



The state of Kubernetes jobs

MARKET REPORT 2023 Q2

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Kubernetes Job market trends for Q1 2023

*A year ago, the average U.S. salary for a Kubernetes job was **\$143,684**. Has it increased in Q2 2023? If so, by how much?*

Are the popular technologies in the past quarters, i.e. AWS, Docker, CI/CD **still relevant in Q2 2023?**

What about work experience?

Has the demand for junior roles increased?

The answers to the above questions (and perhaps more) await us in analysing the job data for the second quarter of 2023.

Let's see what we find out.

Before we go ahead, here are a few facts about our dataset:

- 1** At Kube Careers, we solely focus on Kubernetes Jobs.
- 2** The dataset is comparatively small – a total of 123 job descriptions from April to June, 2023.
- 3** If a job doesn't have a clear salary range, we discard it. Many job offers don't indicate a salary range, and we think this is not good for engineers looking for work.
- 4** We discarded job offers from recruitment agencies.
- 5** We have analysed listings on platforms used by European and American audiences.
- 6** All the comparisons you see with other quarters have been carried out after normalising the data.

Do consider the above factors while looking at the numbers.

Let's start!



Where are most Kubernetes job offers located?

In North America!



We published a total of **123 jobs** in Q2 2023, **53** of these were from North America, that's more than **43%**!

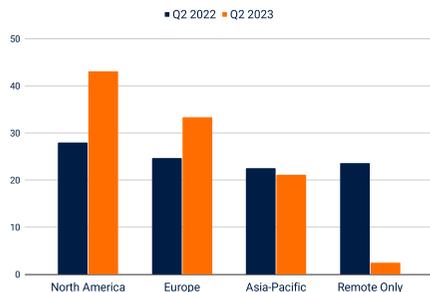
Europe came in at second place with **41 jobs** (almost **33%**), followed by Asia-Pacific with **26 (21%)** job listings.

Interestingly, there were just **3% remote-only jobs!** (more on this later).

Has North America always been the place for Kubernetes jobs?

Yes, but there is more to it.

Jobs by region (year-on-year)



If we compare year-on-year numbers (Q2 2022 vs Q2 2023), here's what we find:

- In Q2 2022, **29%** of the total jobs were from the North American region. In Q2 2023, the number has increased to **43%** – a **15% gain!**

- 24%** of the total jobs published in Q2 2022 were from Europe, this metric has increased by **8%** in Q2 2023!

What could have been the reasons for the increases?

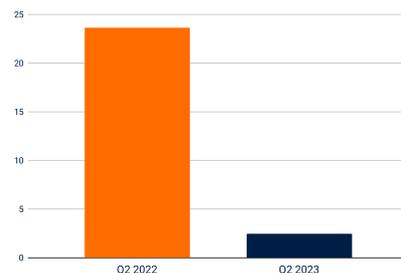
We can't know for sure, but here are a few possibilities:

- Most remote-only jobs in Q2 2022 were from American companies, and since these jobs have **decreased drastically**, these are now being listed as **Remote (U.S.)/Remote (Canada), or Office-only**. Hence the increase in North American as well as European jobs.
- One of the reasons why North America tops almost every quarter could be the sheer size of the American tech sector:
 - At a point in 2020, the U.S. tech stocks were valued at **9 trillion dollars**, that's more than the entire European stock market.
 - Also, the tech startup space is better funded in the U.S. than in Europe, resulting in more job opportunities in smaller I.T. companies.

If both European and North American jobs have increased, something had to give.

And it is remote-only jobs, unfortunately.

Remote-only job mentions (year-on-year)



Of the jobs we published in Q2 2022, **almost 24%** of these were remote-only.

In comparison, in Q2 2023, this metric has reached a mere **2%** – a **22% decline!**

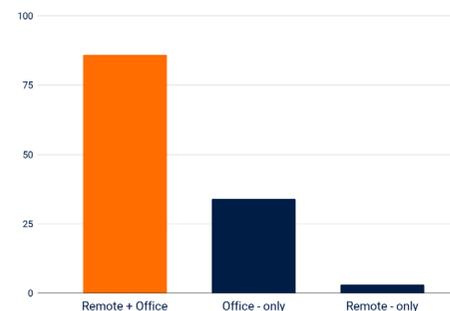
While there may be numerous reasons for it, one of the main ones is a shift to a remote-hybrid model:

- One recent Gartner study indicates that by the end of 2023, **39%** of global knowledge workers will work in a remote-hybrid mode.
- Companies are re-configuring their hybrid policies as well. A recent Okta study says, **2 out of 3 U.K. businesses** plan to reassess their hybrid model in the next 18 months.

Let's dive into the numbers and compare:

- Fully remote or remote-only jobs.
- Remote hybrid or remote + office jobs.

Working trends for Q2 2023

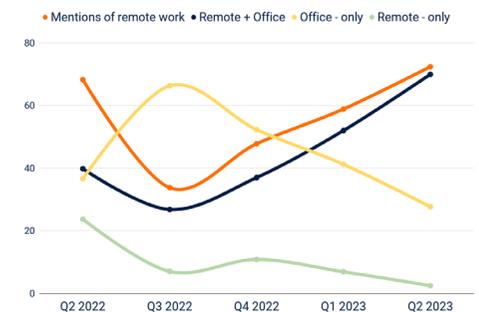


Of the total jobs published in Q2 2023 **almost 70%** mentioned a **remote-hybrid** or a **remote+office** nature of working.

Comparatively, **only 27%** were **Office-only**, and a measly **3%** were **remote-only**.

If we plot the remote mentions with the different tiers of working, *it gets interesting:*

Remote mentions with working modes



In Q2 2022, **remote work mentions** are at a **high (68%)**.

Simultaneously, **remote-only jobs** are also at an all-time high (**23%**).

Then, in Q3 2022, remote work mentions **drop drastically (to 33%)**, and so do remote-only and remote + office jobs.

However, from Q3 2022 to Q2 2023, the remote mentions have **gone up by 39%**! Simultaneously, remote + office jobs have **gone up by a staggering 43%**!

In conclusion, the remote mentions in Q2 2022 were a result of **62% Remote + Office jobs** and **38% Remote-only jobs**, while the remote mentions in Q2 2023 grew as a result of **97% Remote + Office jobs** and just **3% remote-only jobs**.

