Interview Guide for Infrastructure Software Engineer

Y Combinator

Created by Deliverables AI

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About this Guide

Welcome to this strategic guide to streamline and enhance the interview process for the position of Infrastructure Software Engineer. This document serves as a comprehensive resource for hiring teams, ensuring a structured, efficient, and effective evaluation of candidates. Through structured interviewing, our aim is

to identify a candidate who not only possesses the necessary technical skills and experience but also aligns with Y Combinator's values and culture.

The playbook outlines a clear structure for the interview process, including a detailed assessment of key competencies, practical assignments, and behavioral insights. Through this approach, we aspire to understand each candidate's potential and ensure the best fit for both the role and Y Combinator.

The guide includes both behavioral and situational interview questions. We recommend dividing up competencies and questions between two or three interviewers and using a combination of both types to assess a candidate's suitability for the role.

- Behavioral questions are based on the premise that past behavior predicts future performance. These questions prompt candidates to recount specific past experiences, focusing on their actions and outcomes. They are effective for roles where past experience is a strong indicator of success, especially in skills like problem-solving and leadership. For example, asking "Describe a time when you worked under a tight deadline" assesses time management and pressure handling.

- Situational questions are hypothetical and designed to assess how candidates might handle future situations. They test judgment and problem-solving abilities, asking candidates to respond to imaginary scenarios. These questions are useful for evaluating less experienced candidates or roles requiring adaptability. An example is, "How would you handle a project falling behind schedule?" which gauges analytical thinking and adaptability.

Both behavioral and situational questions are valuable in interviews but serve different purposes. Behavioral questions are best for roles where past experience predicts success, while situational questions suit roles requiring future problem-solving and adaptability. A combination of both types offers a comprehensive assessment of a candidate's capabilities.

This interview guide was created by Deliverables AI using GPT-4 and is based on the job description and company description provided. It should be used in conjunction with an interviewer's expertise and knowledge of the domain to assess the candidate's suitability for the role. Research shows that structured interviews are significantly more effective and less biased at identifying successful future employees and we welcome any feedback you have to feedback@deliverables.ai.

Y Combinator Mission, Vision, and Values

Mission

Y Combinator's mission is to increase the number of startups by assisting founders in their creation. The organization aims to get startups through their initial phase, often helping them build something impressive enough to raise significant amounts of money on a larger scale.

Vision

Y Combinator envisions a world where startups are the norm rather than the exception. They believe that startups are, on balance, a good thing, as their founders and early employees can be much more productive than they would be working for an established company. Y Combinator's vision is to apply mass production techniques to startup funding, making the process more efficient and beneficial for founders.

Values

Y Combinator values integrity, respect, and accountability. They believe these traits are critical for founders to possess. The organization is built on a network of trust, with its strength and value hinging on the trustworthiness of its members. Unethical behavior is not tolerated, as it puts the reputation of the entire community at risk. Y Combinator also values the idea of putting the founders' interests first, even before their own. This approach, while seemingly counterintuitive in a for-profit business, has proven to be more scalable and beneficial in the long run.

Y Combinator also values evidence of demand for a startup's solution and the strength of the founding team. They believe in the importance of launching and testing ideas quickly, rather than overplanning or overthinking. This approach is based on the understanding that the market and user needs can change rapidly, and startups need to be agile and responsive to these changes.

In summary, Y Combinator's mission, vision, and values revolve around fostering a supportive and ethical environment for startups, promoting efficiency and productivity, and encouraging quick action and responsiveness to market demands.

Job Description

Y Combinator - Infrastructure Software Engineer

Y Combinator is seeking an Infrastructure Software Engineer who will help manage and evolve the shared infrastructure that our software runs on. We have a team of approximately 15 Product Engineers who develop YC's software products. Those products are developed in Ruby on Rails and run in AWS. Our team's job is to provide a platform so our Product Engineers don't have to think (as much) about infrastructure.

The ideal candidate will have experience debugging and developing a very broad stack. They're comfortable talking about HTTP caching, AWS security groups, Rails monkey patching, n+1 queries in Active Record, CSRF protection, and React components.

