

## **DevOps Engineer Job Descriptions: A Comprehensive Guide**

DevOps, a portmanteau consisting of “development” and “operations,” is a software development methodology that has gained increased traction in the IT industry. DevOps uses tools, practices, and cultural philosophies that automate and integrate software development and information technology operations to speed up the evolution and development of new software products.

DevOps depends on continuous testing and continuous integration by developing automated CI/CD pipelines. So, the result of implementing DevOps is a CI/CD pipeline that benefits from the effective collaboration between the organization’s development and operations teams.

However, any sound methodology needs engineers to make things run smoother, and DevOps is no exception. To that end, this article presents a definitive DevOps engineer job description. It highlights a DevOps engineer’s responsibilities and roles, the technical skills a good DevOps engineer needs, and how a beginning or experienced DevOps engineer can develop those skills further, including by taking online DevOps programs.

Let’s start with defining the DevOps engineer and then build on that with a DevOps job description.

### **What Is a DevOps Engineer?**

Put simply, a DevOps engineer ensures that the organization’s IT infrastructure runs smoothly. They monitor, manage, and improve communication between the developmental and operational aspects of the software development process. Additionally, a DevOps engineer’s primary duties include launching product updates, spotting production errors and related issues, and creating integrations to improve the customer’s experience.

The chief point of DevOps is to help companies streamline their software development process, thereby saving money and ensuring faster delivery of good software apps. The DevOps engineer is the person who helps and supports that process while ensuring that development and operations teams can stay in contact and collaborate effectively. The engineer is the glue that keeps the entire process together.

With the above in mind, let’s compile a comprehensive DevOps engineer job description.

### **Presenting a DevOps Engineer Job Description**

Let’s begin by reminding everyone that there is no single definitive DevOps engineer job description. These descriptions can vary based on the organization’s size, product line, and structure. However, the following job description touches on the most common aspects of the position.

A **DevOps engineer** is an IT professional who builds, tests, and maintains tools and infrastructure to develop and release software apps efficiently. They possess a deep knowledge of software development processes and lifecycles and are experts in the different automation tools used to develop CI/CD pipelines.

So, a DevOps engineer is an IT professional who works alongside developers and IT teams to monitor and facilitate code releases on a CI/CD basis.

### **DevOps Engineer Roles and Responsibilities**

Now that we’ve established a solid DevOps engineer job description, let’s take a closer look at the specific roles and responsibilities of the DevOps engineer. As we mentioned earlier in our DevOps

job description, the specific DevOps engineer roles and responsibilities can vary depending on a few mitigating factors, such as company structure, industry, and even the engineer's experience level.

- Implementing various testing, development, automation tools, and IT infrastructures
- Planning the team structure, activities, and involvement in various project management activities
- Setting up tools and required infrastructures
- Selecting and deploying the appropriate CI/CD tools and performing any configuration management
- Defining and establishing test, development, release, update, and support processes for the organization's DevOps operations
- Work towards continuous improvement while building continuous integration, continuous development, and constant deployment pipelines
- Possess the technical skills necessary to review, verify, and validate software codes developed in the project
- Implementing and maintaining monitoring stacks
- Maintaining and improving the organization's cloud infrastructure
- Conducting system troubleshooting activities and fixing any found code bugs
- Monitoring the development processes during the whole lifecycle to ensure their adherence and creating or updating new processes and also minimize any waste
- Promoting and building automated processes wherever feasible
- Enhance the IT infrastructure's security protocols by identifying and deploying needed cybersecurity measures by continuously conducting vulnerability assessment and risk management procedures
- Performing incidence management and root cause analysis
- Maintaining consistent coordination and communication within the team as well as with clients
- Mentoring and guiding the IT team members, addressing any concerns and issues
- Understanding customer requirements, monitoring, and measuring customer experience and their Key Performance Indicators (KPIs)
- Managing stakeholders and associated external interfaces
- Managing periodic reporting on project progress to the management, stakeholders, and customers

Now, let's check out some tools that DevOps engineers rely on to perform these tasks and discharge their responsibilities.

### Common DevOps Engineer Tools

Here are some everyday DevOps engineering tasks and the tools the engineers typically use.