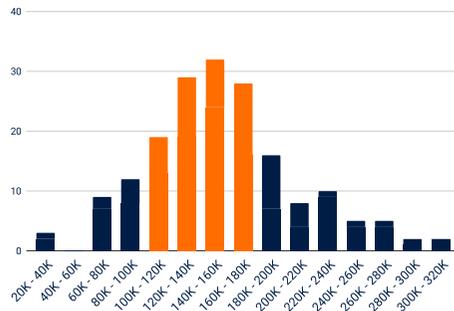
What's the salary range?

We have divided the salary ranges into two categories:

1. North American jobs in USD and
2. European jobs in Euros.

➤ Salary ranges for North American jobs in USD

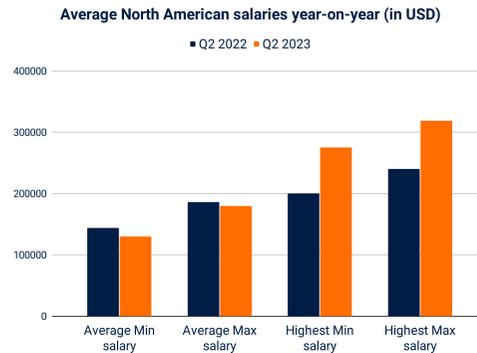
Salary ranges for North American jobs (in USD)



The *minimum salary* offered in North America, on average, stands at **\$129,802**, while the *maximum salary* (on average) offered stands at **\$179,520**.

The Highest salary range is between **\$275,000-319,000**.

How do they compare year-on-year?



If we compare the numbers from Q2 2022, the **average minimum salary in North America has decreased by almost 10%**, while the **maximum average wage has decreased by 4%**.

A 5-10% decrease in the salary range is not alarming, particularly if isolated to a single quarter.

These two factors **may** have something to do with the recent layoffs trend and inflation rates and wage stagnancy.

For context, the average US inflation in **Q2 of 2022** was **8.63%**, while the average in **Q2 2023** was **3.93%**.

That's a whopping 54% decrease. When inflation goes up, industries try to increase wages to match it.

Here's another interesting LinkedIn report that says wages in the tech industry will go down this year.

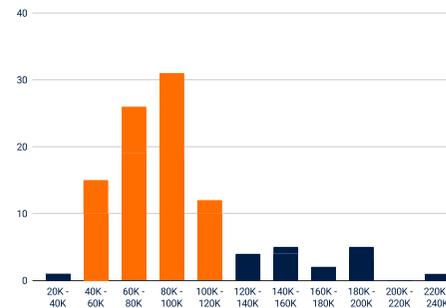
In contrast, **the maximum salary range has increased by 35%**!

While this seems exciting, it can be a one-off situation where we have listed a well-paying senior position.

The highest salary range recorded was up to **\$319,000**, and it was for a **Director (Cloud Engineering) role with Paypal**.

➤ Salary ranges for European jobs in Euros

Average European salaries (in Euros)



The *minimum salary* offered in the Europe, on average, stands at **€80,864**, while the *maximum salary* (on average) offered stands at **€106,464**.

The highest salary range in Europe is **€199,213 - €237,015**.

How do they compare year-on-year?

Average European salaries year-on-year (in Euros)



Before we analyse further, do understand that:

1. **Europe is a vast and diverse continent** with countries with varied economics, cost of living, and technological status. A deeper (read denser) analysis is required to derive meaningful patterns.
2. **We have converted all the European salaries to Euros.** Further derivation needs to be done to obtain better results.

Here are the key takeaways if we compare the Q2 2022 numbers with Q2 2023.

- **The minimum average salary has decreased by almost 4%**, while the average maximum salary has increased by 10%.
- **The highest salary range has increased by 28%**. This could result from a single job opportunity skewing the distribution.

The highest recorded European salary in Q2 2023 was **up to €209,252** for a **Infrastructure Engineer role with Abacus Works**.

Are certifications necessary to apply to Kubernetes jobs?

Certifications are not a strict requirement!

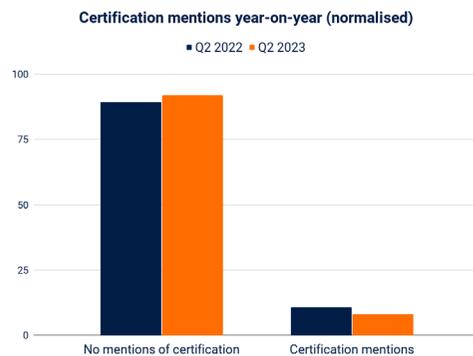


Of the 123 *job listings* we published in Q2 2023, 113 (almost 92%) did not mention a certification requirement!

What could be the reason for this?

Perhaps recruiters want lower entry barriers for applicants.

Is this trend consistent with the past quarters?



In Q2 2022, **more than 89%** of the jobs **didn't mention** a certification requirement.

In that regard, Q2 2023 has seen a **3% decrease** in certification mentions year-on-year.

If we plot the numbers for the past five quarters, here's what we get:



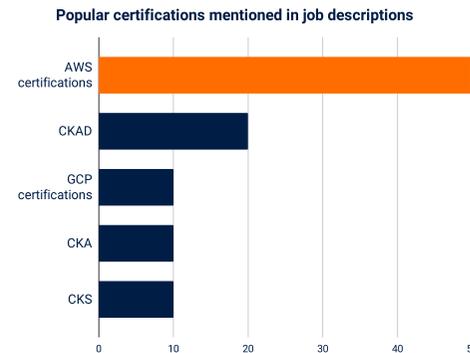
If we take an average of the last five quarters, **90% of the jobs didn't mention a certification requirement!**

Although the analysis may suggest certifications are less crucial for Kubernetes jobs, there are better ways to look at it.

Traditionally, certifications of any domain have always been seen as a plus and, in some cases, a good differentiator.

What one can take away from this is – **although certifications are good to have, they don't stand as entry barriers if you are looking for Kubernetes jobs.**

What's interesting is almost all the job descriptions that mentioned certification did so while citing **more than one certification!**



Of the jobs that mentioned a need for certification:

- **50%** of these mentioned the **AWS certifications.**
- **40%** of these mentioned **Kubernetes certifications.**
- while 10% mentioned the GCP certifications.

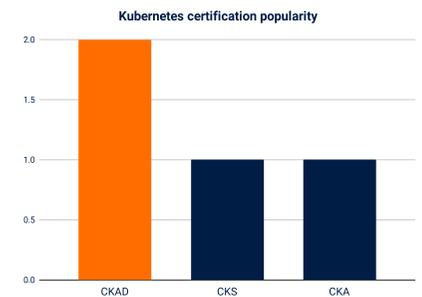
How does this compare with Q2 2022?



