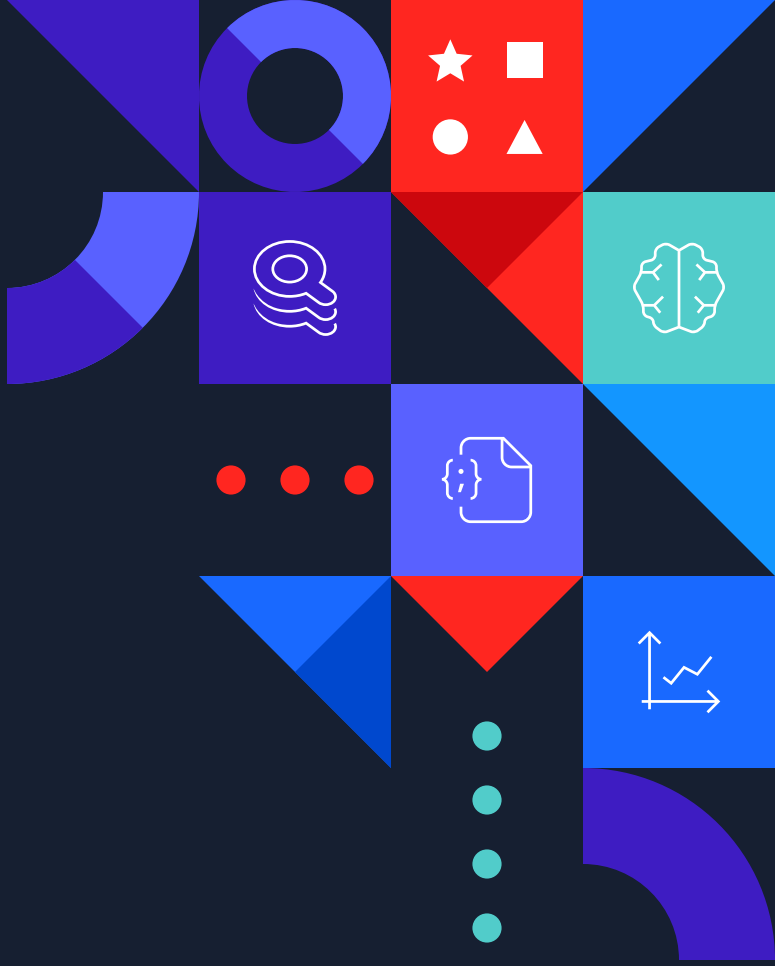
DTi2.0



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Digital Transformation Index 2.0 Survey Report

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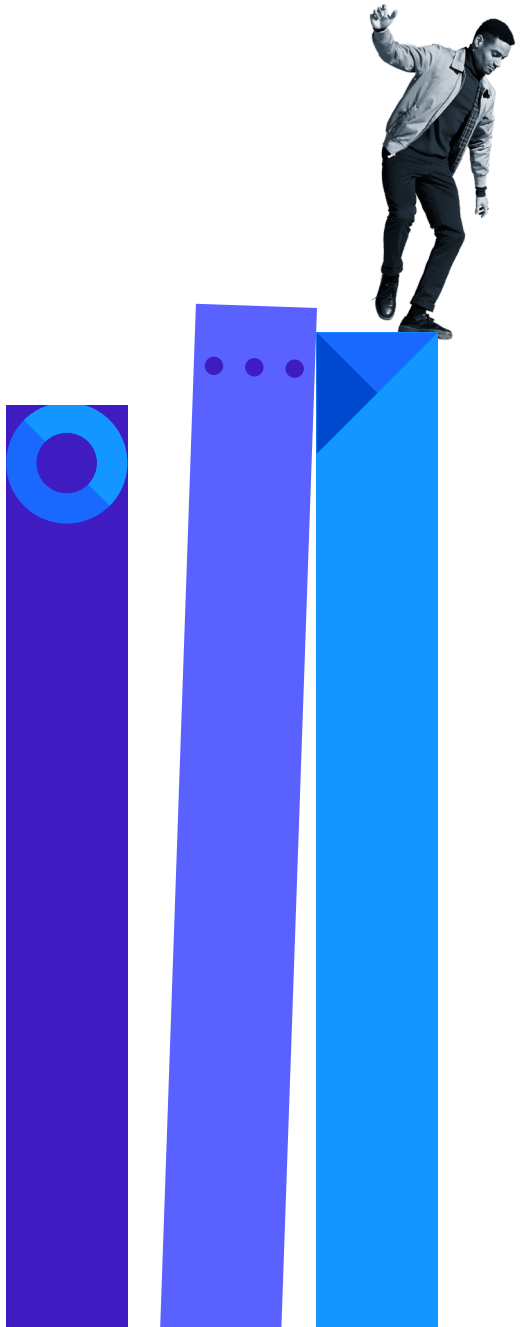
OUTLINE:

- KEY FINDINGS
- INTRO
- THE DTI
- CULTURE & TRANSFORMATION
- THE MODERN DATA LAYER
- DATABASE APPLICATIONS
- ONE LAST INSIGHT
- METHODOLOGY & DEMOGRAPHICS
- ABOUT REDIS



Key Findings:

01. Digital transformation's pace has accelerated since we ran our last survey in November 2020, with cloud adoption being the major driving force behind it.

