Interview Guide for Infrastructure Software Engineer

Y Combinator

Created by [Deliverables AI](https://github.com/androb/deliverables)

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# About this Guide

This guide is a structured tool for assessing candidates for the Infrastructure Software Engineer position at Y Combinator. It is designed to ensure a thorough and consistent evaluation process. The guide draws from the job description and Y Combinator’s core values. It will help interviewers probe the depth of candidates’ technical skills, their problem-solving abilities, and their cultural fit.

The guide includes a detailed interview agenda, a competency framework, and a candidate evaluation scorecard. It provides a clear path for interviewers to follow, ensuring that all necessary areas are covered. The questions and scenarios are crafted to elicit responses that reveal candidates’ capabilities and thought processes.

Interviewers should use this guide to prepare for interviews and as a reference during the interview process. It is a living document that can be refined based on feedback and evolving needs of the role and Y Combinator.

The ultimate goal of this guide is to identify candidates who are not only technically proficient but also embody the values that Y Combinator stands for. This ensures that new hires will contribute positively to the company’s mission and vision.

# 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

The interview will last approximately 2 hours. It will include a technical assessment, behavioral questions, and a case study. The agenda is as follows:

1. Introduction (10 minutes)
2. Technical Skills Assessment (30 minutes)
3. Behavioral Interview (30 minutes)
4. Case Study / Role Play (30 minutes)
5. Candidate Q&A (10 minutes)
6. Wrap-up and Next Steps (10 minutes)

# Competency Framework

The competencies for the Infrastructure Software Engineer at Y Combinator are based on the job description and the company’s values. Candidates should demonstrate technical expertise, problem-solving skills, and alignment with Y Combinator’s culture. The competencies are:

1. **Technical Proficiency in Web Development**: Experience with MVC web applications, preferably Ruby on Rails, Postgres, and React.
2. **AWS and Docker Deployment**: Knowledge of deploying and running applications using AWS and Docker.
3. **Infrastructure Management with Terraform**: Proficiency in using Terraform for infrastructure changes.
4. **Debugging and Performance Optimization**: Ability to debug web applications and optimize performance.
5. **Security and Data Protection**: Keeping applications and data secure.
6. **Collaboration and Communication**: Working with a team and communicating effectively.
7. **Adaptability and Quick Learning**: Learning new technologies and adapting to changes quickly.
8. **Alignment with Y Combinator’s Values**: Integrity, respect, accountability, and putting founders’ interests first.

# Competency 1. **Technical Proficiency in Web Development**

Candidates should have experience with MVC web applications. They should understand concepts like HTTP caching, n+1 queries, CSRF protection, and be able to discuss them.

## Lead Question

**“Tell me about a complex web application you’ve worked on. How did you handle its various components, such as the database, backend, and frontend?”**

*What to look for: Depth of understanding in web application architecture, ability to articulate the interaction between components.*

## Situational Scenario

**“Imagine you’re tasked with upgrading a legacy Rails application. What steps would you take to ensure a smooth transition to the latest version?”**

*What to look for: Methodical approach to upgrading applications, awareness of potential pitfalls and how to avoid them.*

## Diving Deeper

* “How do you manage database migrations in a Rails application?”
* “Can you explain the concept of CSRF protection and why it’s important?”
* “Describe a time when you had to optimize an application for better performance.”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| Lacks understanding of MVC architecture | Basic understanding of MVC, but limited practical experience | Solid understanding and experience with MVC applications | Strong experience with MVC and can discuss advanced concepts | Expert in MVC web development with a track record of complex applications |

# Competency 2. **AWS and Docker Deployment**

Candidates must know how to deploy and run applications in AWS and Docker. They should be familiar with services like ECS, RDS, IAM, and CloudWatch.

