How to Hire Cloud Engineers: The Definitive Guide

HackerRank

Hire Top Cloud Engineers

Cloud engineering is a growing and in-demand skill set essential to technical teams in every industry. In this guide, you'll gain key insights into hiring cloud engineers to set your team up for success.

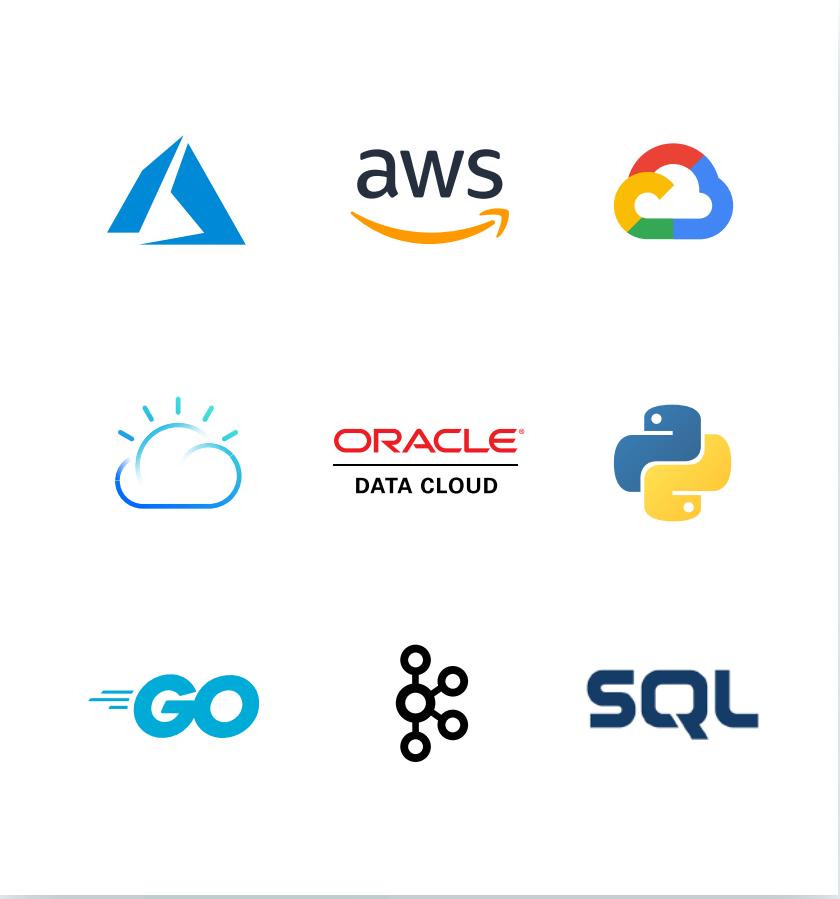
Introduction

By 2026, the global cloud computing market is expected to reach $947.3 billion. Growing at a rate of 112.7% in just five years, the cloud is on track to become a trillion dollar industry by the end of the decade.

With this unprecedented growth comes an equally large spike in the demand for cloud engineers to build this growing industry. Cloud job postings increased by 94% between 2017 and 2020. And that was before the pandemic accelerated adoption of the cloud.

The number of cloud engineers is unlikely to keep pace with this exponential growth, widening the already huge deficit in the number of skilled cloud engineers available. 80% of cloud leaders say already that inadequate employee skills are holding them back from expanding their cloud environments. Without more cloud engineering talent, this hiring gap could hinder the growth and innovation of the entire cloud computing industry.

In this guide, we break down everything you need to know about hiring cloud engineers. From attracting top engineers to evaluating candidates to join your team, you'll gain key hiring insights you won't find anywhere else.



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1 Cloud Engineering 101

Cloud computing is a service that provides on-demand access to computing resources without direct management or ownership by the party using the service. These services include computing power, data storage, platforms, infrastructure, and software.

Cloud engineers are IT professionals responsible for building cloud computing infrastructure, including design, implementation, maintenance, and support.

On a more technical level, the core job responsibilities of cloud engineers include:

- Writing scalable, testable code
- Building cloud environments
- Configuring cloud infrastructure
- Presenting features to stakeholders
- Keeping up-to-date with industry trends
- Working in an agile environment

Key Terminology

Cloud engineering is an advanced discipline with its own set of technologies, terms, and jargon. Hiring teams that have fluency with technical concepts have a competitive advantage while recruiting for cloud roles.