02. NoSQL database adoption continues to accelerate. We found a strong correlation between NoSQL adoption and overall digital transformation index scores.

03. Caching is critical for any application that needs to scale. Caching is not just an optimization for improving performance, and it's being used in more ways than ever before.

Intro

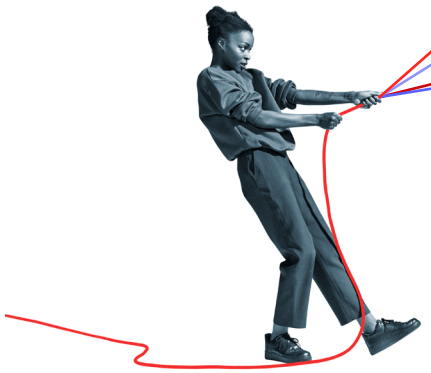
Digital Transformation—much ink has been spilled on digital transformation in the past decade. At Redis, we experience it every day in conversation with our customers, practitioners, and industry peers. We see a direct connection between a set of technology layers that enable the transformation (cloud, microservices, containers, and NoSQL databases) and how quickly and successfully companies are able to push through their transformation journeys. In order to quantify and simplify the way we measure transformation, we created the Digital Transformation Index (DTI). This single composite index indicates how far along a company is on its journey based on the current level of adoption of the four technologies.

As we ran the second edition of the report during our annual RedisConf event on April '21 (only six months after conducting the first survey), we found the pace of innovation has accelerated even in this short time.

One of the main themes of RedisConf 2021 was Redis as a real-time data platform. **Your organization only moves as fast as your data.** You can make the most of the cloud, adopt Kubernetes, and build microservices, but without a modern data layer built on speed and scalability, you won't keep pace with your peers. This report bears that out, with the types of databases in use and how those databases are used being key indicators of an organization's digital success.

The Digital Transformation Index

The DTI is based on four components calculated from survey respondents' self-assessments of their progress in using the cloud, microservices, Kubernetes, and NoSQL databases. As an example, the question about Kubernetes usage gave users four choices:



We converted the answers to this and similar questions to numeric values and used those to calculate the DTI.

The Digital Transformation Index

Cloud continues to be the #1 transformation technology

TAKEAWAY:
CLOUD COMPUTING WAS THE MOST MATURE TECHNOLOGY IN OUR FIRST SURVEY, AND THE GAP BETWEEN CLOUD AND OTHER TRANSFORMATIONAL TECHNOLOGIES IS EVEN WIDER NOW.

Compared to the November 2020 survey, by far the most significant change to the DTI components was in cloud strategies, with that metric up by 0.35. The overall DTI is up, along with an increase in NoSQL usage. On the other hand, microservices and Kubernetes strategies took a small step backwards as the difficulties of refactoring monoliths and using Kubernetes effectively become more apparent as transformations move forward.