It's apparent that:

- **AWS certifications continue to be the most in-demand.**
- In Q2 2022, there were **no mentions** of CKS, CKAD, CKA.
- What's also interesting is how Azure certifications were mentioned in Q2 2023, which weren't there in Q2 2022.

What about Kubernetes certifications?



Of all the job descriptions that mentioned Kubernetes certifications, **all of these** said the CKAD certification.

The CKA and CKS represent a 50% depiction each.

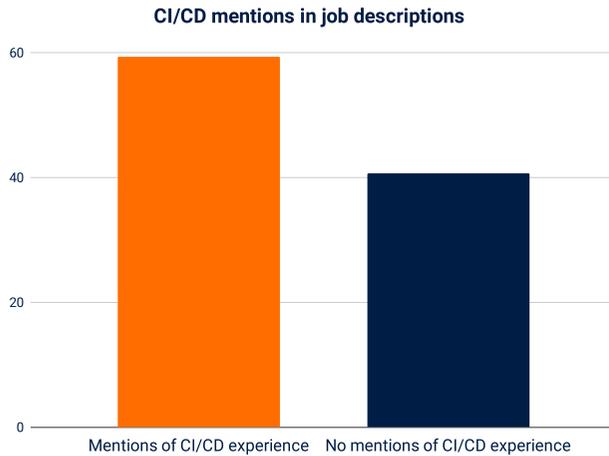
Can we derive trend patterns with regards to the Kubernetes certifications or make a call on a Kubernetes certification popularity?

We must understand that **only two jobs from the 123** we published in Q2 mentioned Kubernetes certifications.

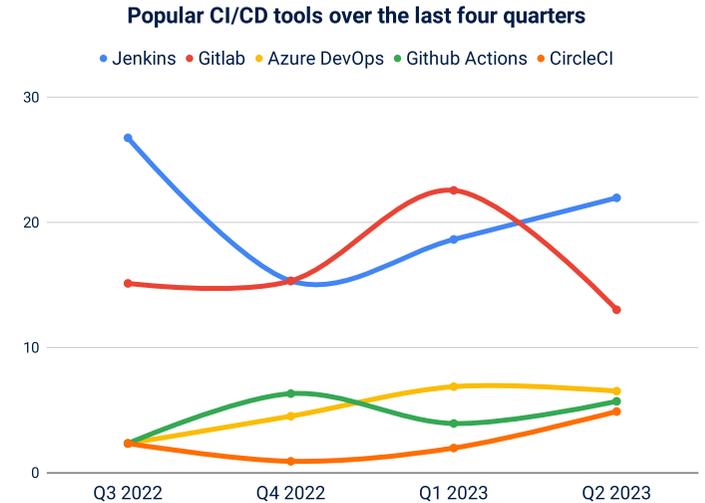
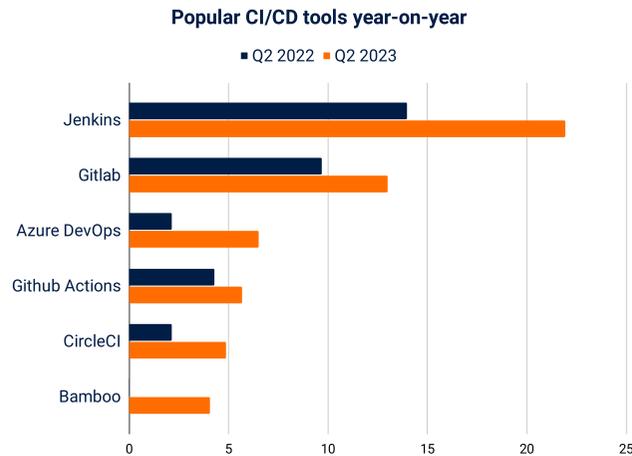
That's just too small a case to derive any patterns.

Kubernetes, CI/CD and Jenkins vs GitLab CI

Of the 123 jobs we listed in Q2 2023, **73 (60%)** mentioned the need for CI/CD experience.



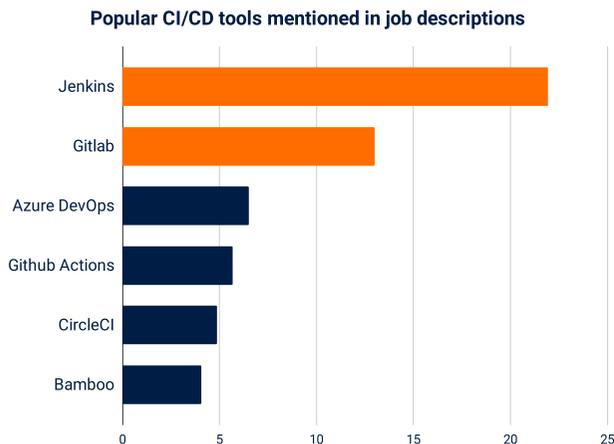
Mind you, there were multiple instances wherein job descriptions mentioned **more than one CI/CD tool**. Then the order came out to be: *Azure DevOps (105)*, *GitHub Actions (9%)*, *CircleCI (8%)*, and *Bamboo (6%)*. *Was Jenkins always popular?*



CI/CD mentions have become **more prevalent year-on-year**, increasing by 10%.

Of the jobs (73) that cited CI/CD experience, **27 (37%)** of these mentioned Jenkins.

Gitlab came second in popularity with **16 (21%)** citations.



Comparing year-on-year numbers, we understand that:

1. Jenkins remains both quarters' most popular CI/CD tool.
2. Gitlab is the closest to Jenkins compared to others, in second place, in both quarters.
3. Azure DevOps, GitHub Actions, and CircleCI have traded places between the quarters.

If we plot the numbers from the last four quarters, here's what we get:

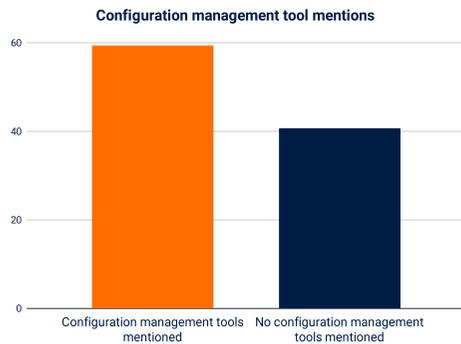
Here are the notable points:

- **Jenkins** is usually the **most preferred** tool, but **Gitlab** is not so far, it even **exceeded Jenkins** in Q1 2023.
- At a distance from the top two, *Azure DevOps* and *Github Actions* keep trading places in the 3rd and 4th spot.
- *CircleCI* is a consistent fifth popular tool.

