
THE CURRENT STATE OF CONTAINER USAGE

IDENTIFYING AND ELIMINATING BARRIERS TO ADOPTION



 **DevOps.com**

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The Container Data People™

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EXECUTIVE SUMMARY

This report is based on the current and planned container usage patterns of 285 respondents. The survey was conducted over the latter half of May 2015.

While the sampling contained responses from organizations of all sizes, the largest segment of responses were from organizations with 1 to 500 employees. Large organizations with over 2500 employees represented 18% of respondents.

The respondents were primarily from development, operations or DevOps teams. Both security and QA teams were also represented.

The survey measured respondents' current level of container usage, the biggest obstacles to wider container adoption, which container platforms they use, and what stack they are building on. Another section of the survey queried data management priorities, usage and importance.

Some high-level findings of the survey include:

- Over 94% of respondents had either investigated or actually used some container technology over last 12 months.
- Docker was the overwhelming choice of respondents (90%+) as their container of choice.
- Only 38% of respondents said they were using containers in actual production environments today (this is still higher than other data points have reported). However, 65% of respondents stated that they are planning on using containers in production in the next 12 months.

When it came to concerns and barriers to adoption:

- Among the findings uncovered by the survey were insights into what respondents perceived to be the primary barriers to container adoption. When asked to rank several categories on a scale of "major barrier" to "no barrier," respondents identified the following as major to moderate: Security 61%; Data Management 53%; Networking 51%; Skills and Knowledge 48%; Persistent Storage 48%.

In the area of data management:

- Two-thirds of respondents said data management was critical to success or an important gating factor for their overall container strategy.
- Over 53% of respondents said current data management capabilities are a moderate to major barrier to container usage.
- Over 70% would like to run a database or other stateful service in their container environments, with MySQL and Redis the two leading choices (several others close behind).
- The two most important features for data management in container solutions were: "integration of data management capabilities into existing container workflow and tools" and "seamless movement of data between dev, test and production environments".

2.1

USER PROFILES

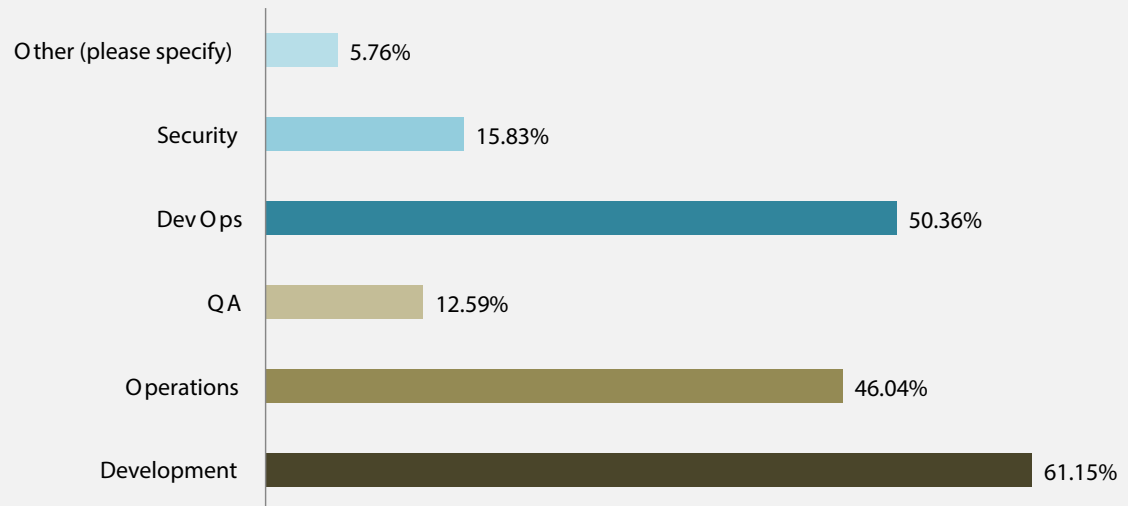
Given the choice to identify with more than one team function, development was the largest segment identified. Interesting to note, DevOps was the second choice, even slightly higher than operations.

Whether or not DevOps is a job title is still a hot button topic, but people identifying as working on DevOps teams probably refer more to working on cross-functional teams.

Security and QA were also represented in a minority of responses. Among the “other” responses, there were executives represented as well.

Q1 Which of the following teams are you a member of? Choose all that apply.