Culture and Transformation

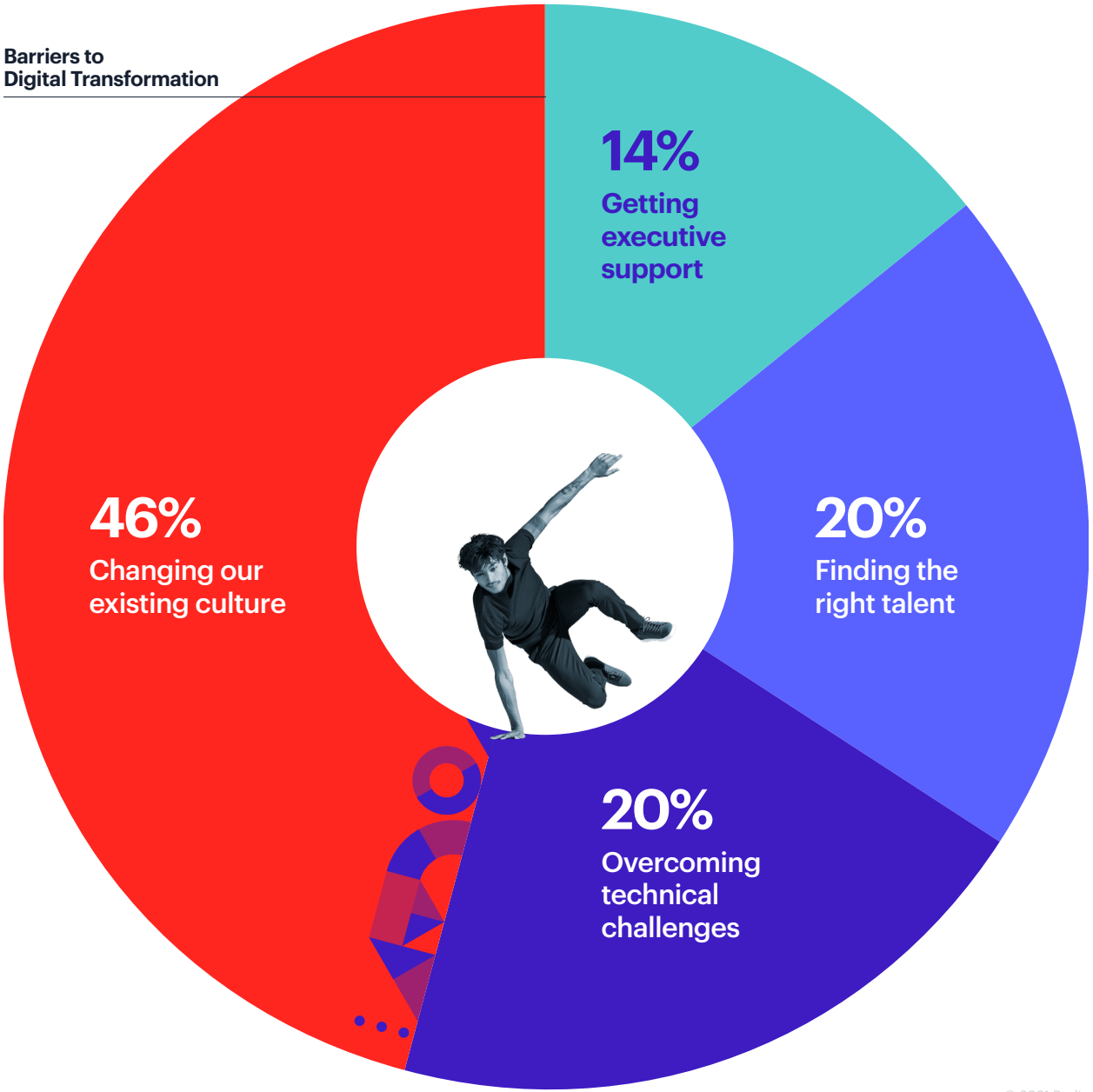
Technology is important, but culture comes first

TAKEAWAY:
CULTURAL CHANGES ARE BY FAR THE MOST CHALLENGING PART OF A DIGITAL TRANSFORMATION.

We got some of our most interesting data by asking respondents what was their number one obstacle in mobilizing their organization to transform. By a wide margin, cultural changes were named the most significant obstacle. This is likely no surprise to anyone with experience implementing technical initiatives across an organization, but we were struck by the magnitude of the problem.

The good news here is that executive support for digital transformation is the least common problem. Finding the right talent and overcoming technical challenges, such as breaking down monoliths, were far less difficult than making cultural changes.