So if you are looking for a Kubernetes, having some experience with either **Jenkins or Gitlab** is a **good idea**.

Infrastructure as Code (and Terraform) in Kubernetes job descriptions

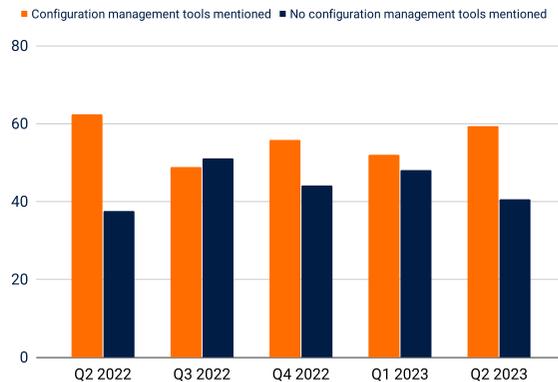
In Q2 2023, almost 60% of the jobs we published mentioned a need for configuration management tool experience.



If we look at the data from Q2 2022 to Q2 2023, only in Q3 2022 were the mentions below 50% (they were 48%, to be precise).

In all the other quarters, the mentions surpassed the 50% mark.

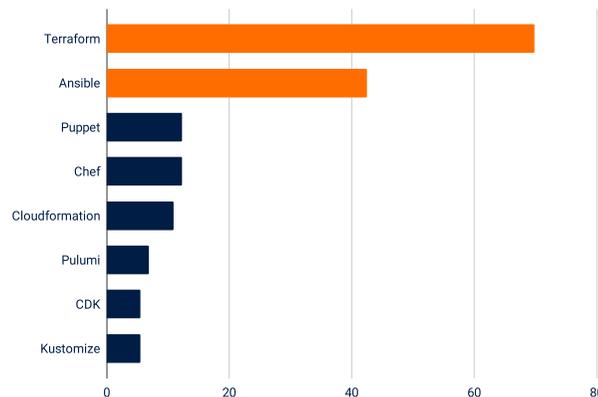
Configuration management tool mentions over the year



If we take the median of the last five quarters, on average, the mentions for configuration management tools **have been at 56%**!

Of the jobs that mentioned a configuration management tool, almost **70% of these mentions were for Terraform!**

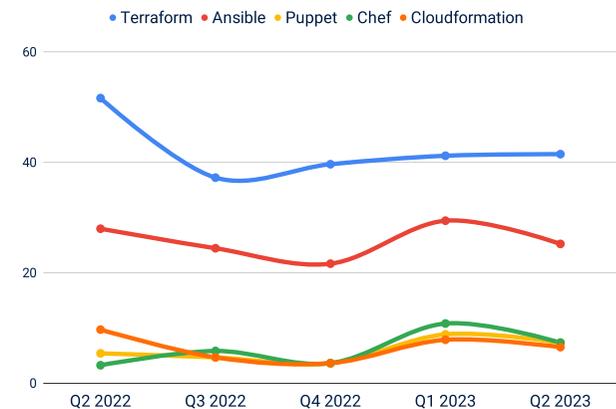
Popular configuration management tools



Ansible mentions were second with **42%** representation. It was followed by *Puppet (12%), Chef (10%), and Cloudformation (10%)*.

How do those numbers compare with previous quarters?

Popular configuration management tool trends over the year



The key takeaways from the above trend graph are:

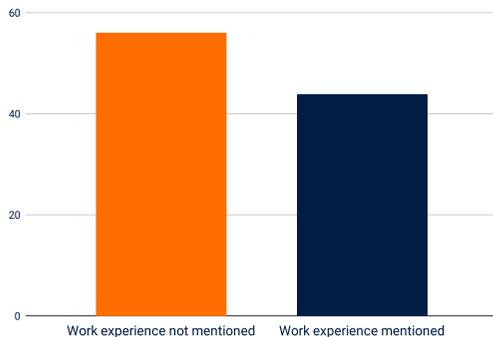
- **Terraform** is the **most popular** configuration management tool. Period.
- **Ansible** has been *consistently popular* in the **second place**.
- There is a bottom tier of **Puppet, Chef, and Cloudformation**, trading places, but on average, representing the same popularity level.

If you wish to gain experience in just one tool, pick **Terraform**.

Although, things are getting murky since Hashicorp decided to change the licensing permissions.

How much experience is required for most Kubernetes jobs?

Mentions of work experience in job descriptions



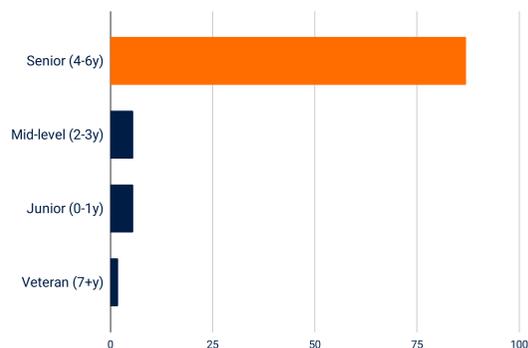
44% of the total jobs published in Q2 2023 mentioned work experience.

Mind you, when we say work experience mentions, we mean explicit mentions.

For example, if we get a job listing for a **DevOps Engineer**, we won't count it as a work experience mention. Still, if we get a **Junior Cloud Engineer** or **Senior Data Engineer**, we'll consider these as work experience mentions.

Do employers seek any specific seniority level?

Work experience preference



The preference is as straightforward as it could be: senior-level.

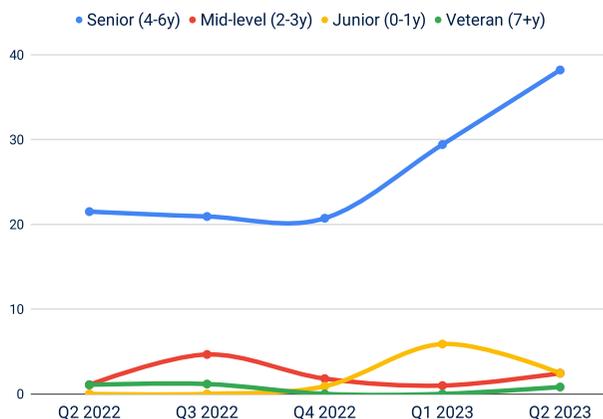
Out of the 54 jobs that mentioned work experience:

- A staggering **87%** of these mentioned a **Senior level experience (4-6 years)**.
- Followed by **Mid-level (2-3 years)** and **Junior-level (0-1 years)** experience with an identical **5%** representation.
- There was only a **single mention** of a **veteran-level experience**.

