than just technology, it takes qualified people.

## CYBERS CYBERSECURITY SUPPLY & DEMAND FINDINGS (SOURCE: CYBERSEEK) :

**Total Cybersecurity Job Openings** – 285,681

**Supply / Demand Ratio of Cybersecurity Workers** – 2:6  
(the national avg for all jobs in the US is 5:6)

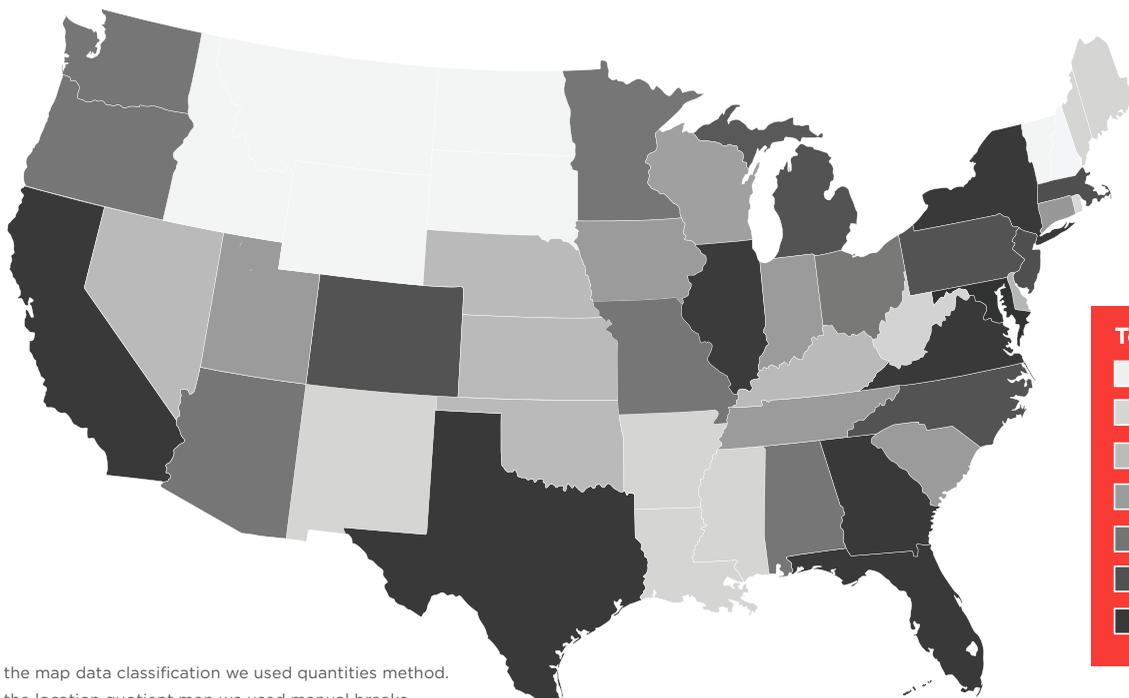
### Highest Certification Demands

(source: Global Knowledge Study)–

Certified Information Security Manager (CISM) - \$128,156 annual salary

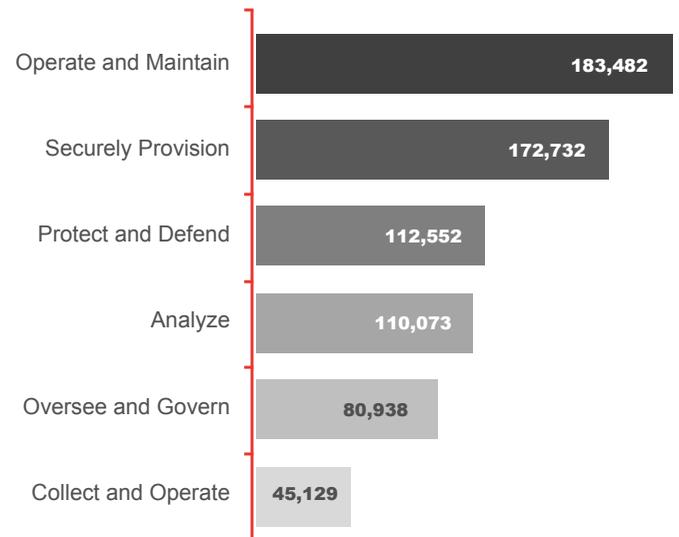
Certified Information Systems Security Professional (CISSP) - \$121,729

## HEATMAP OF CYBERSECURITY JOB OPENINGS BY STATE (CYBESEEK.ORG DECEMBER 2017):



For the map data classification we used quantities method.  
For the location quotient map we used manual breaks

## Job Openings by Niche Cybersecurity Workforce framework Category



### Total job postings

- 123 - 595
- 596 - 1,417
- 1,418 - 1,765
- 1,766 - 3,016
- 3,017 - 7,059
- 7,060 - 10,405
- 10,406 - 33,454

# Cyber Security Specializations – the growing skills chasm

## WHAT CYBERSECURITY SKILLS ARE CRUCIAL FOR FIRMS TO OBTAIN?

The following high-demand cybersecurity skills are essential for firms to obtain in order to prevent breaches that could expose them to data and financial loss.