Enjoy the many perks of working for a successful company – competitive salary and excellent benefits including fully-paid health care benefits and unlimited vacation – while working on a small, fast-moving and high-impact team.

In your first month, you might:

- Migrate a Rails application from Capistrano and EC2 to Docker and ECS
- Upgrade one of our applications to a newer version of Postgres or Rails
- Move more of our AWS infrastructure into Terraform
- Simplify our use of Webpack and Javascript for both developer productivity and faster deployments
- Create shared infrastructure to help manage email subscriptions and unsubscribes across 5 different product teams
- Triage and respond to bug bounty reports
- Work with outside security auditors to run a penetration test against our applications

Key Responsibilities:

- Provide a stable modern platform for our applications to be deployed to
- Keep our applications and data secure
- Improve our developer experience and tools so the YC Software Team can ship product updates quickly
- Help debug performance issues in our web applications
- Ship Ruby on Rails and TypeScript code that is shared among multiple YC applications

Skills:

- You know how to develop and debug MVC web applications. We use Ruby on Rails, Postgres, and React, but don't worry if you haven't used those specific technologies before
- You know how to deploy and run applications with AWS and Docker
- You use Terraform to make infrastructure changes

Experience:

- You have at least 5 years of experience developing and deploying web applications
- You are deeply familiar with the AWS platform specifically ECS, RDS, IAM, and CloudWatch

Location: YC is headquartered in the SF Bay Area with employees working from home or from our offices in San Francisco and Mountain View, CA. Candidates must live in the SF Bay Area or be willing to relocate.

Compensation: $130,000 to $270,000 + bonus (depending on skills and experience).

Benefits: Our full benefits package includes medical, vision, and dental plans, infertility benefit, STD/LTD, life insurance, commuter benefits, flexible spending account, health savings account, 401(k) + 4% matching, generous parental leave, paid holidays and flexible paid time off policy.

Work Authorization: This position does not support work authorization/visa sponsorship.

Y Combinator considers qualified applicants with criminal histories, consistent with applicable federal, state, and local law including San Francisco's Fair Chance Ordinance. Y Combinator is committed to protecting the privacy of the personal information of job applicants

and complying with the California Consumer Privacy Act. The privacy policy of Ashby, Inc., the hiring platform used by Y Combinator, governs the collection of such data.

Interview Agenda

Welcome and Introduction

- Greet the candidate warmly and express gratitude for their interest in the role
- Introduce the interview team, including their names and roles at Y Combinator

Company Overview

- Share Y Combinator's mission to support startup creation and growth
- Discuss the vision for a world where startups are the norm and innovation thrives
- Highlight Y Combinator's core values: integrity, respect, accountability, and commitment to founder success

Job Overview

- Outline the role of Infrastructure Software Engineer and its importance to Y Combinator
- Discuss the technical environment, including Ruby on Rails, AWS, and React
- Talk about key responsibilities such as providing a stable platform, securing applications and data, improving developer tools, and shipping shared code

Competency Deep Dive

- Technical Expertise in Full Stack Web Development
- Advanced Cloud Infrastructure Capabilities
- Strategic Security and Compliance Acumen
- Developer Experience Optimization
- Proficiency with Infrastructure as Code (IaC)

- Containerization and Orchestration Expertise
- Performance Optimization Prowess
- Collaborative Spirit and Effective Communication
- Adaptable and Lean Approach to Problem Solving

Candidate Vision and Strategy

- Invite the candidate to describe their vision for the role
- Explore how the candidate's approach aligns with Y Combinator's goals and values

Q&A and Wrap Up

- Offer the candidate the opportunity to ask any questions about the role, team, or company
- Discuss the next steps in the hiring process
- Thank the candidate for their time and participation in the interview

Competency Framework

The following competencies have been identified for the Infrastructure Software Engineer role at Y Combinator:

1. Technical Expertise in Full Stack Web Development: Solid expertise in the design, troubleshooting, and management of full-stack web applications, favoring those with experience in Ruby on Rails as part of a diverse technology stack.