- **Source code management:** GitHub.
- **Developing CI/CD pipelines:** CI/CD processes rely on specialized tools for automation, including Jenkins and GitLab CI.
- **Testing:** DevOps engineers use tools such as Selenium to help the engineer ascertain how their application turned out and to check for errors.
- **Containerization:** This task needs specific tools to build and configure containers that allow the software to work across different environments. These tools include Docker and Kubernetes, an open-source container-orchestration system.
- **Configuration management:** Tools include Puppet and Chef.
- **Monitoring:** Monitoring tools such as Nagios and Prometheus help the engineer screen the app and ensure it works as intended.
- **Cloud platform integration:** More organizations are turning to the cloud to run apps and store information over the web instead of in-house systems. Cloud suppliers include Amazon Web Services, Microsoft Azure, and Google Cloud Platform.

### What Are the Essential Requirements and Skills for a DevOps Engineer?

Based on the extensive list of DevOps engineers' roles and responsibilities, you can rightly assume that the role demands a specialized set of skills. DevOps engineers operate in a very complex, demanding, and critical environment. There's a high demand for new software and apps, DevOps is supposed to facilitate that development, and the DevOps engineer is expected to make that design process run smoothly. Here is a selection of the critical requirements and skills a good DevOps engineer needs.

First, let's look at education. Most potential employers seek a bachelor's degree in a relevant discipline like computer science, computer engineering, computer information systems, information technology, software engineering, or a related discipline. It's also useful for the DevOps engineer to have a strong background in data center migrations.

Next, although not mandatory, it helps for the DevOps engineer to have some appropriate certifications, which can be acquired through an online DevOps course or other online resource. We will explore a typical certification example later.

Additionally, typical requirements and skills (both hard and soft) you'll find in a DevOps engineer job description include:

- Work experience as a DevOps Engineer or similar software engineer role
- Experience working on Linux-based infrastructures
- A working knowledge of various tools and open-source technologies
- Awareness of critical concepts in DevOps and Agile principles

- A good knowledge of Python, Java, Perl, or Ruby
- A solid understanding of configuring and managing databases (MySQL, Mongo) and SQL
- Experience in configuration management (e.g., Ansible, Chef, Puppet, or similar)
- A strong knowledge of cloud platforms such as Azure, AWS, or GCP, especially if the DevOps engineer is angling for a job with a company that relies heavily on cloud computing
- Managing production infrastructure using tools like Terraform, CloudFormation, etc.
- A problem-solving mindset
- Experience in project management
- A spirit of teamwork and cooperation
- Excellent troubleshooting skills
- Good communication skills are necessary for dealing with management, stakeholders, and clients.

Although requirements can vary depending on the company, DevOps engineers with a wide range of skills and knowledge stand a better chance of getting hired.

### **Career Progression of DevOps Engineers**

As a developing area, you are likely to find exciting roles that bring together unique combinations of skills. Here are some of the most popular pathways for DevOps engineers.

#### **DevOps Evangelists**

DevOps evangelists envision and implement comprehensive DevOps strategies in product development. They play a significant role in shaping end-to-end DevOps practices.

#### **Release Manager**

They integrate new and updated features into the existing architecture. They ensure the smooth progression of software releases and deployment.

#### **Automation Expert**

They are in charge of assessing processes for automation and integrating product stacks. This role requires a keen eye for identifying automation opportunities and implementing efficient solutions.

#### **Software Developer/Tester**

Engaging in conventional programming and coding tasks, their responsibilities span unit testing, deployment, continuous monitoring, etc.

#### **Security Engineer and Quality Assurance Specialist**

They ensure product functionality and integrate security features into the development cycle. Their role is to increase the reliability and safety of DevOps processes.

In terms of growth prospects, a DevOps engineer can find opportunities as a Blockchain Engineer, Security Engineer, Embedded Engineer, Data Engineer, and Backend Engineer as they progress.

## **Differences Between DevOps Engineer vs. Software Engineer**

Now that we have outlined some significant aspects of these two roles let's look at how they diverge. This will give you a clearer perspective of their duties and roles. We will look individually at the different areas of their work domain.

### **Focus Areas**

- DevOps engineers bring a holistic perspective in terms of business and technology. They intertwine business considerations into the software deployment and design process. This role focuses on positive user experiences and meeting interface needs throughout the Software Development Life Cycle (SDLC).
- Software engineers delve deep into the technical intricacies of design. Their role is more about concentrating on code creation and product conceptualization.

### **Responsibilities**

- DevOps engineers bring together both developmental and operational domains. They oversee every aspect of the SDLC, assuming operational responsibilities even after software deployment.
- Software engineers are engrossed in designing and building software and tailoring code to meet client specifications.

### **Technical Skills**

- DevOps engineers are proficient in essential tools like Docker and Kubernetes, which are crucial for effective software planning, development, implementation, and testing. They excel in system administration. Additionally, mastery of tools like Ansible Works and Jenkins is part of their skill set.
- On the other hand, software engineers should be proficient in programming languages such as Java, C++, Ruby, and Python. Their technical skills extend to rigorous testing and troubleshooting applications.

### **Soft Skills**

When it comes to soft skills, there are more similarities than differences. Teamwork is important as professionals collaborate with diverse IT staff to execute projects. Analytical acumen and strong communication skills are key strengths they need as they need to work with people from diverse technical backgrounds.

### **Similarities Between DevOps And Software Engineers**

Let us now look at how similar they are. This will help you figure out which is more appropriate for you as a profession. We will focus on the educational requirements to break into the role and the work environment.

Let us take an in-depth look at the roles and responsibilities of a DevOps engineer.

## **Roles and Responsibilities of a DevOps Engineer**

- Collaborating with partners, client technical leads, and executive stakeholders, they then orchestrate and execute the implementation of DevOps solutions
- Partnering with product and engineering teams to implement best practices, they make leadership guidance available and publicly available assets
- Engaging with partners and technical stakeholders to navigate project parameters, they ensure the alignment of scope, deliverables, priorities, and timelines.
- Championing customer needs and addressing adoption obstacles. They also leverage field experience to spearhead the development of new features.
- Presenting solution architectures and overseeing the deployment of distributed virtualized infrastructure solutions. These solutions are tailored to meet customer requirements.

## **The Day-to-Day Tasks of a DevOps Engineer**

As a relatively recent development in the tech world, you will find the role of DevOps quite interesting. It encompasses a spectrum of tasks that include both integration of development and operations. Here's an insight into the typical day-to-day activities.

- Serving as the link between development and operations teams. They foster collaboration to streamline the software delivery process.
- Leveraging their expertise to design and implement automation tools such as Puppet, Chef, and Ansible. It enhances efficiency and ensures reliability in the development and deployment pipeline.
- Ensuring applications are developed and deployed consistently and in a repeatable manner.
- Monitoring system performance and promptly addressing issues as they arise, Overall, this practice contributes to the continuous optimization of operations.
- Collaborating with fellow IT professionals to uphold application security and scalability. They also make sure it aligns with the overarching organizational objectives.
- Demonstrating a deep understanding of both software development principles and IT operations.
- Applying scripting and automation skills effectively, utilizing tools like Puppet, Chef, and Ansible to create robust and efficient systems
- Utilizing expertise in cloud platforms such as AWS, Azure, and Google Cloud to create scalable and resilient infrastructures.
- DevOps Engineers stay abreast of the latest industry trends and technologies by adopting continuous learning methods.

As dedicated team players, they contribute to delivering high-quality software, actively participating in initiatives to improve organizational efficiency. It is a role steeped in collaboration, automation, consistency, and staying ahead of a dynamic landscape.

### **Educational Requirements**

- Both roles typically require a Bachelor of Engineering (BE) or Bachelor of Technology (BTech) in Computer Science, Software Engineering, or related fields.
- Alternatively, a Bachelor of Computer Application (BCA) or Bachelor of Science (BSc) in Computer Science is valued.
- Post-graduate degrees in computer science and management can increase qualification and earning potential.

### **Work Environment**

- Both DevOps and software engineers find employment in diverse industries, including education, medicine, government, automotive, non-profit organizations, and software development.
- They collaborate with developers, programmers, and IT specialists.
- In an office setting, time is spent coding, developing, and attending development team meetings to address client requirements and implement design features.

### **How to Choose the Right Role?**

Choosing between a DevOps Engineer vs. Software Engineer requires thoughtful consideration. One cannot say one is better than the other. Each has its ups and downs. But it's easier to make an informed decision based on these tips.

- Assess your interests and strengths
- Understand whether you thrive in a collaboration environment like DevOps or a focused area like development.
- Explore each role's educational and skill requirements, aligning them with your career aspirations.
- Learn from the experts in both fields and consider potential growth trajectories.