



Mac Cloud Solutions for Building and Testing Your iOS Apps



Executive Summary

Apple app development is a significant revenue driver for many organizations. But the specific limitations of developing for Apple platforms have created inefficient, siloed workflows. Mac cloud hosting services, like MacStadium, can provide the underlying infrastructure your team needs to optimize your development workflows and get your app to market faster and recapture lost revenue.

KEY TAKEAWAYS

- Suboptimal iOS build and test processes cost your organization money.
- The right Mac cloud partner can increase speed and quality of your iOS release cycles without creating overhead expenses.
- Determine the right balance of performance, reliability, and cost to support your app development team.
- Future-proof your decision by evaluating integrations, add-on services, and interoperability when selecting your Mac cloud provider.



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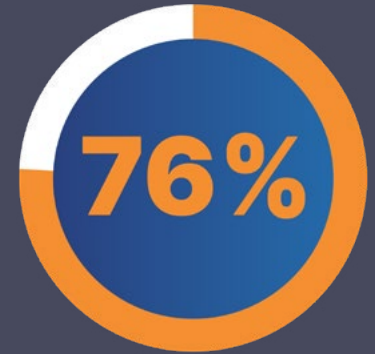
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Introduction

In today's day and age, where nearly everything is done from a mobile device, your iOS app has never been more important to your business. iOS development is a significant revenue driver for many organizations, with 76% of companies accounting for more than 25% of their annual revenue earned through mobile.¹ It's time to prioritize your iOS app.

In the world of iOS development, building and testing your app can be time-consuming and tedious. Inefficient processes turn into bottlenecks, pushing deadlines further back. Delayed iOS releases cost organizations hundreds of thousands of dollars in lost revenue every single year.¹

While all Apple hardware functions seamlessly for the end user, it's not as easy on the developer side. The same tools and workflows designed for non-Apple workflows are not compatible with Apple hardware, causing a large gap for developers trying to stay on a release schedule. Your macOS CI process is likely to become inefficient and costly as your development team and product itself grows. To keep up with your growing business, you need purpose-built Mac cloud services to support your iOS app development and deployment.



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Challenges of iOS Development Environments

Want to publish and sell through Apple's app store? Your app needs to be built on genuine Apple hardware. This essential detail means that your team will need a dedicated Mac environment for building and testing your Apple app, but most tooling and cloud providers aren't designed to accommodate Mac. The necessarily different hardware and tooling, combined with your team's organic growth causes most organizations to create fragmented, inefficient iOS development environments.

Lack of Control

If you are currently using a CI-as-a-Service provider, you have probably run into its limitations around customizing your build or test environment. With the service's shared Mac compute, you have limited ability to fine-tune your virtual machine (VM).

Or perhaps you successfully strung a few rogue Macs together in the past to create your own Mac cloud, but as your team and app grow, the maintenance alone renders this strategy impossible. While these configurations can work temporarily, they are not long-term solutions. Ad-hoc setups limit standardization of build environments and increase the likelihood of configuration drift.

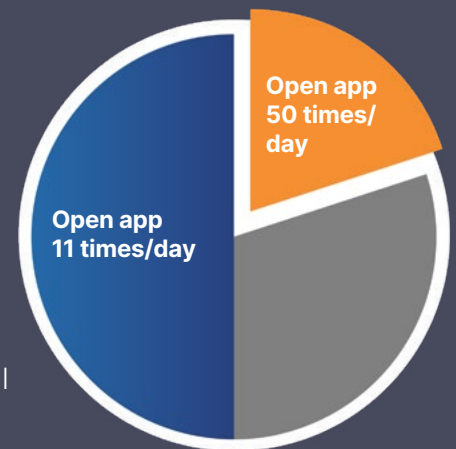
Scalability Bottlenecks

Nearly 50% of smart phone users open a single app 11 times each day, and over 20% of millennials open that same app over 50 times in a single day.² With an average of 5 minutes per session on each app, users are spending up to 5 hours every day on mobile apps.³ This extreme increase in usage is driving the demand for better (and more) apps. And you have likely seen your app development team's growth and demands trend up with it, but keeping up with peak demand and supporting larger projects can be costly and time-consuming.

Simply scaling horizontally – adding more Macs to the process – may not alleviate your iOS CI pipeline bottlenecks.¹⁴ And, especially if you are self-hosting the machines, adding more of them is likely to cost more in resources for regular maintenance and support.

Security Risks

A recent study shows that majority of DevOps and security professionals take CI/CD security seriously, but still over 20% had at least one security incident in their CI/CD pipeline over the past year.⁴ Sharing CI/CD resources could compromise your team's control over compute and increase security vulnerabilities for your business.



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Selecting the Right Mac Cloud Platform

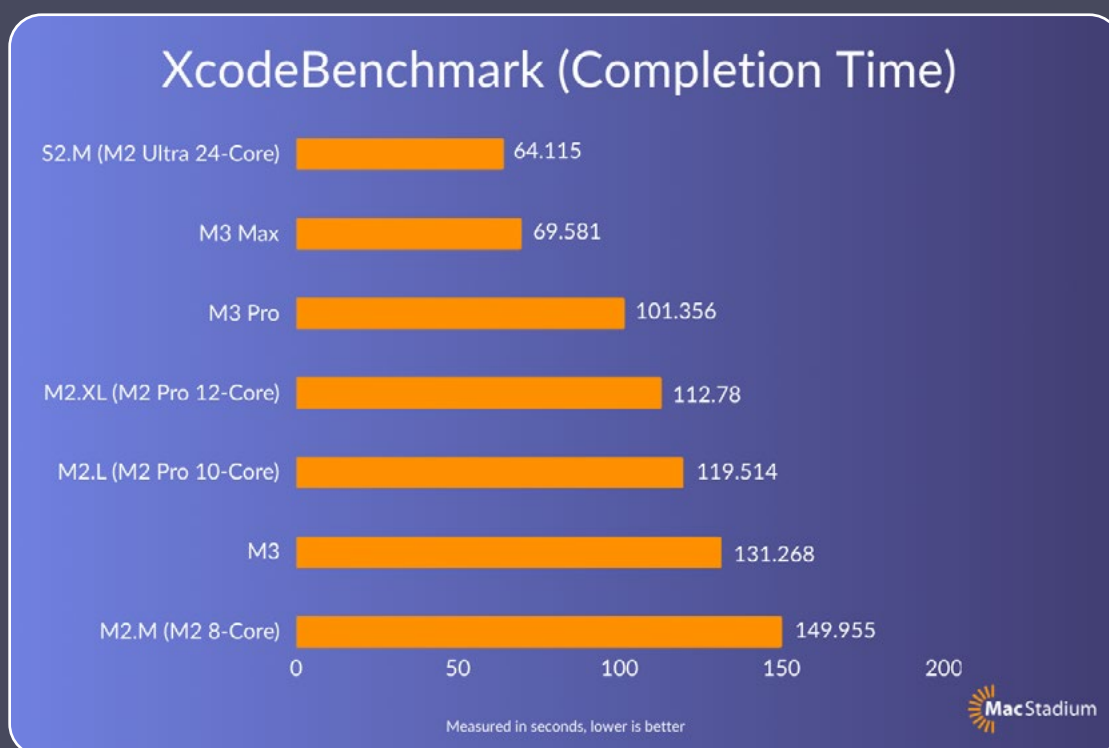
A secure Mac cloud-hosted platform can help your business rapidly grow your iOS application. When evaluating Mac cloud services, make sure to keep these categories and features in mind:

Performance and Cost-Effectiveness

Nearly 40% of CI/CD professionals feel prevented from adopting new CI/CD tools due to cost/effort of deployment and licensing.⁵

When building your app, you want to get the most bang for your buck when it comes to performance and cost. It's important to find a balance between the two that works best for your business. If you want to scale, fast builds are indispensable. Your customers will notice a difference too. 90% of app users reported they stopped using an app due to poor performance.⁶ You don't want your application to fall under this category, as once you lose your customer's trust, it's extremely difficult to gain back.

When trying to get the most power for the least amount of capital, you can compare compute against your needs. Take a look at the results from MacStadium's M3 Xcode benchmarks. You can see coming within ~5 seconds of M2 Ultra, the gap between M3 Max and M2 Ultra is half of the gap between M3 Pro and M3 Max. While the M2 Ultra reigns supreme over M3 Max, it comes close enough to be considered a good alternate option for speedy builds.⁷



Reliability and Support

Unreliable Mac compute can slow down your app releases, which costs your business money. In fact, according to a 2024 Kobiton study, 75% of organizations thought slowed mobile app releases cost over \$100,000 in lost revenue per year.¹⁶ Minimal downtime and top-notch support are critical when selecting a Mac cloud platform.

Instead of waiting for hours, sometimes days, to resolve an issue, you can work with a platform that is proactive at preventing them in the first place. In terms of customer experience, dedicated expert support and account management is vital for enterprises who need Tier 1 support from critical vendors.

Take Dropbox as an example – Their team needed more Mac expertise and support to expand their Mac infrastructure for their growing team. Transitioning to a reliable, cloud-hosted Mac environment for CI cut their workload in half. "It's really important to have reliable infrastructure that you can trust," said Paul Ruan, Software Engineer at Dropbox.



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Integration Capabilities

The ease of integrating can significantly impact development workflows. In a recent study, 84% of businesses said integrations are a key requirement for their customers.⁸

When looking for a Mac cloud platform, one of the most important features is integration with your favorite CI, Dev, and testing tools like Xcode, GitLab, Jenkins, Packer, and CircleCI to name a few. Not only do you want a platform that works with your existing tools, but one that has a seamless transition with little to no hiccups.

Virtualization

Want faster builds and releases? Virtualization can help streamline your Mac DevOps. According to G2, companies see a 50% improvement in operational efficiency after adopting virtualization.⁹ Cloud-focused design is a major differentiator with virtualization software for Mac infrastructures. This is extremely important for scaling versions of Mac environments.¹⁰

Scalability

Even if you're using virtualization today, true performance comes with orchestration of those VMs over a large compute cluster. MacStadium's Orka solution is a great example of a reliable platform that can grow with your team. Orka easily scales to accommodate hundreds of nodes in a single environment.

Choosing a platform that makes it easy to add more machines for more complex projects is key to a successful CI/CD workflow. With Orka, you can create multiple environments in different data centers around the world to meet the needs of your development team.

“ We monitor the demand for build nodes and work with MacStadium to scale the number of Mac minis in both data centers. It's easier than managing Macs ourselves. ”

- Sander Lijbrink, Software Engineer, Shopify

Interoperability

We live in a heterogenous cloud world – Your Mac resources need to work seamlessly with your data center and other public cloud providers. Mac cloud solutions like MacStadium are designed so that your Mac cloud can work well with your other cloud providers and build/test/deploy infrastructure. MacStadium does this with native support for Kubernetes and K8s-compatible tools like Okta and Azure AD for user management.

Homebrew migrated from VMware to Orka, and now has the freedom to create and scale their cloud environment without time limits or one-size-fits-all VMs. "Orka is the closest thing you can get to Google Cloud or AWS for macOS," said Mike McQuaid, Project Leader at Homebrew, founder & CTO of Workbrew.

Implementation Strategies and Best Practices

Even the best solution can fall flat without the proper implementation. Once you've selected your Mac cloud compute there are some best practices that can help ensure your team's success:

Implementation Strategies

Executing a plan around purpose-built Mac cloud services is critical to the success of your growing app. Implementing Mac cloud-hosted bare metal and virtualization can differ from other solutions. Unlike traditional Linux and Windows environments, Apple has more technical and business restrictions for virtualization. MacStadium's Orka solution provides resources that are more efficient and easier to orchestrate for businesses. Plus, you can leverage the power of K8s to manage your macOS workflows.

Hear from AppDynamics about Orka – "Orka fell in line with our strategy to provide ephemeral agents for our build environment, as we were already doing in Windows and Linux," said Craig Hall, Senior Manager, DevOps Build & Release, AppDynamics.

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Integrating a Mac cloud solution with your most used tools should be a seamless, straight forward process.

Here's an example of how to start the GitHub Actions Integration with Orka on Docker17:

```
docker run -e GITHUB_APP_ID=<value> \ -e GITHUB_APP_INSTALLATION_ID=<value> \ -e GITHUB_APP_PRIVATE_KEY_PATH=<value> \ -e GITHUB_URL=<value> \ -e ORKA_URL=<value> \ -e ORKA_TOKEN=<value> \ -e ORKA_VM_CONFIG=<value> \ -e RUNNERS=<value> \ ghcr.io/macstadium/orka-github-runner:<tag-name>
```

Future Outlook

As the Mac cloud infrastructure landscape continues to evolve, there are a few upcoming trends that will impact the CI/CD industry.

Getting Faster, Faster

Apple has complete control over their hardware product development timeline thanks to the rise of Apple silicon.¹¹ They have accelerated the release of new Mac hardware with faster, more powerful chip sets, which is requiring users to think differently about purchasing hardware. The Mac hardware you buy today may work short-term, but in order to keep up with demand, you need to run your workloads on the newest Apple chipset. You can no longer assume the Mac hardware you buy today, will serve your development team for years to come. Apple is advancing its technology too quickly.



Conclusion

With over 1,300 apps released in the app store every single day, it's more important than ever before to make sure your iOS application is the best version it can be.¹³ This starts by building a solid foundation.

Implementing a Mac cloud infrastructure and virtualization solution can be game-changing for your business. If you want to keep up with demand, you need a secure, reliable, purpose-built Mac cloud platform to support your iOS app CI/CD pipeline.

Mac cloud providers like MacStadium partner with businesses like yours to give you the control and flexibility your team needs for faster building, testing, and releasing.

Don't let your business fall behind – Get and stay ahead with MacStadium. We provide modern app development solutions for iOS, macOS, and all Apple platforms hosted in a secure private cloud.

Talk to a Mac cloud expert today and get started with MacStadium!

KEY POINT

1.3K

1,300 apps released in the app store every single day

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