Answered: 278 Skipped: 7



2.2 COMPANY SIZE

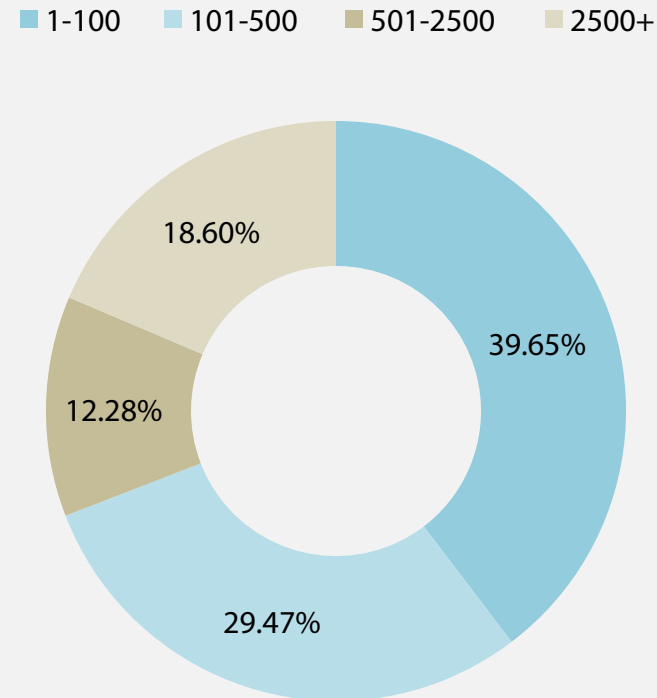
The overwhelming majority of respondents came from smaller organizations with under 500 employees. In fact the largest segment of responses were from employees at organizations with 1-100.

Does this mean containers are a startup technology? Not from the interest that it is garnering from the likes of IBM, Microsoft, HP, EMC, etc. Large organizations did represent approximately 20% of responses.

We expect this segment to continue to grow as the technology matures.

Q2 How many employees does the organization you work for have?

Answered: 285 Skipped: 0

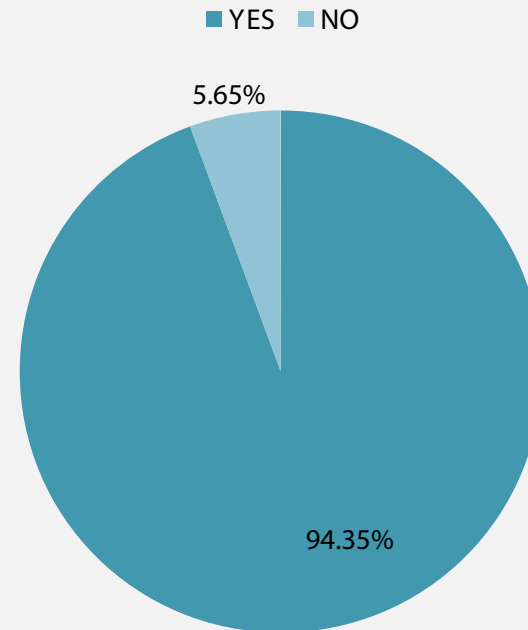


3.1 CONTAINER USAGE

Perhaps one of the most powerful findings was that nearly 95% of respondents have used or investigated container technology over the last 12 months.

Q3 Have you used or investigated any container technology in the last 12 months?

Answered: 283 Skipped: 2



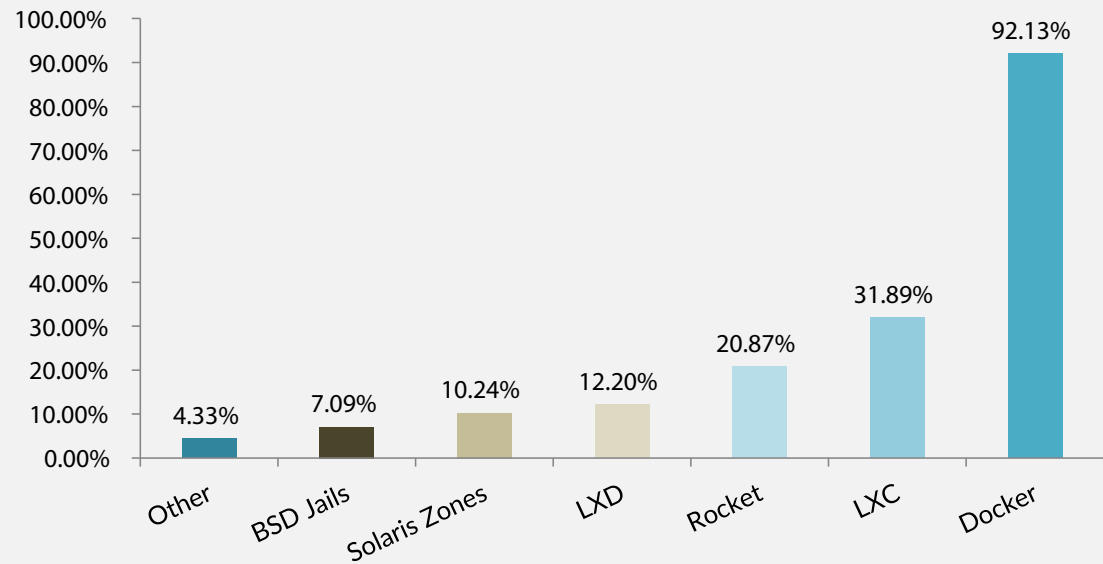
3.2 CONTAINER OF CHOICE

Bearing out the market buzz, over 92% of those surveyed have used or investigated Docker.

LXC, the foundational container technology in the Linux kernel itself that Docker popularized by exposing a simple REST API, was a distant second, but still a solid choice over Rocket, which was third with only 21% of the sample having either used or investigated it.

Q4 Which container technology have you used or investigated?

Answered: 254 Skipped: 31



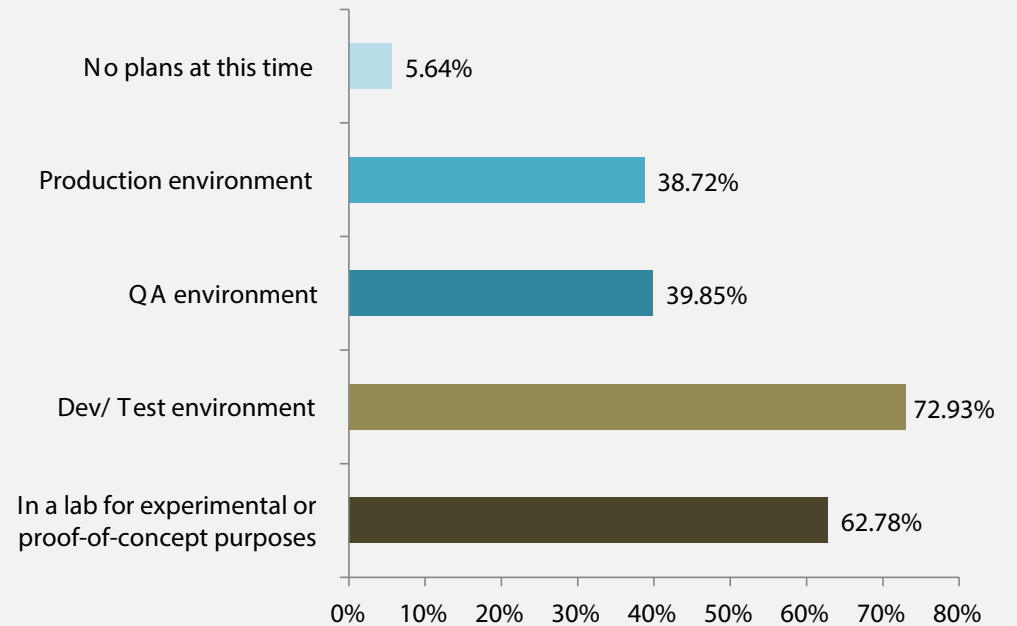
3.3

WHERE ARE THEY USING CONTAINERS

As many have postulated, not everyone using container technology is deploying them in production. In fact less than 40% of respondents are using them in production.

Q8 Where are you using container technology? Choose all that apply.

Answered: 266 Skipped: 19



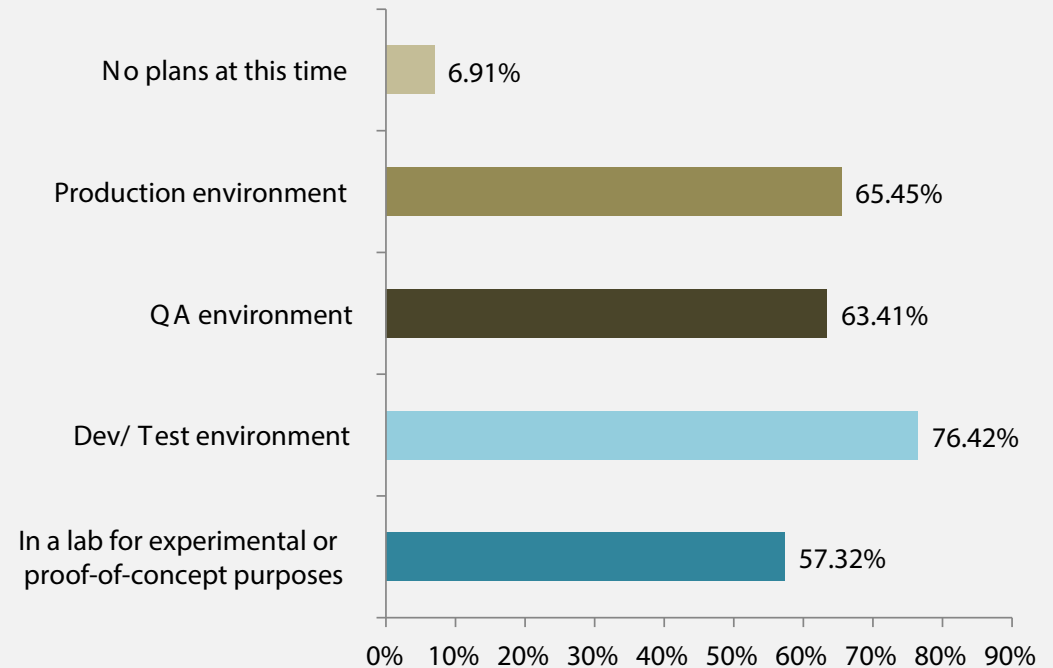
3.3

WHERE ARE THEY USING CONTAINERS, CONTINUED...

As should equally be expected, the optimistic view of moving more containers into production environments (as well as into all environments), in the next 12 months was also represented by the responses.

Q9 Where are you planning to use container technology in the next 12 months? Choose all that apply.