Core technical concepts include:

AI: Artificial intelligence. The ability of a computer to perform tasks associated with intelligent beings.

Big data: Large sets of information growing at increasing rates. Characterized by variety, velocity, and volume.

Cloud computing: A computing delivery model that provides servers, data, and applications as a service over the internet.

Cloud service provider: A company that provides cloud-based infrastructure, platform, or storage services.

DevOps: A set of practices that combines software development and IT operations.

IaaS: Infrastructure as a Service. A delivery model that provides computing, storage, and networking resources through an online subscription.

Language: A set of rules used to control the actions and behavior of a computer.

ML: Machine learning. The development of computer systems that are able to learn and adapt without following explicit instructions.

PaaS: Platform as a Service. A delivery model that deploys software and hardware environments through an online subscription.

SaaS: Software as a Service. A delivery model where users access software through an online subscription.

Key Programming Languages

Cloud engineers use a range of programming languages to build cloud infrastructure. While there are a number of languages used in the field of cloud engineering, an individual engineer might only learn a few languages that align with their specialization, interests, and career path.

Python An interpreted, high-level programming language. Popular for rapid development across multiple platforms.	**Java** A high-level programming language used to create complete applications.	**Go** A popular general-purpose language invented by Google for networking and infrastructure.
SQL Structured Query Language. An industry-standard query language that works with relational databases.	**C/C++** General purpose and compiled programming languages that are statically typed. C++ is an extension of C with the functionality of user-defined data classes.	**C#** A general purpose, object-oriented programming language developed by Microsoft as part of its .NET initiative.
Ruby An interpreted, dynamic, open-source programming language with a focus on simplicity and productivity.	**PHP** A widely-used open source general-purpose scripting language that is especially suited for web development.	**Scala** A high-level programming language that combines object-oriented and functional programming.

Source 1, Source 2

Cloud Computing Tools and Technologies

Due to the pace of innovation, the technologies cloud engineers use are constantly evolving. The popularity of languages and tools changes every year and new frameworks are constantly being developed. Before starting the hiring process, in-depth research into technical skills will be necessary to understand the unique technical requirements for your role.

	Cloud Computing Platforms	Database Management Systems	Big Data Frameworks	Message Brokers
Definition	Platforms that provide on-demand computing services over the internet	Software that stores and manages data	Tools for the fast, efficient, and secure processing of big data	Software that enables applications, services, and systems to communicate with each other
Use Cases	SaaS, PaaS, Iaas, big data analytics, disaster recovery	Relational or non-relational databases	Business intelligence, real-time analytics, machine learning, artificial intelligence	Serverless and hybrid cloud architectures
Tools	AWS, Azure, GCP, IBM Cloud, Oracle Cloud	MySQL, Oracle, mongoDB, Cassandra, Amazon DynamoDB	Apache Hadoop, Apache Spark	RabbitMQ, ActiveMQ, Kafka