### CLOUD SECURITY:

According to ESG research, 33% of firms say they have a shortage of Cloud security specialists. The demand for Cloud Security specialists has exploded due to rapid Cloud adoption. These specialists help prevent attacks related to: compromised credentials, hacked interfaces and APIs, exploited system vulnerabilities, account hijacking, malicious insiders, DDoS attacks, and shared technology risks. Additionally, if a firm is using a Public Cloud provider, such as AWS or Azure, a team of Cloud Security specialists is required to configure and manage the shared security responsibilities.

### RISK MITIGATION:

This skill involves monitoring risks that have already been identified, discovering new ones, and assessing the risks of a project, such as a cloud migration. To develop proper risk mitigation procedures, a firm must possess a specialist that is able to audit 3rd party vendors and create a process of actions that will effectively decrease threats to the business. Risk Mitigation as a skill represented 40% of the skill gap reported by firms of all sizes.

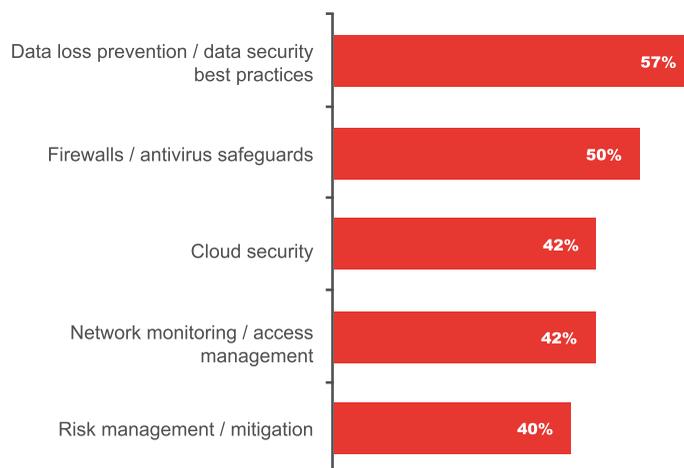
### NETWORK MONITORING AND ACCESS MANAGEMENT:

Network Monitoring provides firms with visibility to get ahead of performance issues and potential harmful and anomalous activity across the network and physical devices. Routers, switches, virtual servers, mobile devices, and applications need to be monitored 24x7. Access Management grants authorized users the right to use a service, while preventing access to non-authorized users. Being able to assess suspicious activity and detect threats before they escalate is the responsibility of a Network Security specialist. Currently, 28% of firms say they have a shortage of talent that can fulfill this crucial role. Networking Monitoring and Access Management is viewed as a “level 1” security best practice.

### IT CONFIGURATION:

According to the Ponemon Institute, IT misconfigurations and failure to fully configure purchased security products resulted in 468 million records stolen in 2016. Having the experience and skills to properly configure firewalls, AV, and other purchased security technology tools represented 50% of cybersecurity skill concerns across firms of all sizes. The more advanced the security tool the more training and specialization is required to configure and manage the technology. Consider AI and its use in detecting anomalous activity based on user behavior patterns, most of this technology has only been in use for the past five years, making it very challenging to find experienced specialists.

## Top Cybersecurity Skills Gap Concerns



# Cyber Security Specializations – the growing skills chasm

## **NEW GOVERNMENT CYBERSECURITY REGULATIONS IGNITES GREATER DEMAND FOR TALENT**

Earlier this year, the Superintendent of Financial Services announced the implementation of 23 NYCRR 500, a list of cybersecurity regulations that apply to financial services firms operating in the state of New York. The four main areas of the regulation included:

1. Appointment of a Chief Information Security Officer (CISO)
2. Establish a cybersecurity program
3. Adopt cybersecurity policy
4. Manage third party vendors through annual penetration tests and vulnerability assessments

Financial firms within the banking, insurance, and other financial services industry have been left scrambling to find cybersecurity talent to fulfil the regulations of the first key certification date of February 15, 2018. By March 1, 2018, firms must be in compliance or will not be able to do business. As of November 29th 2017, there are 13,771 cybersecurity job openings in the state of New York, the 3rd most openings in the nation behind California and Texas (which are expected to be hit with similar regulations in 2019).



# New Trends, New Technology – The future of IT Management

Technology is changing. Businesses are innovating. The possibilities of automation and artificial intelligence are endless, meaning IT teams must adapt quickly to manage and support new technology.