Have companies always preferred senior-level experience?

- To understand this better, let's plot the data for all the quarters between Q2 2022 and Q2 2023.

Work experience preference through the year



When work experience is mentioned in job descriptions, on average, 85% of the time, it's for senior-level experience.

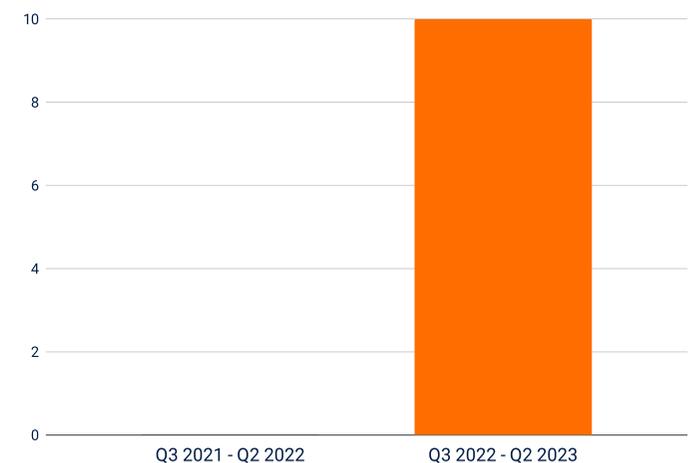
Although a distant second, mid-level experience has been consistent across the quarters.

There has been a massive increase in junior-level roles since Q4 2022, a trend we hope continues in the coming quarters.

Disclosure: We observed a massive void of Junior roles in our listings, and to aid junior engineers, we changed our algorithms to include more junior positions.

If we compare the last four quarters to the ones before, the stat for Junior roles has increased by 10X since we have pushed for more junior positions.

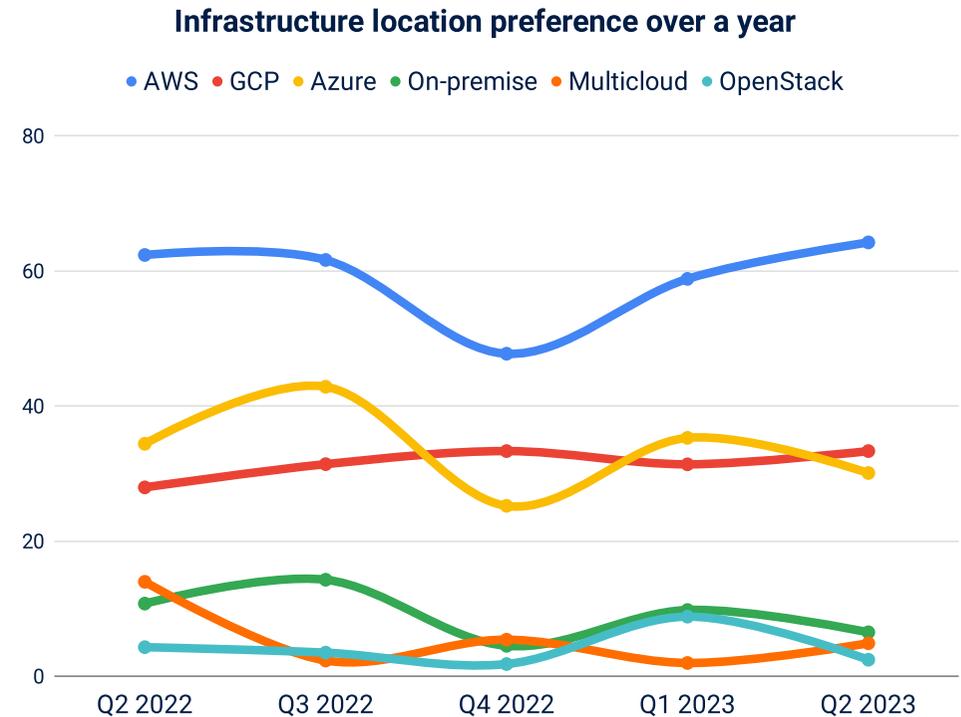
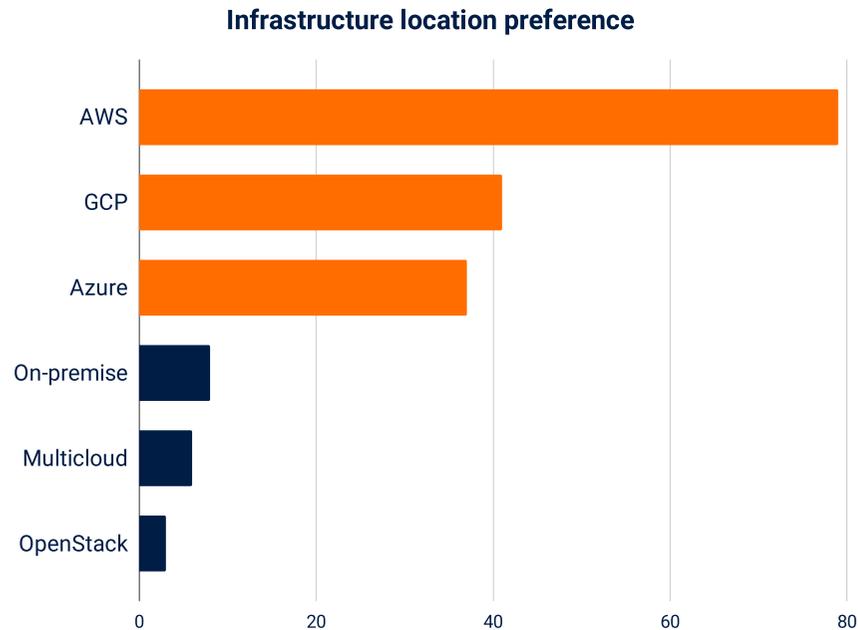
Junior-level experience jobs published



Junior Kubernetes roles are hard to come by; thus, if you come across one, let us know, and we will help you reach a wider audience.

Popular cloud providers for running Kubernetes

Spoiler: it's always AWS.



First, of all the jobs we published in Q2 2023, **78%** of these revealed their **infrastructure location**.

Of the total jobs that mentioned their infrastructure location:

- Almost all of these mentioned more than one host.
- A staggering **83% of these mentioned AWS** as their preference.
- At a distance but still fighting for the second place were **GCP** and **Azure** mentions with **42% and 38% representation**.
- These were then followed by *on-premise* 8%, *multicloud* 6%, and *openstack* 3%.

How does that compare over time?

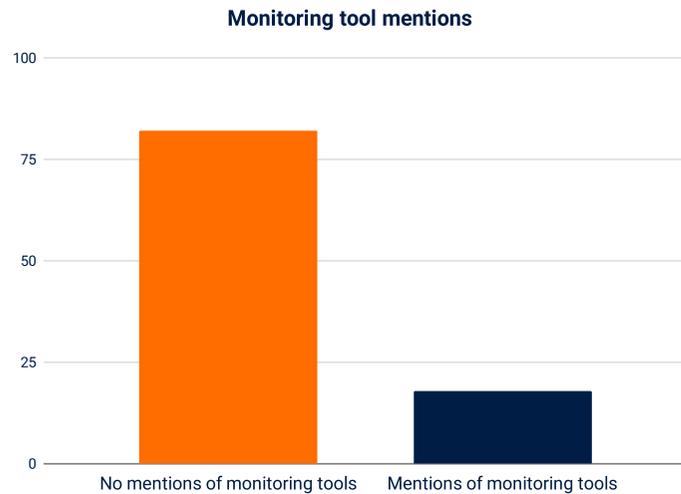
Although it has its downtrends, still, **AWS continues to be the place** for companies to host their clusters.

GCP and Azure, although far less popular than AWS, continue to trade places in popularity at the **second spot**.

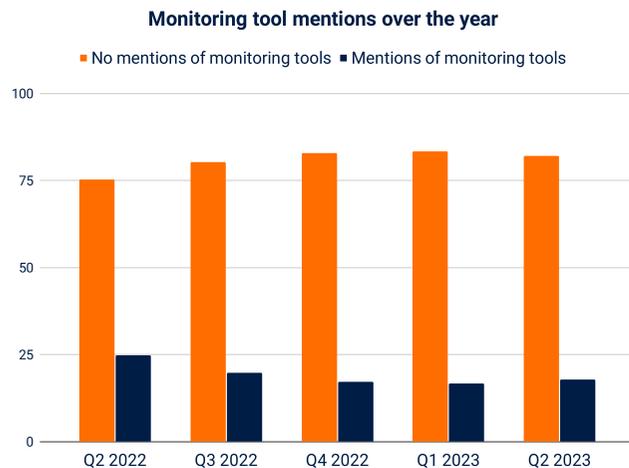
On-premise, Openstack, and Multicloud are trading places in the lowest bracket of popularity, with each taking the fourth spot at least once in the past year.

Monitoring stacks for Kubernetes in job descriptions

Of the jobs we published in Q2 2023, only 17% mentioned a requirement for monitoring tools experience.



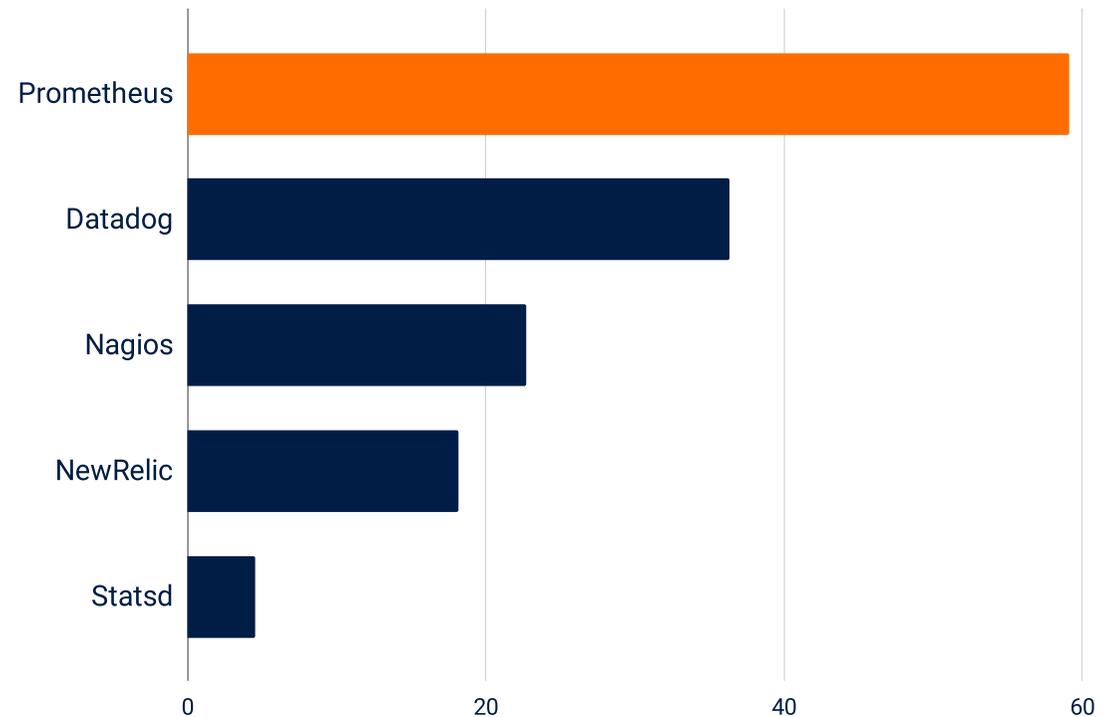
This is consistent with the previous quarter.



If we take the **median of the last five quarters**, monitoring tool mentions came to be at only 20%.

Were any specific tools mentioned among the few jobs that cited monitoring tools?

Popular monitoring tools mentioned in job descriptions



First, there were multiple instances wherein more than one tool was mentioned.