Source 1, Source 2, Source 3, Source 4, Source 5, Source 6

Employer Demand for Cloud-Engineering Skills

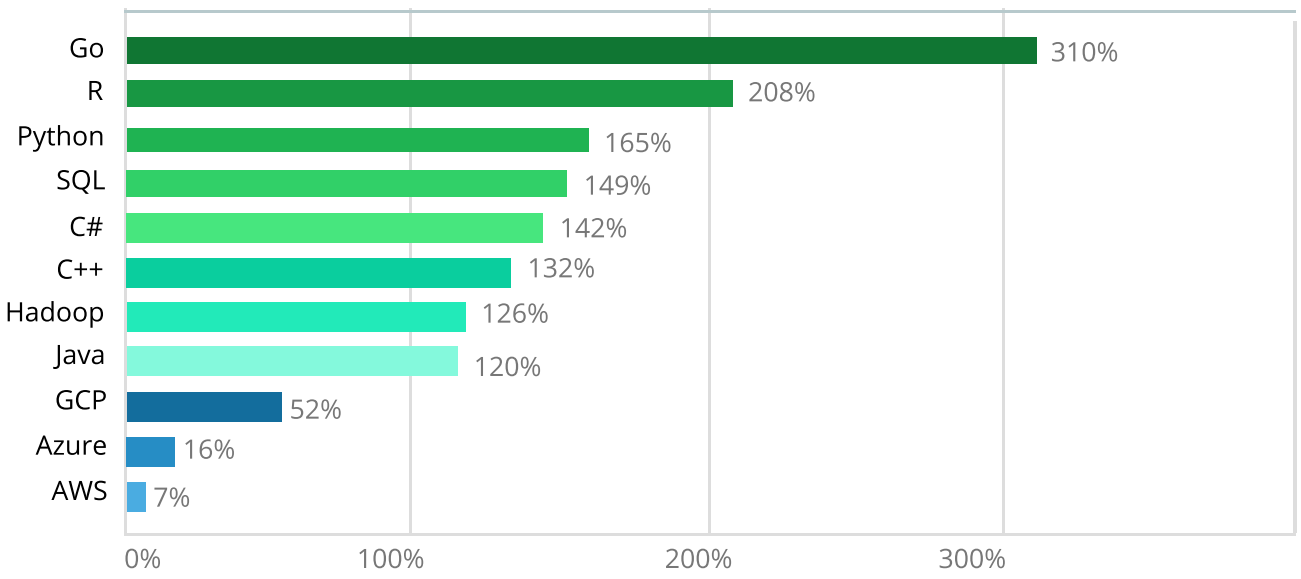
Cloud engineers are vital members of technical teams, which have consistent demand for their skill sets. However, employer demand for specific languages, frameworks, and tools shifts with market trends and technological innovation.

The following data depicts the increase in the number of technical skill assessments that developers completed for job applications on HackerRank between 2021 and 2022.

Demand for languages is based on assessments where employers required a specific language. Demand for cloud platforms and Hadoop is based on the total number of tests.

It's worth noting that this data represents the demand for skills across all technical roles. Cloud engineering is responsible for a portion of the huge increase in demand for programming languages.

Change in Number of Screening Assessments (2021-2022)



Beyond the Resume

Cloud engineers solve complex challenges, collaborate with other engineers, and communicate with non-technical stakeholders. To succeed in a cloud engineering role, new hires need to have skills that aren't easily represented on a resume. Your ability to assess these four key competencies will help you identify great engineers during the interviewing process and make better hires.

Code Quality

When multiple engineers work on the same codebase, it's important for them to follow best practices to avoid committing unintentional pattern and syntax errors. Quality code is clear, bug-free, documented, and in compliance with best practices.

Language Proficiency

Language proficiency refers to an engineer's ability to understand all of the rules, features, and mechanisms of a programming language, and optimize for simplicity and accuracy.

Problem Solving

Solving problems is a foundational skill of computer science. Cloud engineers need to understand how to solve a problem, translate this algorithm into something a computer can do, and code the solution.

Technical Communication

Engineers use technical communication to make technical information clear, concise, and understandable. Throughout their careers, cloud engineers use communication skills to work with non-technical stakeholders and train employees on systems they've built.

Emerging Trends

Multi-Cloud

According to 84% of mid-sized companies, the only thing better than having one cloud is having several. Multi-cloud is a cloud computing model where a company uses two or more clouds. Businesses that operate in this model enjoy a number of advantages, including flexibility, security, and redundancy. By diversifying their operations across multiple cloud environments, companies can reduce the risk of relying on a single service provider. Forbes predicts 2023 to be a defining year for the adoption of multi-cloud models. To support the implementation of multi-cloud, cloud engineers have to solve a number of technical challenges, including security, visibility, data governance, and configuration errors.

Hybrid Cloud

Ever since companies have been migrating their operations to the cloud, they've had two computing options. They could either purchase public cloud solutions or use their own private cloud. But now cloud engineers at Microsoft, Amazon, and IBM are building solutions that combine both private and public cloud into a hybrid model.

Hybrid cloud gives companies the flexibility to run most of their operations through public cloud infrastructure while securing their sensitive data on private cloud servers built by cloud service providers. Hybrid cloud is technically a type of multi-cloud, as it involves more than one cloud environment.

Trends to Watch

AI in the Cloud	Disaster Recovery	Edge Computing	FinOps
Hybrid Cloud	Kubernetes Enabling Blockchain	Multi-Cloud	Resource Optimization
Secure Access Service Edge	Serverless Cloud	Sustainability	XaaS

Source 1, Source 2, Source 3, Source 4

Sample Job Description

The job descriptions for cloud engineering roles can vary widely, depending on the responsibilities, compensation, and seniority of the position. That said, there are commonalities between descriptions that you can take advantage of. Here's an example of a job description for a mid-level cloud engineering role.