Answered: 246 Skipped: 39

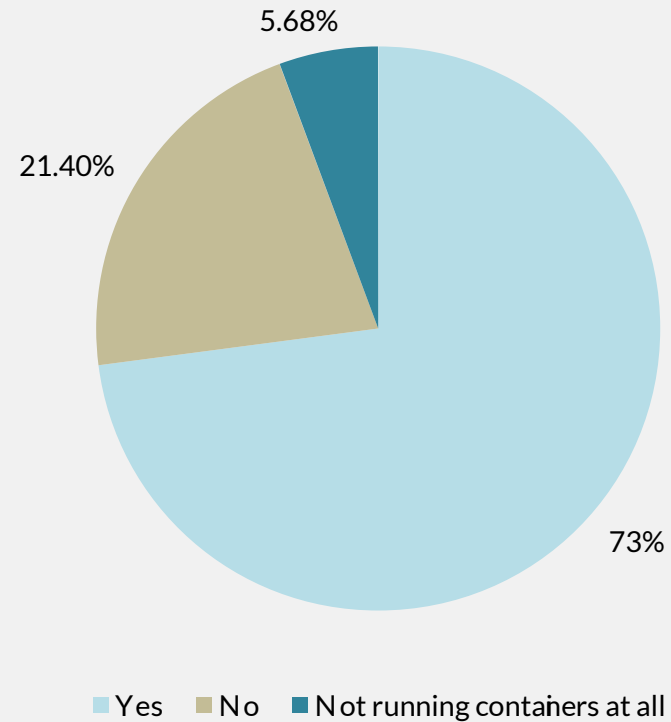


3.4 RUNNING CONTAINERS IN A VM ENVIRONMENT

While some view containers as the death knell of hypervisors, the responses indicate the overwhelming majority of container users are running them in a hypervisor.

Q19 Are you running containers in a hypervisor virtualized environment?

Answered: 229 Skipped: 56

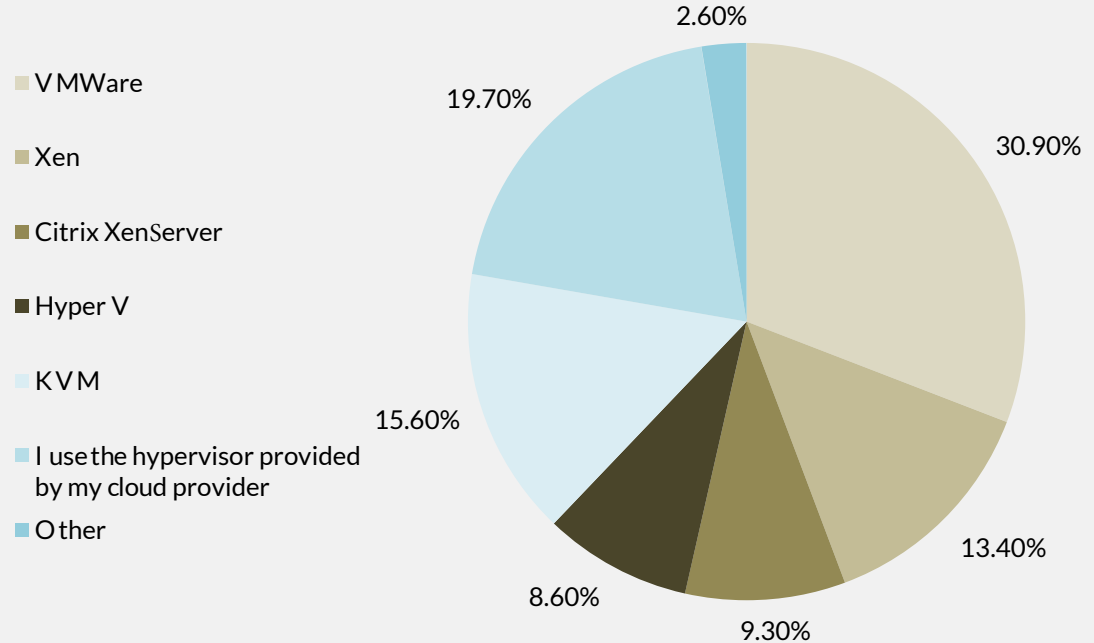


3.4 RUNNING CONTAINERS IN A VM ENVIRONMENT CONTINUED...

In terms of their hypervisor of choice, the picture is a bit more muddled. About a third of respondents say they use VMware. A further 20% use whatever hypervisor their cloud or service provider uses. For questions of containers vs. hypervisors, which hypervisor they use with containers is less important than the fact that they do run them in a hypervisor.

Q20 If you answered yes, which hypervisor are you using? Choose all that apply.