## Lead Question

**“Describe the process you would use to deploy a web application using AWS and Docker.”**

*What to look for: Clear understanding of deployment processes, ability to articulate steps and considerations.*

## Situational Scenario

**“You need to migrate an application from a traditional server setup to a containerized environment. What are the key considerations and steps you would take?”**

*What to look for: Knowledge of containerization benefits and challenges, ability to plan and execute a migration.*

## Diving Deeper

* “How do you ensure high availability and disaster recovery for applications on AWS?”
* “What are some best practices for managing Docker containers in production?”
* “Explain how you would monitor and scale an application in AWS.”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| Unfamiliar with AWS and Docker | Basic knowledge of AWS or Docker, but not both | Competent with AWS and Docker deployments | Proficient in deploying complex applications with AWS and Docker | Expert in AWS and Docker with a strong track record of successful deployments |

# Competency 3. **Infrastructure Management with Terraform**

Candidates should use Terraform to manage infrastructure. They must understand infrastructure as code principles.

## Lead Question

**“How do you use Terraform in your current role? Describe a project where you implemented infrastructure changes using Terraform.”**

*What to look for: Practical experience with Terraform, understanding of infrastructure as code.*

## Situational Scenario

**“A company’s infrastructure needs to be updated and scaled. How would you approach this using Terraform?”**

*What to look for: Strategic thinking in infrastructure management, ability to use Terraform for scaling and updates.*

## Diving Deeper

* “What are some challenges you’ve faced with Terraform and how did you overcome them?”
* “How do you manage state in Terraform?”
* “Describe how you would refactor an existing infrastructure to be managed by Terraform.”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| No experience with Terraform | Limited use of Terraform, basic understanding | Regular use of Terraform, good grasp of concepts | Advanced use of Terraform, can handle complex infrastructure | Expert in Terraform with extensive experience in large-scale environments |

# Competency 4. **Debugging and Performance Optimization**

Candidates must be able to debug web applications and optimize their performance.

## Lead Question

**“Tell me about a time when you had to identify and fix a performance issue in a web application.”**

*What to look for: Analytical skills, experience with performance optimization.*

## Situational Scenario

**“You notice that a web application is running slow, especially when loading certain pages. How do you go about diagnosing and resolving the issue?”**

*What to look for: Systematic approach to problem-solving, knowledge of performance tools and techniques.*

## Diving Deeper

* “What tools do you use for performance profiling in web applications?”
* “How do you address n+1 query problems in Active Record?”
* “Describe how you would optimize a React application’s performance.”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| Struggles to identify performance issues | Can identify obvious performance issues, but lacks depth | Good at diagnosing and fixing common performance problems | Very skilled at performance optimization, uses a variety of tools | Expert in performance optimization with a track record of significant improvements |

# Competency 5. **Security and Data Protection**

Security is paramount. Candidates must keep applications and data secure.

## Lead Question

**“How do you ensure the security of web applications and protect sensitive data?”**

*What to look for: Understanding of security best practices, experience with securing applications.*

## Situational Scenario

**“You’ve been informed of a potential security vulnerability in an application you manage. What steps do you take to address it?”**

*What to look for: Ability to respond to security incidents, knowledge of incident response protocols.*

## Diving Deeper

* “Explain how you would implement CSRF protection in a web application.”
* “How do you manage AWS security groups to ensure application security?”
* “Describe your experience with handling bug bounty reports or working with security auditors.”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| Limited understanding of web application security | Basic security practices known, but lacks experience | Solid experience with application security and data protection | Strong security background, proactive in implementing security measures | Security expert with a strong track record of maintaining secure applications |

# Competency 6. **Collaboration and Communication**

Candidates must work well with others and communicate effectively.

## Lead Question

**“Can you give an example of a successful project you worked on with a team? What was your role and how did you contribute to the team’s success?”**

*What to look for: Teamwork, communication skills, ability to contribute to a team’s goals.*

## Situational Scenario

**“You’re part of a team that’s facing a tight deadline for a critical project. How do you ensure effective communication and collaboration among team members?”**

*What to look for: Strategies for teamwork under pressure, communication methods.*

## Diving Deeper

* “How do you handle disagreements or conflicts within a team?”
* “Describe a time when you had to explain a complex technical issue to a non-technical stakeholder.”
* “What tools and practices do you use to keep a remote team aligned and informed?”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| Struggles with teamwork and communication | Can work in a team but communication could improve | Good team player, communicates effectively most of the time | Excellent collaborator, consistently communicates well with team members | Exceptional team player with outstanding communication skills, even in remote settings |

# Competency 7. **Adaptability and Quick Learning**

The role requires learning new technologies and adapting to changes.