Title: Cloud-Engineer II
Full-time. Associate.

Responsibilities:

Development: Responsible for creating, coding, and optimizing cloud servers, databases, and applications.

Delivery: Agile delivery of solutions aligned to business needs while maintaining a high standard of quality.

Collaboration: Partner with product owners to understand business and product requirements and translate them into engineering solutions.

Qualifications

Basic Qualifications

- Experience with at least two programming languages
- 3-5 years of experience in cloud development
- BS/BA degree or equivalent experience

Required Qualifications

- 3+ years of hands-on development experience with cloud computing platforms (AWS, Azure, GCP)
- 3+ years of hands-on development experience with Java, Python, or Go
- Experience with SQL and relational database management systems (Oracle, MySQL)
- Knowledge of industry-wide technology trends and best practices

Other Desired Skills

- AWS, Azure, or GCP certifications
- Experience with big data tools including Apache Hadoop and Spark
- Familiarity with DevOps tools (Docker, Gitlab, Jenkins)

2 Role Demographics

The backgrounds of cloud engineers span a wide range of experiences and professional histories. Cloud engineers as a whole are a large, diverse, and fast-growing workforce experiencing high job satisfaction and strong career outlook.

It's worth noting that engineers with a cloud skill set may identify with broader job titles such as cloud architect or cloud network engineer. Because of this, the number of cloud engineers is likely underreported.

75,000+

Number of Cloud Engineers in the U.S.

Source: LinkedIn Recruiter

210,000+

Number of Cloud Engineers Worldwide

Source: LinkedIn Recruiter

34,000+

Number of Open Cloud Engineering Positions Worldwide

Source

Experience

After skill, the most important qualification for cloud engineers is experience. For many employers, on-the-job experience and training is an essential requirement.

Larger companies that employ a significant number of cloud engineers tend to use well-defined structures and pay grades for their seniority levels.

A senior engineer at Google, for example, might occupy the seniority level of L5. For the purpose of this guide, we are focusing on years of job-related experience. It's also worth noting that some leading tech firms refer to their cloud engineers as software engineers.

Career Levels at Leading Tech Companies

Google	Apple	Meta	Amazon
L3 - SWE II	ICT3 - Junior Cloud Engineer	E3	SDE I - L4
L4 - SWE III	ICT3 - Cloud Engineer	E4	SDE II - L5
L5 - Senior SWE	ICT4 - Senior Cloud Engineer	E5	SDE III (Senior SDE) - L6
L6 - Staff SWE	ICT5	E6	Principal SDE- L7
L7 - Senior Staff SWE	ICT6	E7	Senior Principal SDE - L8
L8 - Principal Engineer	Distinguished Engineer	E8	Distinguished Engineer - L10
L9 - Distinguished Engineer	Senior Distinguished Engineer	E9	
L10 - Google Fellow	Engineering Fellow		

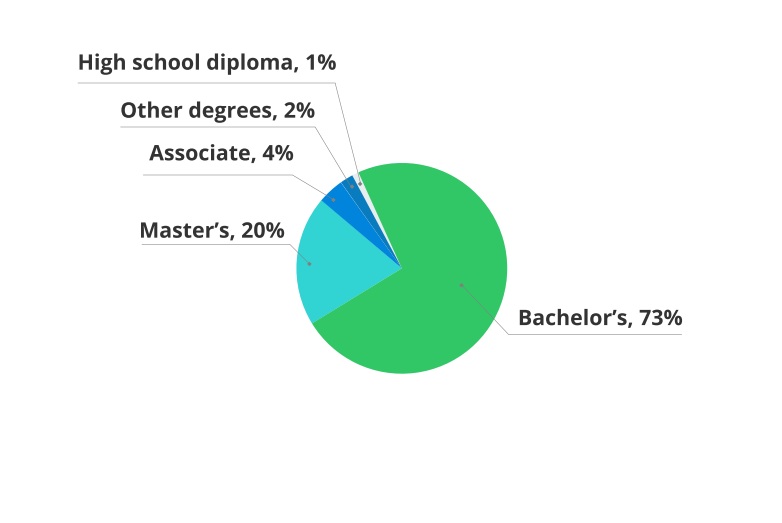
Source

Education

Because cloud computing is a new and evolving field, demographic data on cloud engineers is hard to find. However, the education levels of engineers in cloud computing are likely similar to those in software engineering.