And, of the jobs that mentioned monitoring tools:

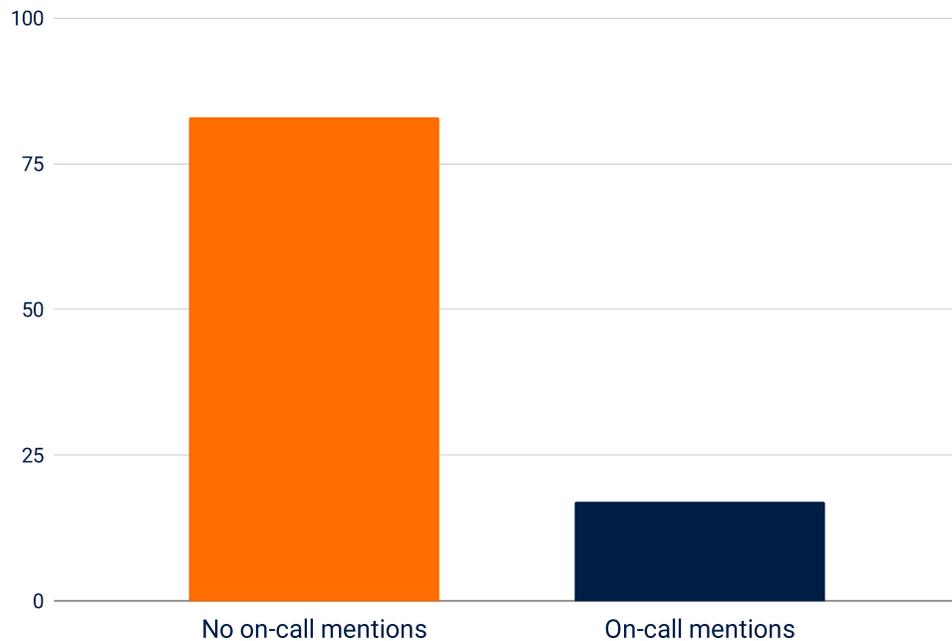
- **Almost 60%** of these mentioned **Prometheus**.
- **Datadog** came in second with **36%** representation.
- This was then followed by *Nagios (22%)*, *NewRelic (18%)* and *Statsd (4%)*

Excluding Q4 2022, in all the last five quarters, the popularity trend for monitoring tools has been: **Prometheus > Datadog > NewRelic**

Kubernetes jobs with on-call rotation

Only 17% of the jobs we published in Q2 2023 mentioned a need for on-call rotation.

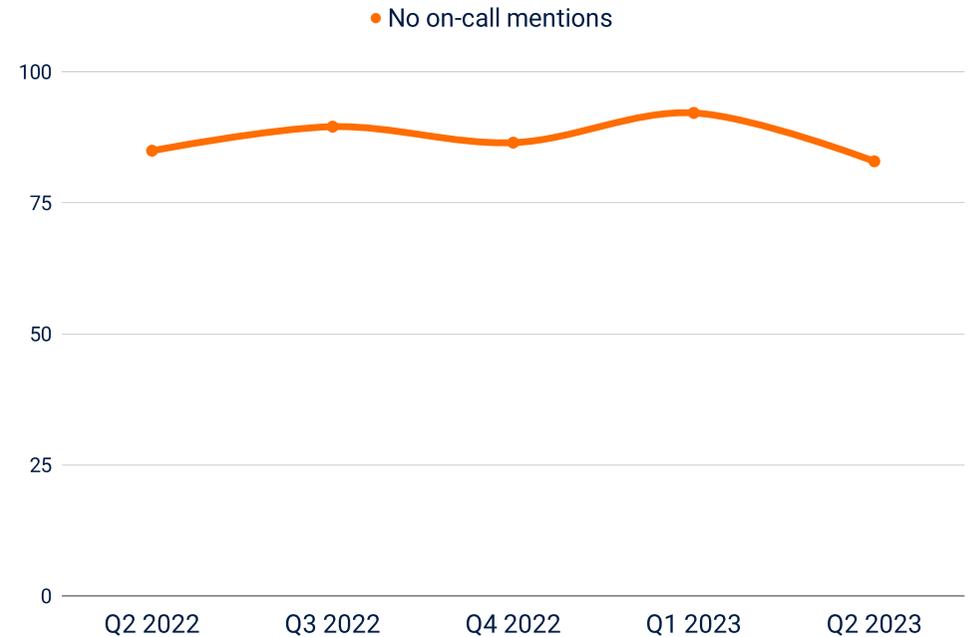
On-call mentions in job descriptions



It's good to know **less than 1/5th** of the jobs published in a quarter require on-call rota.

What's interesting is when we compare previous on-call statistics:

On-call mentions trend over the year



On-call mentions have **never exceeded the 20% mark in last five quarters!**

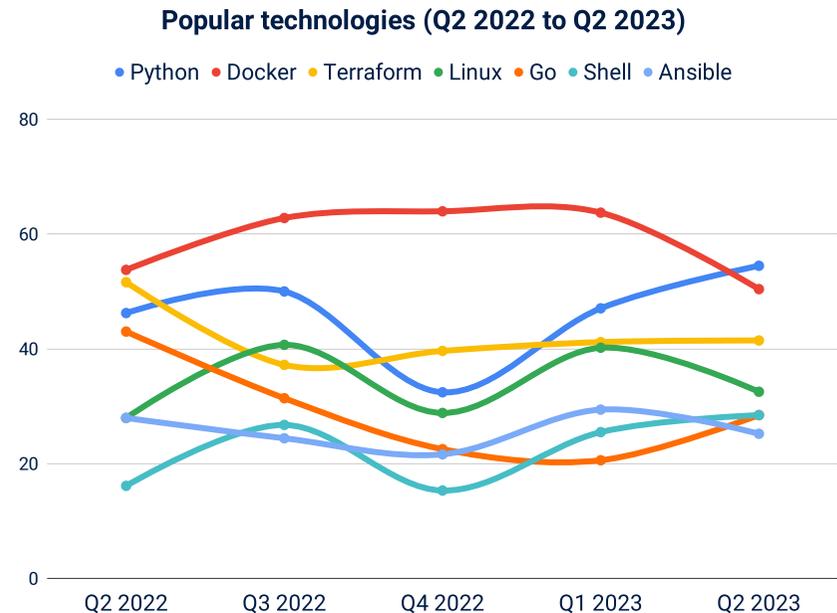
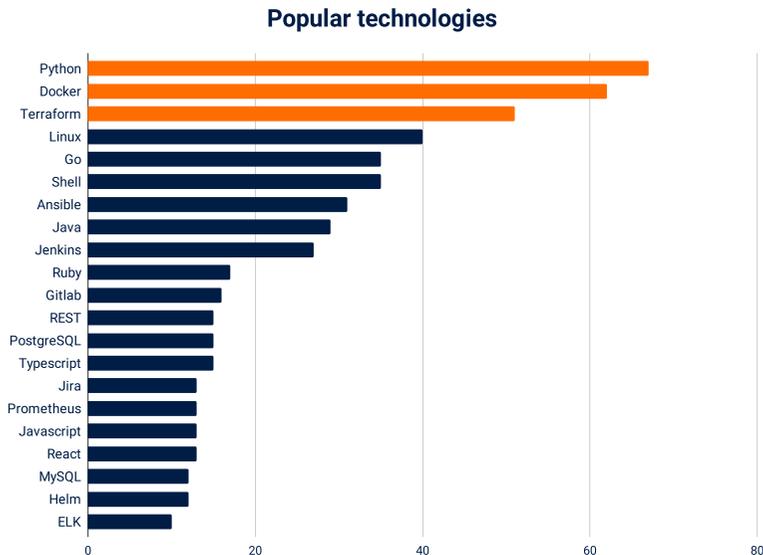
If we take the median of the last five quarters, the on-call mentions are at just 12%.