2. Advanced Cloud Infrastructure Capabilities: Proven depth of understanding and hands-on experience with AWS services, with a focus on building and maintaining robust cloud infrastructure solutions vital to startup operations.

3. Strategic Security and Compliance Acumen: Demonstrated knowledge and application of security practices to protect applications and data, with a commitment to safeguarding user trust in line with Y Combinator's integrity value.

4. Developer Experience Optimization: Experience improving developer tools and processes to streamline deployment cycles and foster innovation, resonating with Y Combinator's respect for enhancing productivity.

5. Proficiency with Infrastructure as Code (IaC): Skillfulness in defining, automating, and managing infrastructure utilizing tools like Terraform, promoting scalable tech solutions congruent with Y Combinator's mission.

6. Containerization and Orchestration Expertise: Practical skill set with containerization using Docker and related orchestration platforms, advocating for agile development practices in fast-paced startup ecosystems.

7. Performance Optimization Prowess: Capability to identify and resolve performance issues, driving the efficiency and reliability essential to Y Combinator's productivity-focused ethos.

8. Collaborative Spirit and Effective Communication: Strong interpersonal and collaboration skills paired with clear and effective communication, enabling teamwork within a dynamic and high-impact engineering culture.

9. Adaptable and Lean Approach to Problem Solving: An entrepreneurial mindset that embraces quick learning cycles and adaptable problem-solving, in sync with Y Combinator's fast-paced, startup-centric environment.

Competency 1. Technical Expertise in Full Stack Web Development

Proficiency in building and managing the full stack of web applications, particularly those involving Ruby on Rails within a diverse technology stack. Adept in a range of web technologies, including both front-end and back-end development, with the ability to troubleshoot complex issues across the stack and enhance application performance.

Lead Question

"Please describe a complex web application you have developed with Ruby on Rails. How did you ensure it was scalable and secure, and what was your approach to handling data persistence, API integration, and user interface challenges?"

Assess comprehensive understanding of Ruby on Rails stack, scalability and security strategies, familiarity with API integration, data management, and problem-solving related to UI.

Situational Scenario

"Your Rails application is experiencing increased latency, causing user complaints. Upon investigation, you discover an N+1 query issue. How would you go about solving this problem?"

Candidate should exhibit ability to identify and resolve N+1 query problems, improving application efficiency.

Diving Deeper

Cloud Infrastructure Management: "How would you go about migrating an existing Ruby on Rails application to AWS using Docker and ECS, while minimizing downtime?"

Security and Performance Optimization: "Describe your approach to identifying and fixing a common security vulnerability in a web application and how you would optimize its performance."

Development Workflow Improvement: "What tools and practices would you implement to enhance the productivity of a development team working on a Ruby on Rails project?"

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Limited knowledge, cannot describe a scalable or secure system.	Basic understanding, missing key concepts in scalability or security.	Adequate knowledge, addresses some but not all components of the stack.	Strong overview, clearly understands stack and scalability, minor gaps.	Expert analysis and troubleshooting of the full stack with advanced solutions.

Competency 2. Advanced Cloud Infrastructure Capabilities

Proven depth of understanding and hands-on experience with AWS services, essential for designing, implementing, and maintaining robust cloud infrastructure solutions critical to start-up operations.

Lead Question

"Can you describe a complex cloud infrastructure you've designed or worked on, detailing the AWS services involved, the challenges you faced, and how you ensured its reliability and scalability? How would you monitor, troubleshoot, and optimize this infrastructure for performance and cost?"

Look for detailed knowledge of AWS services, clarity in explaining the architecture, problem-solving and optimization skills, and continuous monitoring strategies.

Situational Scenario

"Imagine you're tasked with migrating an entire suite of applications to AWS, prioritizing minimal downtime and data integrity. All the while, you have to ensure compliance and enhance performance. How would you proceed with this task?"

Evaluate understanding of AWS migration strategies, awareness of compliance protocols, and planning for performance optimization and data integrity during migration.

Diving Deeper

System Reliability & Scalability: "What strategies would you employ to maintain high availability and fault tolerance of an AWS-based infrastructure?"