About 73% of software engineers have a bachelor's degree, and 20% have a master's. When recruiting, interviewing, or hiring engineers, most of the candidates will have a degree. And many companies still require candidates to hold four-year degrees. However, cloud computing bootcamps have emerged as an alternative education path for aspiring cloud engineers.

Software Engineer Degree Levels



Source

Certifications

All of the major cloud providers offer certification courses to cloud engineers, including AWS, Azure, and GCP. In addition to providing training in the platforms, certifications also serve as a credential for cloud engineers. For roles requiring experience with cloud providers, having a certification in the appropriate platform is often a required or nice-to-have qualification.

Compensation

On average, cloud engineers receive highly competitive compensation packages. However, data sources on engineer salaries often present different, and at times conflicting, numbers at both a national and global level.

Estimates of the average base salary for cloud engineers in the U.S. range from $127,637 to $152,250. But some estimates place the global median much higher at $160,000. And engineers with expertise in specializations such as cloud architecture command even higher compensations.

Cloud engineer salaries can vary based on a number of factors, including experience level, skill requirements, industry, location, and company size.

Estimates of Cloud Engineer Salaries in the U.S.

Source	Seniority	
	Mid Level	Senior Level
Glassdoor	$152,250	$154,018
ZipRecruiter	$127,637	$144,318
Salary.com	$130,475	$153,443
Comparably	$105,176	$142,500
Average	**$128,885**	**$148,570**

3 Screening Candidates

Assessing cloud engineers joining your team is critical. But it can be challenging to screen candidates in a way that focuses on the technical skills needed to perform the job.

The best way to do so is through screening strategies that evaluate candidates' real-world technical skills. Resumes are traditionally an important part of hiring technical talent. But teams looking to hire the right engineers for their open roles usually supplement the resume screen with a skill assessment to gauge the candidate's real-world technical skills.

Skill Assessments

Skill assessments are used to evaluate a candidate's technical skills and proficiencies, and they're one of the essential elements of the hiring process.

The timing of the skill assessment may vary, but assessments early in the process help recruiters identify candidates with the real-world skills required for the job. Providing assessments early in the process can also help with identifying the most promising engineers in the applicant pool.

Skill assessments of cloud engineers can cover a wide range of subjects, including:

- Coding
- Problem solving
- Databases
- Work simulation
- Algorithms
- Data structures

Screening Pro Tip

Coding challenges and technical questions should assess the candidate's skills and ability to solve problems at a difficulty level appropriate for the role. A survey we conducted on LinkedIn found that 53.6% of developers consider question difficulty to be the most frustrating part of technical interviews.

4 Interviewing Candidates

Technical interviews are fundamental to finding and assessing great cloud engineers. However, many of the traditional strategies for interviewing candidates are insufficient for evaluating increasingly complex cloud computing skills.

Currently, the tech industry is in the process of transitioning from coding interviews based on algorithm-style challenges to hiring experiences built around real-world technical skills. Hiring teams who focus on the application of skills in real-world job scenarios make better hires and deliver a better interviewing experience for engineers.

In this section, we'll review the types of questions technical teams use during cloud engineering interviews.

Technical Interview Round

After an engineering candidate moves on from the screening stage, they'll encounter a live technical interview that gauges their problem-solving skills and proficiency in the languages and frameworks required for the role.

The questions that make up a technical interview are important to assessing a candidate's skills. The interview questions companies use to evaluate cloud engineers can cover a wide range of subjects, including coding, algorithms, data structures, and technical communication. Depending on the role, employers may also evaluate additional skills, including cloud security, product expertise, and knowledge of cloud service platforms.

Interviewing Best Practice

Investing in a strong integrated development environment helps make interview set up easy and gives engineers all of the tools they need.

System Design Interview Round

In addition to a coding interview, many hiring teams include a system design interview. The system design round is a type of interview that challenges candidates to design the architecture of a cloud environment, often on a physical or virtual whiteboard. As they develop their answer, candidates explain their solution and thought process to the interviewer.

More commonly found in hiring processes for senior-level roles, this stage grants candidates a look into the organization's tech stack and operations, and gives hiring managers an understanding of the candidate's approach to problem solving. These interviews should ideally proceed like discussions, with the candidate thinking aloud about scalability, storage, reliability, and other aspects of the system.

System design interviews are considered one of the more difficult types of interviews. They require a fundamental understanding of systems and advanced preparation to succeed. By their nature, system design questions are broad, open-ended questions with a variety of possible answers. Sometimes, system design questions are platform specific, testing an engineer's familiarity with a particular cloud service platform.

Sample Discussion Points:

- What combination of public and private cloud services would you recommend?
- What are the most important considerations when designing a cloud system?
- Would you use a relational or non-relational database management system?
- How would you connect on-premise applications to cloud services?
- Can you walk me through your migration strategy?

5 Hiring Best Practices

A cloud engineer's experience during the hiring process has a major impact on their interest in the role — and your ability to hire them. A company that provides a world-class candidate experience will have an advantage in screening, interviewing, and hiring the right candidate for the role. Here are three best practices you should follow while hiring engineers.

Hiring Senior-Level Professionals

Hiring senior cloud engineers is a fundamentally different challenge than hiring early-career and mid-level professionals. The competition for senior-level talent is fierce, and many senior professionals are already employed. In competitive talent markets, few companies receive enough passive applications at the senior level.

Hiring managers and recruiters with ambitious hiring goals need to rely on strategic outreach and internal referrals. To further this initiative, consider supporting your outbound sourcing strategy with the principles of account-based marketing. In this model, talent acquisition works to identify candidates who aren't on the job market and reach out through networks and social channels.

Outreach should be highly compelling and personalized. Assume the candidate already earns a lofty salary and has received dozens of similar inquiries. To catch their interest, you'll need to anticipate their career goals and motivations, connect on a personal level, and develop a storytelling strategy to encourage engagement.

Hiring managers should also conduct an early call with the candidate to sell the opportunity and generate enough interest for the candidate to want to move forward in the conversation.

Another screening option is to replace the skill assessment with a more strategic take-home project that focuses on a real-world technical challenge a cloud engineer might encounter on the job.

Job Description Language

Increasing diversity, equity, and inclusion (DEI) in the workplace has become a high-priority initiative for tech companies. While cloud engineers already come from a diverse range of backgrounds, recruiters and hiring managers can help further this initiative by integrating DEI into every stage of their recruitment process, starting with sourcing.

The language you use to construct a job description has a significant influence on a candidate's opinion about the company. One survey found that 55% of candidates consider job descriptions one of the most important factors when deciding if a company's a good fit.

An inclusive job description speaks to diverse applicants while being specific about the required skills. Leading with inclusive language shows candidates your organization is serious about inclusivity and helps attract applicants to roles they might not otherwise apply for.

Demographics	Exclusive Language	Inclusive Language
Nationality	Must be a native English speaker	Must have fluency in English
Disability	Visually inspect code for accuracy	Review code for accuracy
Gender	He/she	They, you
Culture	Cultural fit	Cultural add, value alignment
Age	Work hard/play hard, digital native	Inclusive environment, technical fluency

Source

Personally Identifiable Information

Many hiring managers use a resume-first process to start assessing candidates. The problem is that resumes often contain a candidate's personally identifiable information (PII), like name, email, school, employment history, and more. Hiring teams might unconsciously use this information to assume demographic information, including age, race, gender, ethnicity, and nationality. The result is the unintentional introduction of unconscious bias into the hiring process.

Screening out PII allows hiring managers to review the candidate's skills and work history before seeing any personal or demographic information. This helps the hiring team focus on the application without unconscious bias getting in the way. When using any resume screening or skill assessment tool, it's important to look for options that allow hiring teams to screen out PII.

Examples of Personally Identifiable Information

- Name
- Address
- Phone Number
- Email
- Education
- Employment History

Conclusion

If you've made it to the end of this guide, you're now prepared to take on the challenge of hiring the world's most talented and in-demand cloud engineers. We've broken down the fundamentals of cloud engineering, how to find and hire the best engineers, and how to deliver a world-class candidate experience. But there is still work to be done.

The world's need for cloud engineers is vast, and the pool of talent is finite. And it will remain so for the foreseeable future. For years to come, hiring managers and recruiters will continue to optimize their hiring processes to hire faster, better, and smarter. Each day will present new challenges, along with endless opportunities.