## CHANGING IT DEPARTMENT FOCUS

Goodbye maintaining, *hello transforming*. IT departments that are distracted by a mix of infrastructure and tooling are typically stuck in a reactive mode that struggles to advance the maturity of business operations. Additionally, IT departments are moving away from the procurement business as they are seeing hardware and software expenditures reduced as cloud platforms are helping them save on hardware and licensing. While hardware and software expenditures are reduced, investments in technology that can help transform business operations are increasing. According to Gartner, 40% of CIOs plan to invest more budget into technology for customer services next year. It's apparent that a major shift is occurring and IT Departments are being asked to do more than simply "keep the lights on". IT is becoming more integrated into other units of the business. As IT transformation is realized, technical support will cover a wider spectrum of responsibilities. Demand for new technical skills, soft skills, and specialization will change how firms source IT talent.

Here's a look at what changes are coming:

## CHANGING ROLE OF THE CIO:

From operating IT to orchestrating IT - advancements in technology such as, machine learning, blockchain, AR and VR, IoT, and Cloud have transformed the role of the CIO. The responsibility of identifying and implementing technologies that benefit each business unit now falls on the CIO. The relationship between the CIO and the rest of the business units has never been so important to advancing IT maturity and business transformation as it is today. Beyond nurturing in-house relationships, CIOs will spend more time on evaluating and strategically selecting service

providers that align with their business needs, and meet strict security and governance criteria. Managing vendor risk and ensuring service level agreements are fulfilled will also fall under the CIO's responsibility.

## SECURITY RESPONSE TO A GROWING THREAT LANDSCAPE:

Cybersecurity is growing to encompass more than the implementation of technology such as firewalls and AV. IT teams are expected to establish security processes; regulatory compliance, risk mitigation, and on-going end user training. Security technology continues to evolve and use more intelligence and machine learning to automate threat discovery and proactively shutdown the threat in real-time. Advanced security technologies require advanced training and cybersecurity skills, making it very difficult for small - mid-size firms to keep up.

## DATA FUELS DIGITAL TRANSFORMATION:

Machine learning, big data, and data science skills provide tremendous business value, they are also the most challenging skills to recruit for. By 2020 the number of Data Science and Analytics jobs is projected to grow to approximately 2,720,000 worldwide. What's driving this demand? Digital transformation and the way firms are using advanced real-time analytics like AI for insights into the customer experience. Advanced analytics can help organizations understand trends in customer buying behavior, improve interaction, and increase overall revenue.

## TRENDING UP: UTILIZATION OF MANAGED SERVICE PROVIDERS AND PARTNERS

By 2020, IT teams will be smaller and will spend less time "keeping the lights on" and more time managing partners and providers. Complex IT environments of the future will require a multi-sourcing strategy that provides firms with access to a deeper bench of talent and resources at a more affordable price. Research from Everest Group show that 75% of an IT department's time is still taken up with maintaining systems. For IT to truly provide value to the business these technical support

# New Trends, New Technology – The future of IT Management

responsibilities will be increasingly outsourced to service providers. Good outsourcing service providers will also provide business oriented strategic advice and will help create visibility into technology ROI. By outsourcing the responsibilities of technical support, IT teams will be enabled to remain agile and focus on innovation.

## **CAN MANAGED IT SERVICES REALLY REDUCE IT SUPPORT COSTS?**

According to a survey by CompTIA, 93% of firms that outsource some part of their IT operations to a Managed Services Provider (MSP) reported meeting or exceeding their cost-savings expectations. 72% of these firms reported making no significant changes to their in-house IT staff. So how did these firms save money without downsizing their current IT teams? MSPs provide firms with access to resources and technology that would otherwise be prohibitively expensive for their IT departments. By outsourcing commodity IT services to an MSP, such as routine infrastructure maintenance, firms can achieve cost savings instead of hiring additional dedicated IT staff.

## **THE FUTURE APPROACH TO IT MANAGEMENT**

Gartner recommends that firms use a bimodal approach to managing their IT day to day operations. Gartner defines “bimodal IT”, as an IT service delivery method that allows IT departments to focus into two separate modes: stability and agility. The former encompasses day to day IT management, while the latter is focused on innovation and identifying new technologies to help meet business objectives. A scaling bimodal approach can help firms transform and achieve; increased speed, agility, and collaboration across the business. To adopt a bimodal approach to service delivery, IT leaders are choosing to partner with a Managed Services Provider to help fill the skills gap and capacity restrictions of their current IT teams. CompTIA reports that 38% of firms that decide to partner with an MSP to handle routine IT operations, do so primarily to free up their in-house IT teams to manage strategic business maturity projects that increase customer engagement and employee productivity. Mid-market IT leaders attempting to keep up with new technology skills and the demand from business units to out maneuver their competitors, will need to adopt a bimodal service delivery model and consider using an MSP to help scale and achieve results.

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