Infrastructure as Code & Automation: "How do you leverage infrastructure as code, such as Terraform, to manage and version cloud resources, and could you explain an instance where automation saved significant time or resources?"

Security & Compliance: "Discuss how you ensure security and compliance within AWS cloud infrastructure and share an example of how you successfully navigated these requirements in a previous project."

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Limited or no experience with AWS. Can't describe	Basic AWS knowledge. Struggles with	Competent with AWS services. Describes	Strong in AWS architecture design and	Expert-level proficiency. Articulates an

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
a cloud infrastructure.	complex designs or optimization.	an effective cloud solution.	problem-solving. Offers optimization ideas.	advanced, optimized AWS architecture.

Competency 3. Strategic Security and Compliance Acumen

Demonstrated knowledge of best practices in security and compliance, with a proactive approach in applying these to safeguard applications, data, and maintaining user trust, aligned with Y Combinator's commitment to integrity and high ethical standards.

Lead Question

"Can you describe a time when you strategically implemented a security framework or compliance protocol within an infrastructure environment? What were the key considerations taken for the choice of framework and how did you ensure it aligned with the organizational goals and user trust?"

Evaluate candidate's strategic thought process, familiarity with security frameworks, alignment of security protocols with organizational goals, and user trust maintenance.

Situational Scenario

"You discover a critical security flaw in the AWS infrastructure configuration that could potentially expose sensitive user data. How would you address it, considering both immediate actions and long-term preventive strategies?"

Assess problem-solving skills, immediate and strategic response to threats, and ability to implement long-term security improvements.

Diving Deeper

Security Framework Application: "What factors do you consider when selecting and applying a security framework to an existing infrastructure?"

Regulatory Compliance Understanding: "How do you stay up-to-date with regulatory compliance changes, and could you give an example of how you have adapted to such a change?"

Risk Management and Mitigation: "Explain your process for identifying, assessing, and mitigating risks in software infrastructure."

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Shows little understanding of security; vague, incorrect responses.	Basic understanding with minimal practical application; simplistic responses.	Solid grasp, moderate experience; response shows practical application.	Strong in-depth knowledge; well-rounded, strategic examples provided.	Expert-level; demonstrates strategic foresight, innovation in security.

Competency 4. Developer Experience Optimization

Skilled in enhancing developer tools and workflow efficiency, optimizing the development environment to accelerate deployment while encouraging innovation and tech adaptability.

Lead Question

"Tell me about a time when you improved a development tool or process that resulted in faster deployment cycles and increased innovation. How did you measure the impact, and what feedback did you receive from the development team?"

Look for specific examples, understanding of impact measurement, ability to elicit and incorporate feedback, and direct outcomes of initiatives.

Situational Scenario

"Imagine our deployment cycle is slow due to outdated processes, and developers are getting frustrated. How would you identify the bottlenecks and which steps would you take to address them?"

Expect problem identification skills, a systematic approach to optimization, and clear, actionable steps.

Diving Deeper

Workflow Efficiency: "Can you provide an example of how you've configured a continuous integration/continuous deployment (CI/CD) pipeline to maximize developer efficiency?"

Tools Adaptability: "How do you stay current with emerging development tools, and what's your approach to introducing and integrating these within an existing team?"

Innovation Facilitation: "Describe an environment or process you have created that spurred innovation among developers. What were the key elements?"

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
No relevant experience or understanding of developer experience optimization.	Limited understanding; few examples of impact on deployment cycles.	Adequate impact examples; moderate improvements in deployment cycles.	Strong improvement examples; measures impact well; good team feedback.	Exceptional optimization initiatives with metrics; significant deployment acceleration; excellent team feedback.

Competency 5. Proficiency with Infrastructure as Code (IaC)

Expertise in creating, optimizing, and managing resilient cloud infrastructure utilizing IaC tools such as Terraform, aligned with promoting scalable technology solutions and Y Combinator's goal of assisting startups.

Lead Question

"Describe a complex infrastructure you've managed with Infrastructure as Code tools. How did you ensure it was both scalable and maintainable? Can you discuss a specific challenge you encountered with IaC and how you overcame it?"