Answered: 173 Skipped: 112



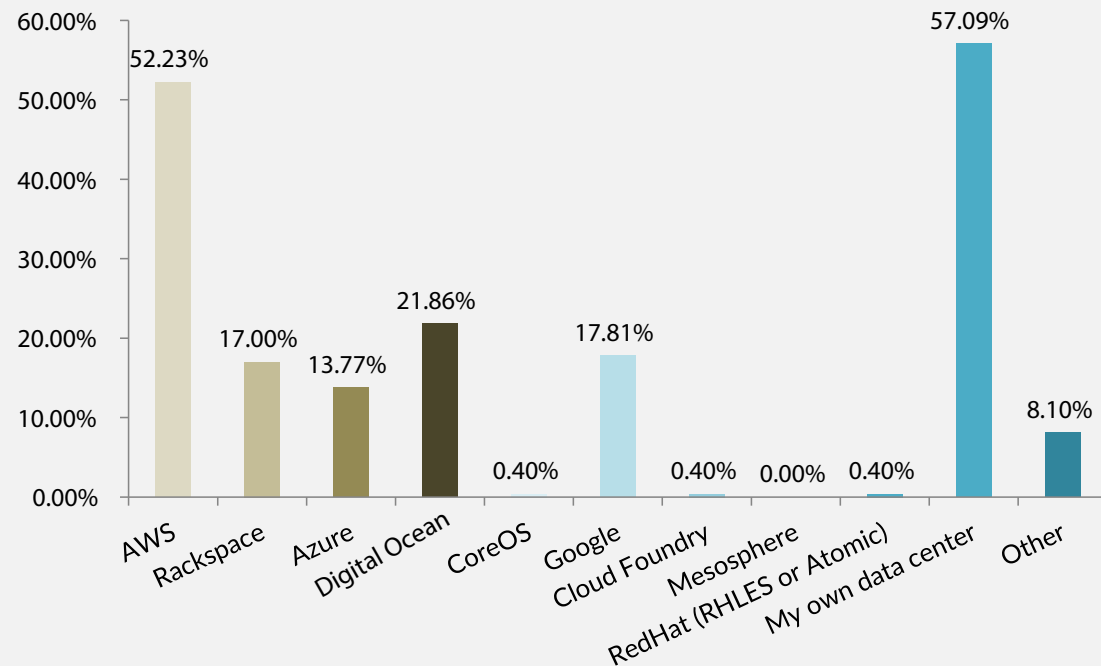
3.5

Cloud or on-prem

When asked where they were running their container environments, the somewhat surprising winner was in “my own data center.” This was followed by Amazon Web Services (AWS) as a close second.

Q11 What infrastructure are you running or do you plan to run containers on?
Choose all that apply.

Answered: 247 Skipped: 38

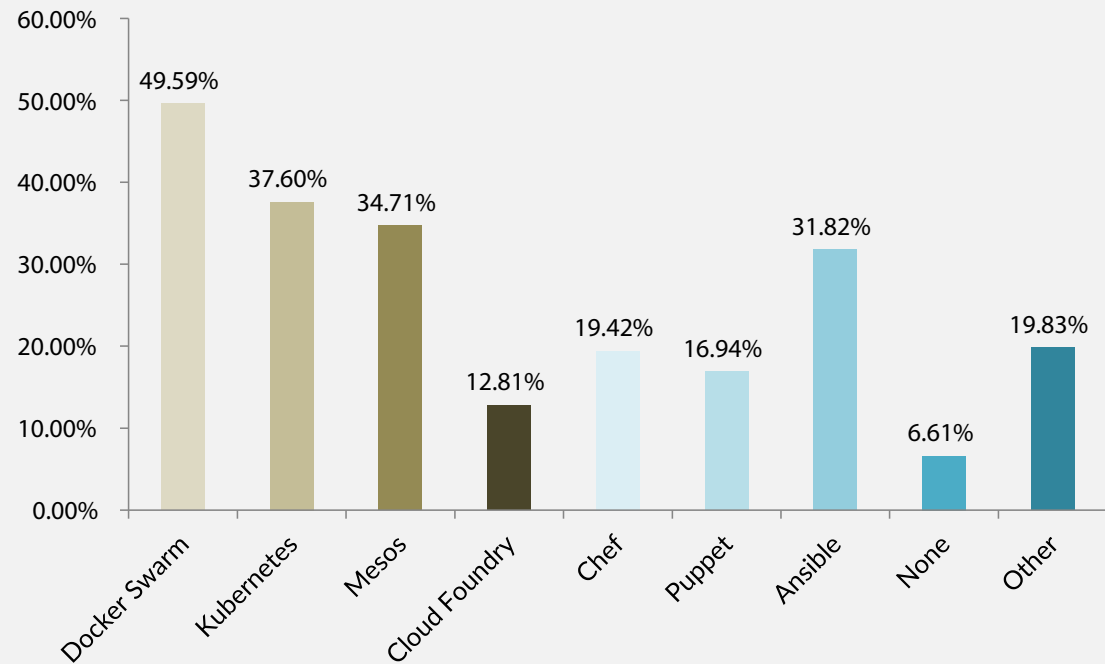


3.6 WHAT CONTAINER ORCHESTRATION TOOLS ARE YOU CONSIDERING IF ANY?

While this is still a nascent market, some early leaders did emerge from the responses. Docker Swarm, the orchestration technology from Docker itself, was the clear winner, with nearly 50% of respondents indicating that they planned to investigate Swarm. Close behind were Kubernetes and Mesos.

Q12 Which container orchestration tools are you considering? (choose all that apply)

Answered: 242 Skipped: 43



3.7 WHAT ARE THE BIGGEST BARRIERS TO PUTTING CONTAINERS IN A PRODUCTION ENVIRONMENT?

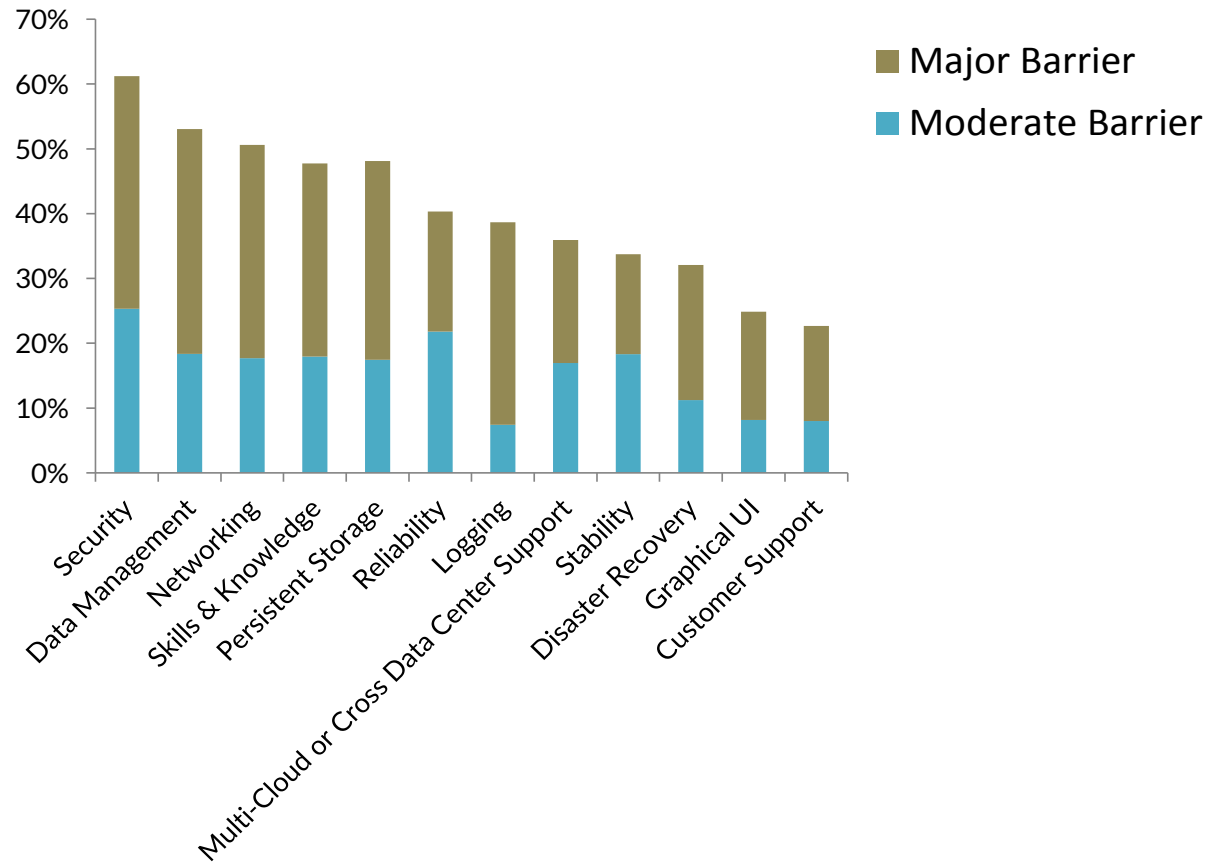
In this question respondents had the option of rating certain categories as a major barrier, moderate barrier, minor barrier or no barrier at all.

Security was the highest rated barrier to increased adoption. The second biggest barrier was data management.

Note: we combined the major and moderate barrier responses and grouped them to weigh biggest barriers.

Q10 Please rate the following based on how much of a barrier to adoption they are for putting containers in a production environment.

Answered: 249 Skipped: 36



4.1

HOW IMPORTANT IS DATA MANAGEMENT TO YOUR CONTAINER STRATEGY?

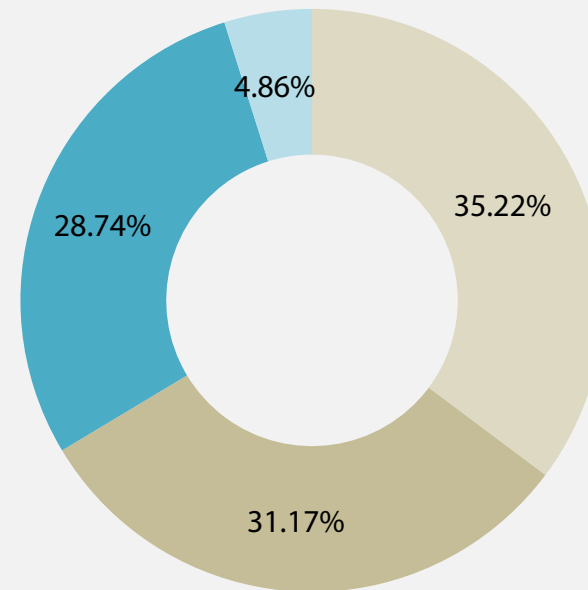
In concert with the previous question, respondents are clear in their belief that data management is of critical importance to their container strategy.

2/3 of respondents said it was either critical or an important gating factor to their container adoption.

Q13 How important is data management to your container strategy?

Answered: 247 Skipped: 38

- Critical to success
- Important gating factor
- Moderately important
- Not important to us



4.2

WHAT ARE THE MOST IMPORTANT FEATURES OF DATA MANAGEMENT TO YOUR CONTAINER PLANS?

Respondents were asked to rank various features of data management for their container plans. They had to rank each item from 1 to 9 with 1 being most important.

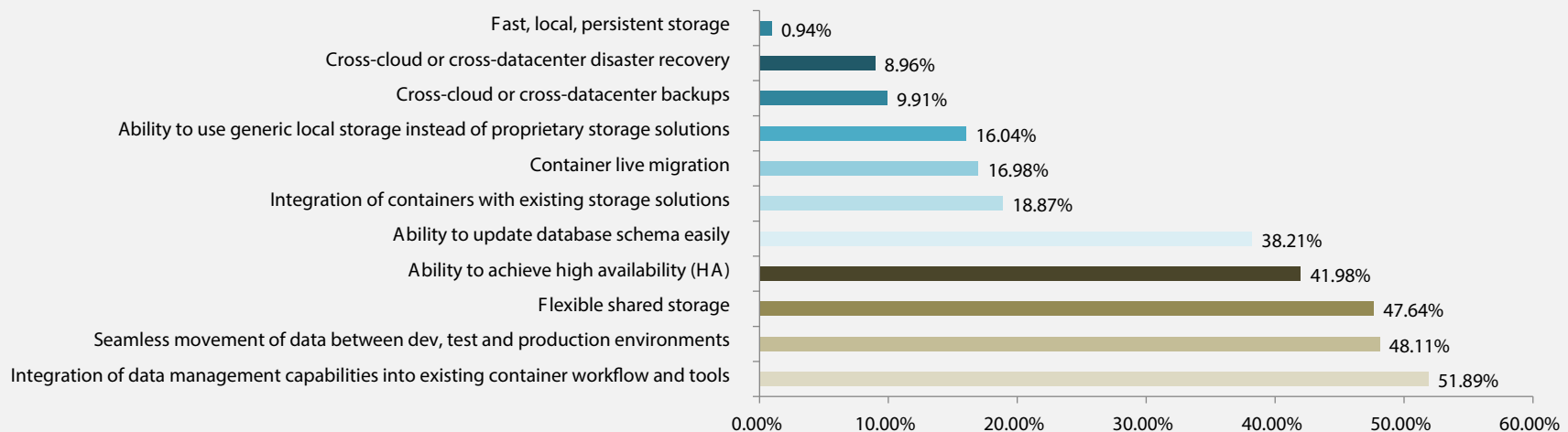
The chart summarizes barriers ranked either 1, 2 or 3 most important. Integration of data management capabilities into existing container workflow and tools was the most important consideration. Seamless movement of data between dev, test and production environments was also considered very important. Other items in the top 5 most important considerations were flexible shared storage, ability to achieve high availability (HA) and the ability to update database schemas easily.

Together, these items indicate that many of the data management capabilities taken for granted in VM-based applications, are equally important for container-based apps. Given that over half of respondents in the survey stated that data management was a major or moderate barrier to container adoption (Report Section 3.7, Question 10), on first glance, it looks like some VM-based data management solutions are not directly applicable to containers.

Q18 Please rank the importance of the following data management features to your container plans (with 1 being the most important, and 9 being the least important).

Answered: 212 Skipped: 73

Chart data summarized by barriers ranked 1, 2, or 3 most important

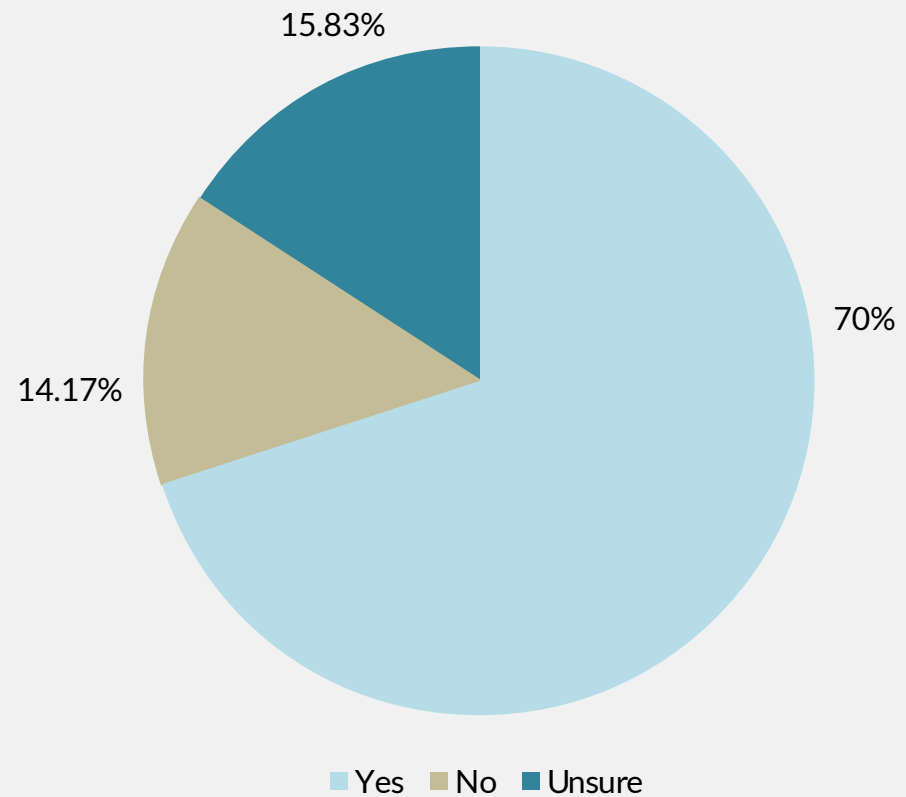


4.3 WOULD YOU LIKE TO RUN A DATABASE OR OTHER STATEFUL SERVICE IN A CONTAINER ENVIRONMENT?

When asked if they would like to be able to run stateful services in containers, 70% of respondents said yes.

Q15 Would you like to be able to run a database or other stateful service in a container as part of a production deployment?

Answered: 240 Skipped: 45



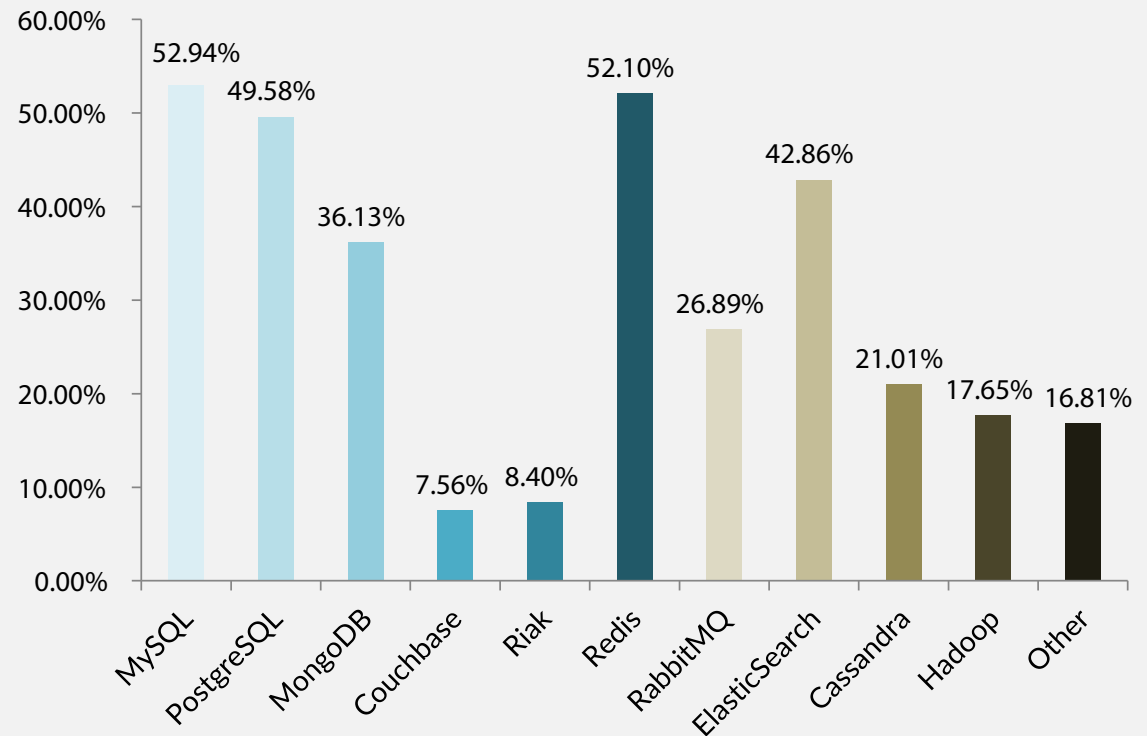
4.4

WHICH DATABASE OR OTHER STATEFUL SERVICE ARE YOU USING OR DO YOU PLAN TO USE IN YOUR CONTAINER ENVIRONMENT?

In a blend of old and new, MySQL and Redis virtually tied for first place.

Q17 Which stateful services are you using or plan to use? Choose all that apply.

Answered: 119 Skipped: 166



CONCLUSION

Containers are being used across businesses of all sizes. While the current usage patterns have the majority of container environments in development or testing situations, a sizeable number of production environments have been stood up, with many more anticipated over the next 12 months.

Docker is the undisputed king of the container space today. Its container runtime is by far the most popular choice and its orchestration framework, Docker Swarm, is leading the pack amongst people who are looking for ways to manage containerized distributed applications.

The biggest barriers to greater container adoption are security and data management functionality. Additionally, users want to be able to integrate container data management functionality into their existing container workflow and tools.

Users want to be able to run their database and other stateful processes in containers. Tools that will enable this and manage it should find a welcome reception in the market.

The container market is the subject of intense interest and hype right now. How fast and how great the impact will be on the IT market will be more clear over the next few months as more tools that overcome container challenges are brought to market.