In Q2 2023, there has been a 10% increase in on-call mentions when compared to Q1 2023.

In conclusion, on-call is a requirement for (a small subset of) Kubernetes jobs.

Which popular technologies other than Kubernetes should you learn?

The following list is an excellent guide for engineers seeking to round out their skill sets.



The most popular choices of technology among Kubernetes engineers are:

- Programming languages: **Python, Go, and Java.**
- Containers: **Docker.**
- Operating systems: **Linux.**
- Infrastructure as Code: **Terraform.**
- Database management: **PostgreSQL.**
- Configuration management: **Ansible.**
- CI/CD: **Jenkins and Gitlab.**

It's essential to notice that if you are well versed with **Python, Docker, and Terraform**, you can confidently apply for more than **60%** of job offers.

How do those numbers compare with the previous quarters?

Let's try to make sense of the above (somewhat confusing) trend chart.

There appear to be three tiers of technology popularity:

- **Tier 1: Docker.** Docker is the **most popular technology** mentioned in Kubernetes job descriptions (makes sense, right?). If we take a *median* of all the Docker mentions in the last five quarters, it comes to **59%**.
- **Tier 2: Python, Terraform, and Linux.** Median wise, these constitute **46%, 42%, and 34%** in the last five quarters.
- **Tier 3: Golang, Ansible, and shell scripting.** These have consisted **29%, 25%, and 22%** on average, in the last five quarters.

Which programming languages are the most in demand in Kubernetes jobs?

We've had a total of 123 job listings in Q2 2023.

Of these, **96 (78%)** jobs mentioned at least one programming language.

There were a total of **239** programming language tags in 96 job listings, that's an average of **2.79** languages per job listing.

Not so far away is **Java**, with 30% representation.

Other important programming languages include: *Ruby (17%), SQL (15%), Typescript (15%), Javascript (13%).*

How does it compare with the previous quarters?

In the second place, we find **Go, Java, and shell scripting**.

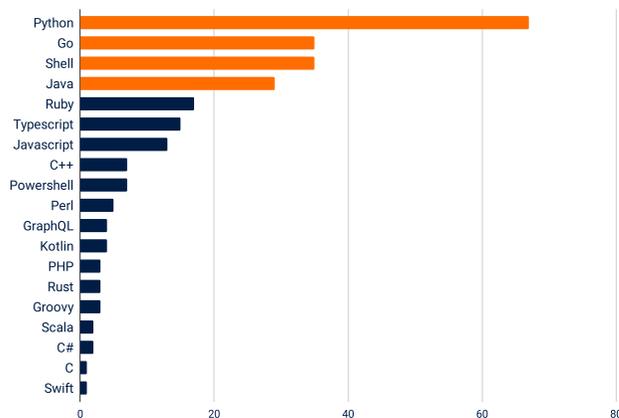
It's worth noting that Go's popularity decreased by **15%** in Q2 2023 compared to the same quarter last year.

In third place there're **Javascript, Typescript, Ruby, and C++**.

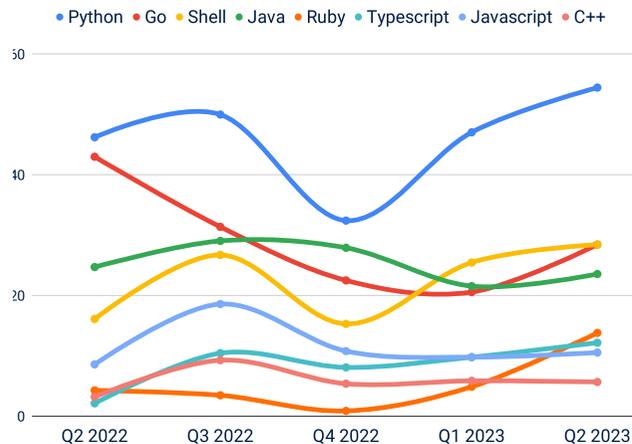
Javascript started in the **5th** popular place, eventually **slipping to 7th** by Q2 2023.

What's also interesting is how **Ruby** has increased in mentions by **12%** year-on-year.

Programming language popularity

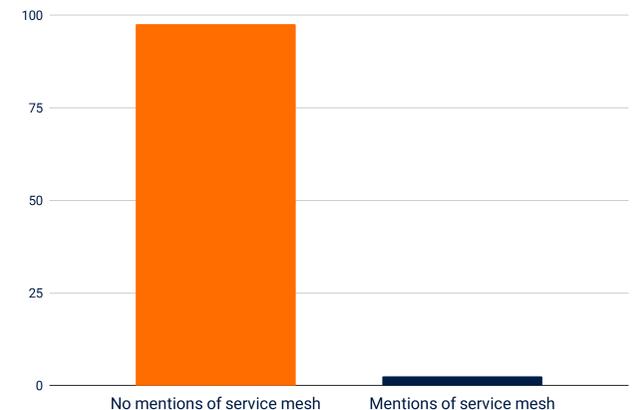


Programming languages trend over the year



➤ Is there any demand for service meshes?

Service mesh mentions



Python is the most in-demand programming language in Kubernetes job descriptions, with almost 70% mentions.

The second popular spot is a tie between **Golang** and **shell scripting**, each with 36% representation (of the total jobs with tags).

Python is the most popular programming language of all.

When a job description has a **programming language mention, 7 out of 10 times**, it mentions Python.

Compared to Q2 2022, Python mentions have increased by **8%** in Q2 2023.

Only 2% of the total jobs we published in Q2 2023 mentioned a need for **service mesh experience**.

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