Look for details on infrastructure complexity, scalability, maintainability, problem resolution, and use of IaC best practices.

Situational Scenario

"Imagine our AWS infrastructure is experiencing sporadic outages, and your task is to use Terraform to implement a more robust architecture. How do you approach this?"

Assess understanding of architecting for high availability, investigative approach, and practical experience with Terraform.

Diving Deeper

Technical Knowledge of IaC Tools: "What are the advantages of using Terraform over other IaC tools, and what specific features do you utilize most frequently?"

IaC Security Practices: "How do you ensure security best practices within your IaC configurations?"

Collaboration and Code Management: "Can you explain how you manage state files and collaborate with team members when using IaC tools like Terraform?"

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Little to no relevant experience; major misunderstandings.	Basic familiarity; significant guidance needed.	Moderate experience; some aspects well-understood.	Strong, practical experience; minor gaps in knowledge.	Expert-level; demonstrates full mastery and innovation.

Competency 6. Containerization and Orchestration Expertise

Essential expertise in containerization using Docker, orchestrating with platforms like Kubernetes, supporting scalable, secure and resilient infrastructure in a startup environment, with agility to respond to rapidly evolving tech needs.

Lead Question

"Can you describe a complex system you've worked on that leverages both containerization and orchestration? In your explanation, highlight how you managed service discovery, scaling, and zero-downtime deployment."

Look for detailed understanding of system architecture, practical problem-solving approaches, experience with service discovery mechanisms, scaling strategies, and deployment techniques ensuring minimal disruption.

Situational Scenario

"Imagine you are tasked with deploying a microservices-based application on Kubernetes, where each service has varying resource requirements. Describe your approach to resource allocation and scaling."

Expect strategic thinking in managing resources, awareness of Kubernetes features for horizontal/vertical scaling, and ability to articulate a Kubernetes-centric deployment approach.

Diving Deeper

Docker Proficiency: "Explain how you optimize Dockerfile for efficient image building and how you manage image versions in a continuous integration pipeline."

Kubernetes Ecosystem Familiarity: "Discuss how you monitor and troubleshoot a Kubernetes cluster. Which tools do you prefer and why?"

Infrastructure as Code Expertise: "Describe your experience with infrastructure as code tools such as Terraform. How do you manage state and changes in a collaborative environment?"

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Limited understanding; no hands-on experience.	Basic understanding; sparse hands-on experience.	Good knowledge; solid practical experience.	Advanced skill set; extensive experience.	Expert-level; leader in container and orchestration.

Competency 7. Performance Optimization Prowess

Capability to identify and resolve performance bottlenecks, enhancing system efficiency and dependability, critical to Y Combinator's productivity-centric philosophy.

Lead Question

"Describe a time when you had to identify and resolve a complex performance bottleneck in a web application. What diagnostic tools did you use and how did your solution improve system performance? Can you also share the process you followed to ensure that the optimization did not adversely affect other system functionalities?"

Seek evidence of effective use of diagnostic tools, a methodical approach to problem-solving, the ability to balance performance with system stability, and communication of the impact on overall functionality.

Situational Scenario

"Your monitoring tools have alerted you to a sudden spike in server load and response times during peak usage of a web application. Outline the steps you would take to diagnose and address this issue."

Expect a structured approach to incident response, aptitude in identifying performance issues, and strategies to resolve the issue without significant downtime.

Diving Deeper

Diagnostic Tool Proficiency: "What is your go-to set of tools for diagnosing and monitoring web application performance and why do you prefer them over others?"

Performance-Driven Development: "Can you discuss how you anticipate performance needs and proactively integrate optimization within the development lifecycle?"

System Reliability Assurance: "How do you ensure that performance optimizations do not compromise the reliability of a system? Please provide an example."

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Inadequate understanding of diagnostic tools and processes.	Basic use of tools; limited problem-solving shown.	Adequate problem-solving; average use of standard tools.	Proficient in tools usage; good problem-solving and impact communication.	Expert in performance optimization with innovative and effective solutions.