## Lead Question

**“How do you stay updated with new technologies and incorporate them into your work?”**

*What to look for: Continuous learning, ability to adapt to new tools and practices.*

## Situational Scenario

**“A new technology has emerged that could significantly improve your team’s productivity. How do you evaluate its potential and decide whether to adopt it?”**

*What to look for: Openness to new ideas, evaluation skills, decision-making process.*

## Diving Deeper

* “Tell me about a time when you had to quickly learn a new technology to complete a project.”
* “How do you approach learning a new programming language or framework?”
* “Describe how you have adapted to a significant change in technology or process in your past roles.”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| Resistant to change, slow to learn new technologies | Willing to learn but needs significant time to adapt | Learns new technologies at an average pace, adapts reasonably well | Quickly learns and integrates new technologies, adapts easily | Exceptional learner, adapts to new technologies and changes rapidly |

# Competency 8. **Alignment with Y Combinator’s Values**

Candidates must align with Y Combinator’s values of integrity, respect, accountability, and founder-first mentality.

## Lead Question

**“How do your personal values align with Y Combinator’s values of integrity, respect, and accountability?”**

*What to look for: Personal values, examples of ethical behavior, accountability.*

## Situational Scenario

**“You’re faced with a decision that could benefit you personally but might be against Y Combinator’s values. How do you handle it?”**

*What to look for: Ethical decision-making, prioritization of company values.*

## Diving Deeper

* “Can you share an example where you put a team or project’s interests above your own?”
* “How do you ensure that you maintain integrity in your work?”
* “Describe a situation where you had to be accountable for a mistake and how you handled it.”

## Evaluation

| Rating 1 | Rating 2 | Rating 3 | Rating 4 | Rating 5 |
| --- | --- | --- | --- | --- |
| Does not demonstrate alignment with company values | Occasionally demonstrates company values | Generally aligns with company values and demonstrates them | Strongly aligns with company values, consistently demonstrates them | Embodies Y Combinator’s values, serves as a role model for others |

# Case Study / Role Play

Candidates will be given a case study to role play. The scenario involves managing a critical infrastructure upgrade under a tight deadline. They must plan the upgrade, communicate with stakeholders, and ensure minimal downtime.

Evaluate candidates on their technical approach, problem-solving skills, and communication. Look for a clear plan, anticipation of challenges, and effective stakeholder management.

The role play assesses candidates’ ability to apply their skills in a real-world context. It also evaluates their fit with Y Combinator’s culture and values.

# Candidate Q&A

At the end of the interview, candidates can ask questions.This is their chance to learn more about Y Combinator and the role. Encourage candidates to ask questions. Their questions can reveal their priorities and how much they understand the role and company.

**Q. What are the biggest challenges the infrastructure team currently faces?**

A. The team is working on scaling our infrastructure while maintaining security and developer productivity.

**Q. How does Y Combinator’s mission influence the infrastructure team’s work?**

A. We support the mission by providing a stable platform for our product engineers, enabling them to focus on building startups.

**Q. Can you describe the team culture at Y Combinator?**

A. The culture is collaborative, with a focus on trust, respect, and accountability. We value quick action and responsiveness.

**Q. What opportunities for professional development does Y Combinator offer?**

A. Y Combinator offers opportunities to work on impactful projects, learn new technologies, and grow with the company.

**Q. How does the infrastructure team prioritize projects and manage workload?**

A. We prioritize based on impact and urgency, using agile methodologies to manage workload and ensure timely delivery.

**Q. What is the typical career path for an Infrastructure Software Engineer at Y Combinator?**

A. Career growth can involve taking on more complex projects, leading initiatives, or moving into leadership roles within the engineering team.

# 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 |
| --- | --- | --- |
| Technical Proficiency in Web Development |  |  |
| AWS and Docker Deployment |  |  |
| Infrastructure Management with Terraform |  |  |
| Debugging and Performance Optimization |  |  |
| Security and Data Protection |  |  |
| Collaboration and Communication |  |  |
| Adaptability and Quick Learning |  |  |
| Alignment with Y Combinator’s Values |  |  |
|  |  |  |
| **Total** |  |  |