Barriers to Digital Transformation

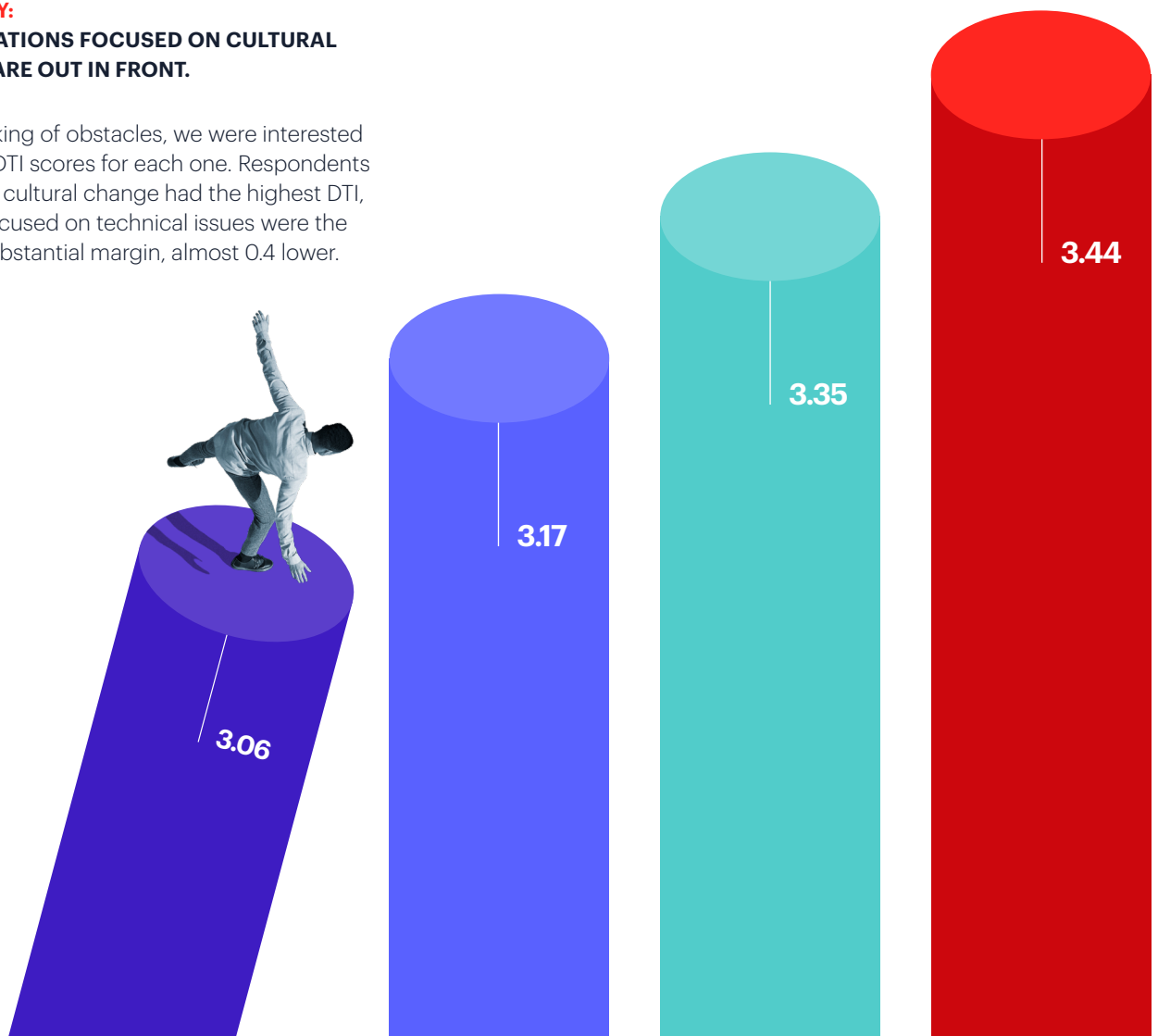


Culture and Transformation

If you haven't tackled cultural change, the road ahead will be bumpy

TAKEAWAY:
ORGANIZATIONS FOCUSED ON CULTURAL CHANGE ARE OUT IN FRONT.

Given the ranking of obstacles, we were interested in seeing the DTI scores for each one. Respondents wrestling with cultural change had the highest DTI, while those focused on technical issues were the lowest by a substantial margin, almost 0.4 lower.



DTI Scores per Challenge

3.44
Changing our existing culture

3.35
Getting executive support

3.17
Finding the right talent

3.06
Overcoming technical challenges

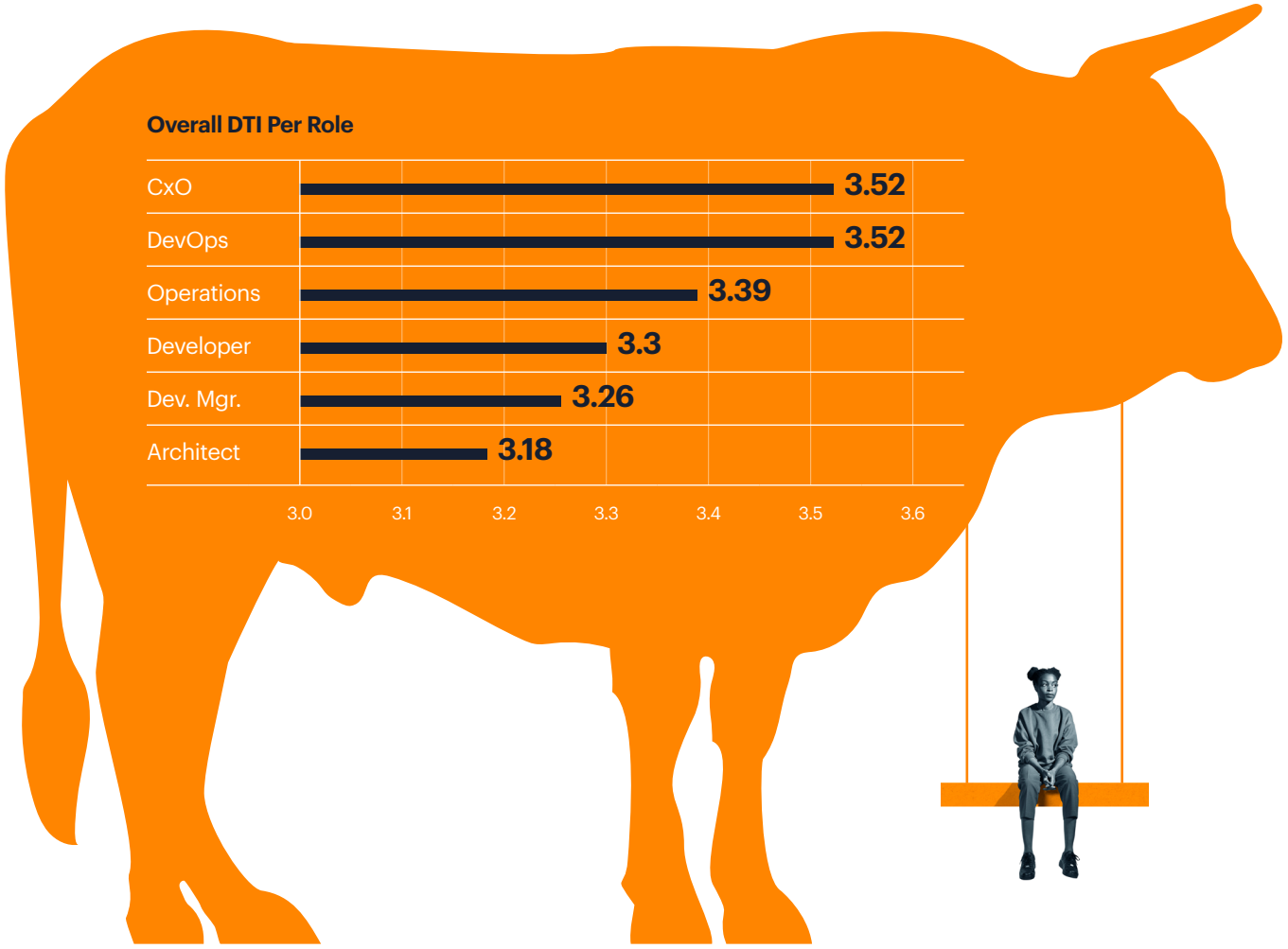
Culture and Transformation

The C-Suite is bullish on transformation

TAKEAWAY:
ACROSS JOB ROLES, THERE IS A SIGNIFICANT DIFFERENCE OF OPINION AS TO HOW DIGITAL TRANSFORMATIONS ARE GOING.

We were curious to see how respondents at different levels of their organizations perceived the state of their transformations. Executives and DevOps professionals ranked their results the highest. Organizations that have embraced a true DevOps culture scored higher than organizations where Developers and Operations are still separate groups.

Architects came in with the lowest scores. This makes sense, given that architects have to live in the present world, where production applications have to keep running, while also moving towards the transformed world they've designed. With that in mind, they live closest to the gap between plan and production than others. Their DTI scores were nearly 0.35 lower than executives and DevOps.

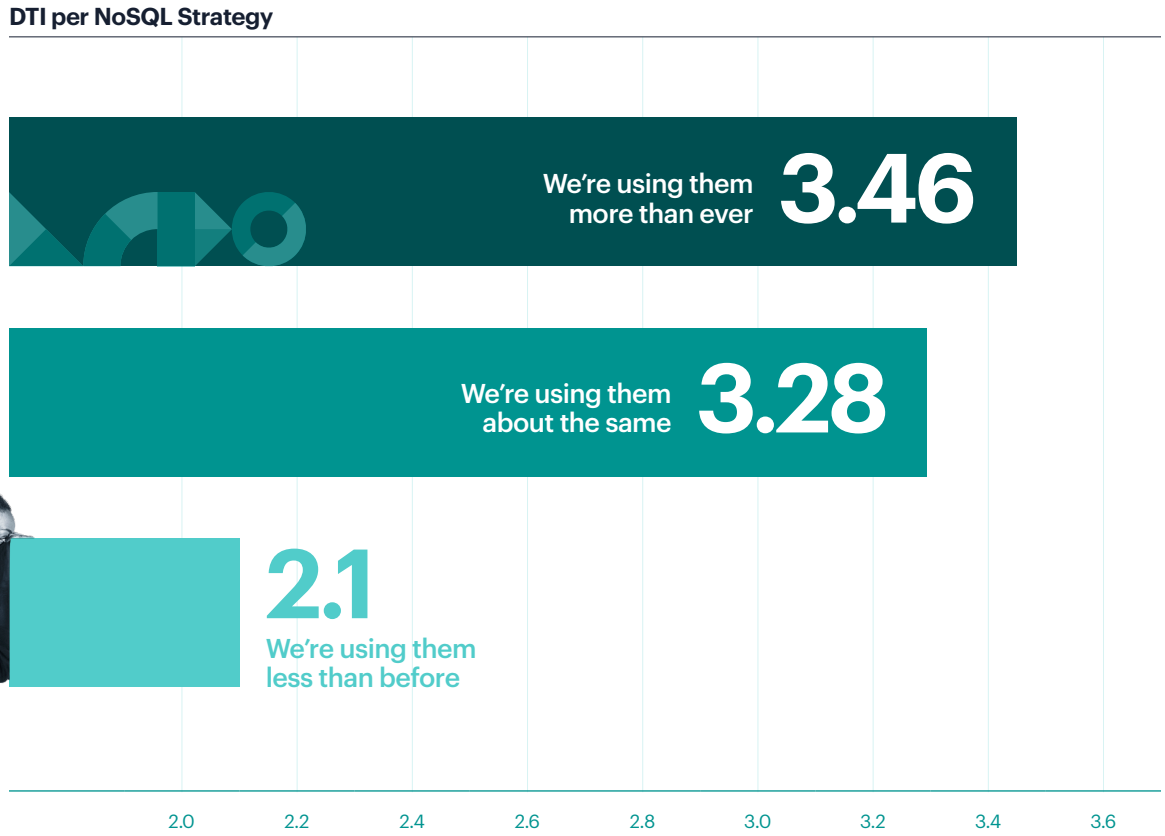


The Modern Data Layer

Relational databases are seriously holding you back

TAKEAWAY:
ORGANIZATIONS INCREASING THEIR USE OF NOSQL DATABASES ARE LEADING THE PACK.

We asked respondents whether they were using NoSQL databases more than before, about the same, or less than before. The results were striking: organizations moving forward with NoSQL had a DTI nearly 1.4 higher than those who are moving away from NoSQL. That's the biggest gap for any question in the survey.



The Modern Data Layer

NoSQL is where the growth is

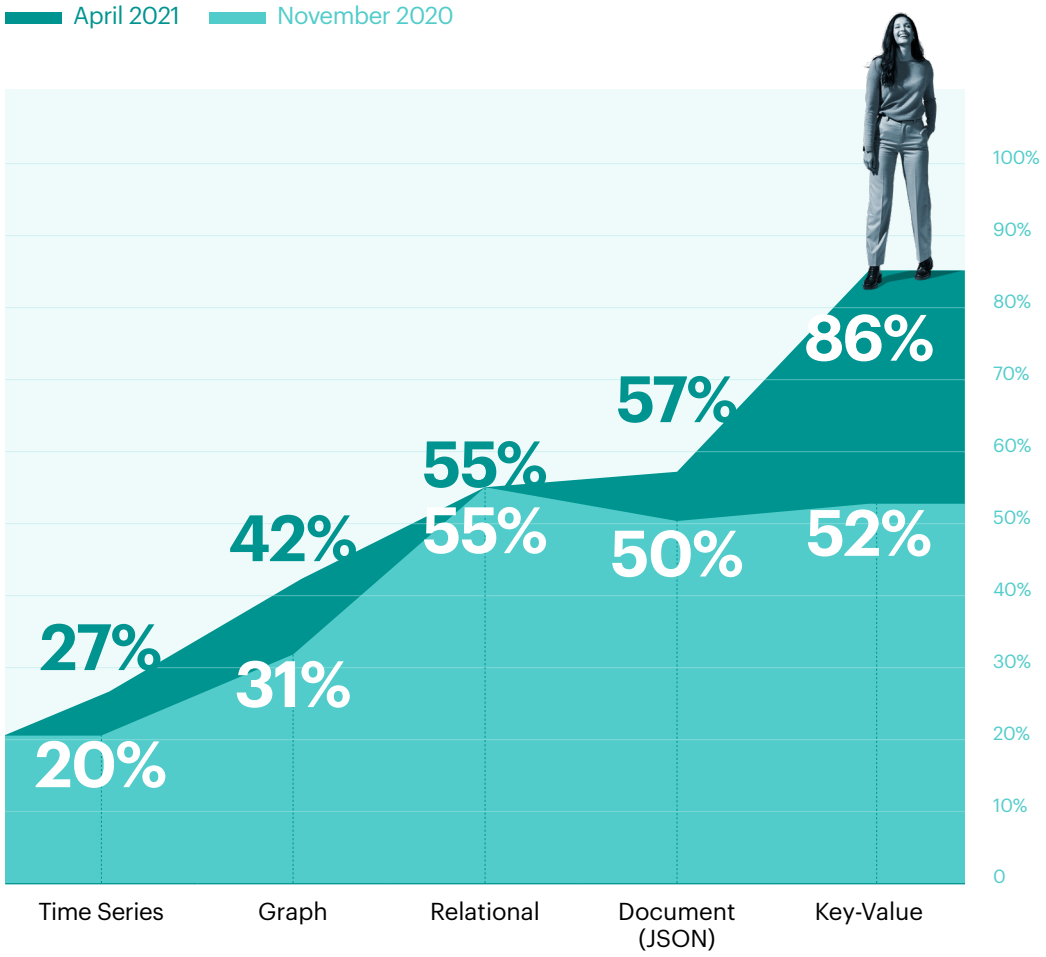
TAKEAWAY:
USAGE OF EVERY TYPE OF NoSQL DATABASE IS ON THE RISE; RELATIONAL USAGE IS STAGNANT.

We asked respondents what types of databases they used, allowing for multiple responses. That key-value databases are used by an overwhelming majority of respondents isn't surprising, given that our audience was RedisConf attendees.

We were surprised to see relational databases in third place behind both key-value and document databases. The use of relational databases was unchanged compared to our first survey, while across the board every type of NoSQL database showed gains.

It's worth mentioning that the RedisJSON, RedisGraph, and RedisTimeSeries modules give Redis native support for Document stores, graph databases, and time series databases. (It's worth it to us, anyway.)

Percentage of Users of Different Database Types



Database Applications

Cache or Die

> **TAKEAWAY:**
> **NO MATTER WHAT YOUR ARCHITECTURE, YOUR APPLICATION OR MICROSERVICE WON'T SCALE WITHOUT A CACHE.**

In a recent interview, author and thought leader Lee Atchison put it bluntly:

"Caching is absolutely critical to scaling the needs of today's modern applications.... Caching used to be an add-on to improve performance, but now caching's becoming a central tenet in all aspects of modern computation and an essential part in the operation of all types of applications and systems."

As organizations move away from monolithic applications and siloed data, storing the results of slow queries from a relational database isn't the only reason to use caching. Although that's still the most common use case, developers are caching results of relatively slow API calls almost as often. Using caches as data stores between applications and microservices is becoming more important as well. Session management brings up the rear as another valuable use case.

While we're on the subject of caching, we can't help but recommend Lee's excellent e-book, Caching at Scale with Redis, available for free on the Redis website. Packed with examples, advice, and architectural diagrams, it's a great resource for anyone interested in building modern applications that scale.

Database Applications

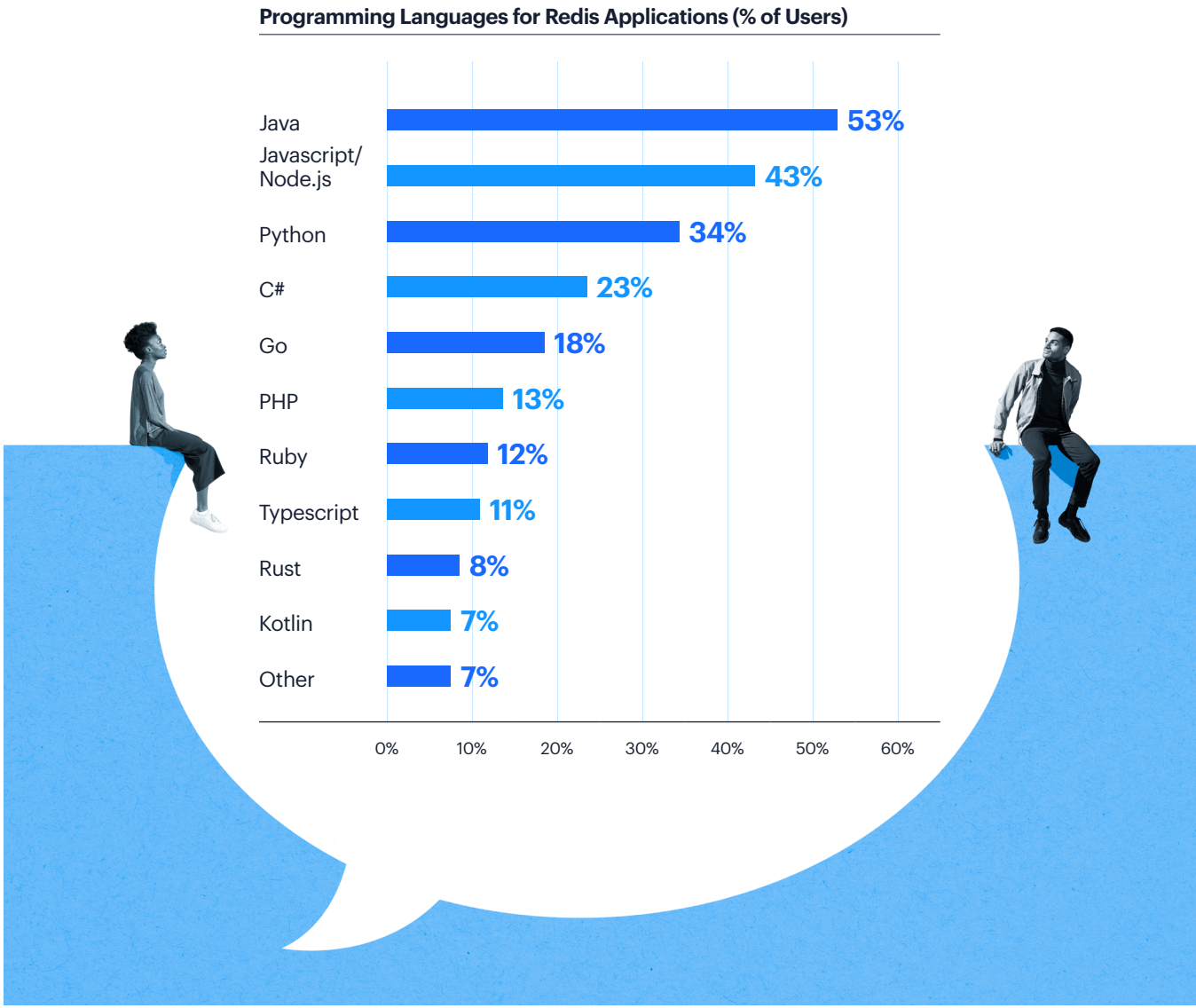
Java reigns supreme in Redis applications

TAKEAWAY:
MOST ORGANIZATIONS USE AT LEAST TWO LANGUAGES TO DEVELOP REDIS APPLICATIONS, WITH JAVA BEING THE MOST COMMON.

We weren't surprised to see Java come in first place here, given the elegance and ease of use of the Jedis and Lettuce frameworks for Java. The top three languages match the results of the January 2021 RedMonk Programming Language Rankings, although not in the same order. Total percentages add up to more than 200%, indicating that most organizations use at least two different languages.

"Other" came in at 7%. Given that Redis toolkits and frameworks are available for over 50 languages, that number could represent a very long tail. We'll include more language choices in the next version of our survey.

In other analyses, we found that users in the Technology industry had the broadest range of language usage, with statistics indicating they use at least three different languages. And looking at language usage patterns for companies with the highest DTI, the top five languages came out in the same order, although Java usage was even higher at 59%.



One Last Insight

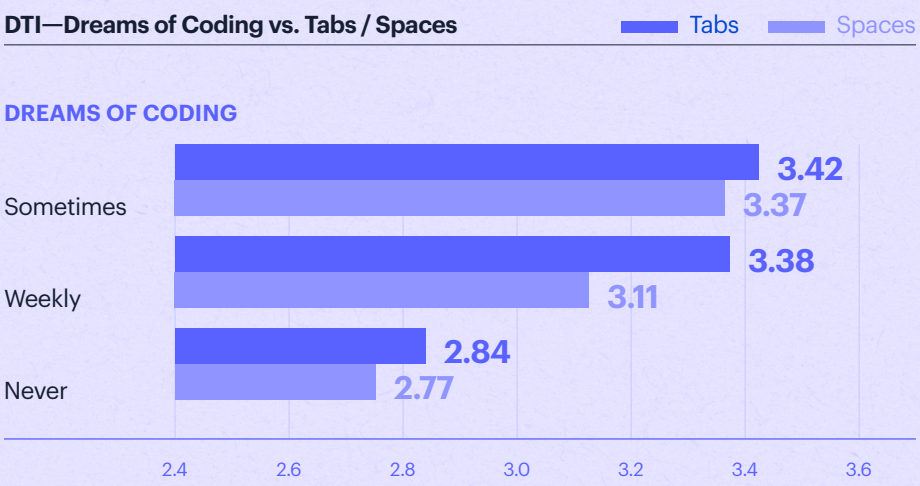
If you're hiring, look for well-rested tab users

TAKEAWAY:
USERS WHO USE TABS INSTEAD OF SPACES HAD HIGHER DTI SCORES ACROSS THE BOARD.

One of the most surprising (if frivolous) results of our first survey is that tab users had significantly higher scores than those who indent with spaces. For version two, the gap isn't quite as wide, but it's still there. In addition to the "tabs vs. spaces" question, we asked whether respondents dream about coding and how often (weekly, sometimes, or never).

Whether they chose tabs or spaces, people who dream about coding occasionally had the highest scores, suggesting that technology enthusiasts with a healthy life-work balance have the most modern skills.

Note: Respondents did not specify what percentage of their coding dreams were nightmares.



Methodology and Demographics

We used Survey Monkey to gather data from thousands of RedisConf 2021 respondents. That data was, of course, stored in a Redis database and analyzed with the RediSearch module.

DTI components

There are four components to the DTI. We start with respondents' self-assessments of their use of four technologies: cloud computing, microservices, Kubernetes, and NoSQL databases. We then assign numeric values to their answers. For example, the maturity of an organization's cloud usage is scored like this:

- 5 points: Hybrid cloud
- 4 points: Multiple public clouds
- 3 points: A single public cloud
- 0 points: No cloud usage at all

Our scoring here is based on the complexity of each implementation. A hybrid cloud integrates an on-premises cloud infrastructure with a public cloud. That's more complicated than integrating multiple public clouds, which in turn is more complicated than using a single public cloud. And not using cloud computing at all (8% of respondents, amazingly) earns a score of 0.

We calculated scores for the other three technologies similarly, giving us a way to quantify the state of an organization's digital transformation.

Geographic Representation

The survey was much more heavily weighted towards the US. In the November 2020 survey, the Indian contingent was slightly larger than the US. On the other hand, the "Other" category is up from 9% to 22%, with respondents from more than 125 countries.

USA	56%	Brazil	2%
India	12%	Spain	2%
Canada	3%	United Arab Emirates	2%
UK	2%	**Other**	**22%**

Industry Representation

Compared to the first version of the survey, our participants were more evenly distributed, with the Technology industry a smaller component of the population.

Technology	30%	Media	6%
Finance	14%	Manufacturing	5%
Government	13%	Retail	4%
Gaming	11%	Travel and Hospitality	2%
Healthcare	7%	Other	8%

About Redis

Data is the lifeline of every business, and Redis helps organizations reimagine how fast they can process, analyze, make predictions, and take action on the data they generate. Redis provides a competitive edge to any business by delivering **open source** and **enterprise-grade** data platforms to power applications that drive real-time experiences at any scale. Developers rely on Redis to build performance, scalability, reliability, and security into their applications.

Born in the cloud-native era, Redis uniquely enables users to unify data across multi-cloud, hybrid and global applications to maximize business potential. Learn how Redis can give you this edge at **redis.com**.