Competency 8. Collaborative Spirit and Effective Communication

Strong interpersonal and collaboration skills paired with clear and effective communication, enabling teamwork within a dynamic and high-impact engineering culture. This includes the ability to concisely

convey complex technical concepts, actively listen to team members, and adapt communication style to different audiences to facilitate mutual understanding and cooperation.

Lead Question

"Can you tell us about a time when you had to work on a team to solve a complex problem? How did you ensure that your communication was clear and effective, and how did you manage different viewpoints to arrive at a solution?"

Look for specific instances where the candidate demonstrated active listening, clarity in technical communications, ability to mediate conflicts, and a focus on collaborative outcomes.

Situational Scenario

"Imagine you're leading a project to migrate an application to a new AWS service. Midway, an issue causes differing opinions between teams. How would you align the team towards a common goal?"

Evaluate the candidate's approach to conflict resolution, ability to communicate technical details clearly, and strategies for fostering a cooperative team environment.

Diving Deeper

Active Listening and Feedback: "Describe a time when you received unexpected feedback during a project. How did you process and respond to it?"

Conflict Resolution and Mediation Skills: "How would you handle a situation where two colleagues have conflicting technical solutions to a problem?"

Adaptability in Communication: "Share an example of how you've adjusted your communication style when explaining technical issues to non-technical stakeholders."

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Does not demonstrate understanding of collaboration or effective communication.	Has basic collaborative skills but struggles with clear communication.	Shows collaborative efforts and communicates effectively, yet room for refinement.	Strong collaboration and communication; occasional lapses in conflict resolution.	Exemplary collaborator, communicator seamlessly resolves conflicts, aligns teams.

Competency 9. Adaptable and Lean Approach to Problem Solving

Seeks efficient and flexible problem-solving methods that maximize learning and minimize waste, aligning with the rapid iteration and innovation required in a startup environment.

Lead Question

"Can you describe an instance where you identified a significant technical challenge and how you adapted your strategy to solve it efficiently? What was the outcome, and what did you learn from that situation?"

Look for concrete examples demonstrating adaptability, efficient problem-solving, the ability to learn quickly from actions taken, and evidence of iteration leading to a successful outcome.

Situational Scenario

"Your deployment pipeline has suddenly started failing due to an unexpected AWS service outage. How would you address this to minimize downtime for active product deployments?"

The candidate's answer should show practical technical knowledge, prioritization of immediate actions, strategic long-term solutions, and ability to communicate with the team.

Diving Deeper

Rapid Learning Ability: "How do you stay updated with the latest changes in AWS services, and could you provide an example when this knowledge significantly impacted a project?"

Efficiency in Debugging: "What is your approach to debugging a complex system that you are not fully familiar with, and how do you ensure minimal impact on existing operations?"

Communication Under Pressure: "Tell me about a time when you had to communicate a critical technical issue to a non-technical stakeholder. How did you ensure they understood the implications and urgency?"

Evaluation

Rating 1	Rating 2	Rating 3	Rating 4	Rating 5
Demonstrates inability to adapt or iterate effectively.	Shows basic adaptation but with limited efficiency.	Adapts to changes, with moderate efficiency and learning.	Adapts well, learns quickly, and improves processes.	Excels in adaptability, rapid learning, and driving efficient outcomes.

Candidate Evaluation

Complete the following scorecard for the Infrastructure Software Engineer role at Y Combinator. Refer to the evaluation guides for each competency to determine the candidate's score.

Competency	Rating (1-5)	Interviewer Comments
1. Technical Expertise in Full Stack Web Development		
2. Advanced Cloud Infrastructure Capabilities		
3. Strategic Security and Compliance Acumen		
4. Developer Experience Optimization		
5. Proficiency with Infrastructure as Code (IaC)		
6. Containerization and Orchestration Expertise		

Competency	Rating (1-5)	Interviewer Comments
7. Performance Optimization Prowess		
8. Collaborative Spirit and Effective Communication		
9. Adaptable and Lean Approach to Problem Solving		
Total		

Other Interviewer Comments: