No Need to Reinvent the DevOps Wheel for Mac

Why top enterprises are choosing Orka over DIY

Executive Summary

- For executives making the choice between developing a cloud-based automated continuous integration (CI) platform for Apple applications internally or purchasing a turnkey commercial solution from a vendor, the decision is easy.
- The total cost of ownership (TCO) and return on investment (ROI) greatly favor purchasing a solution (whether over a short three-year period or a longer six-year period) where the cost evens out between building and purchasing a solution.
- On average, Orka by MacStadium is half the cost of the least expensive do-it-yourself (DIY) solution and one-fifth the cost of a fully custom solution. Investment breakeven for all three options is approximately six years; a duration that puts an internally-built solution at risk of technological obsolescence without continuous investment.
- The additional opportunity costs and cybersecurity compliance risks associated with an open-source-based custom solution makes the decision to choose a commercial turnkey option crystal clear.
- Orka by MacStadium is the only enterprise-grade highly available, high-scale Apple virtualization platform for automated CI/CD pipelines built for security compliance and runs on any macOS infrastructure whether at MacStadium, on AWS, or on-premises (private cloud).

Introduction

As a technology business leader, you face constant tradeoffs. One decision you may have to make is how to invest in CI automation for your engineering and/or DevOps teams to ensure seamless, continuous releases for your customers, a critical business requirement for today's mobile-centric global consumer base. You could build a custom CI pipeline solution or purchase an "off the shelf" product; the true dilemma of course is what is the most cost-effective approach in the long run?

It's likely that your internal technical teams have complained that there is no equivalency for iOS apps with the tools used to build, test, and deploy Android and Linux applications—for example, using established, best-in-class technologies such as Docker, Kubernetes and GitHub Actions for

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your Apple hardware applications, especially when seeking containerized, signed, secure OCI compliant build images rapidly deployed as concurrent ephemeral CI runners. Engineers instinctively favor building their own tools over acquiring them—it's in their nature after all—but which approach should be taken from an ROI perspective? As the decision maker, you must consider the ROI of a build vs. purchase decision for your development team and weigh the pros and cons.

In the past, cost effective, out-of-the-box enterprise-grade virtualized CI pipeline solutions for iOS application development were non-existent. That is no longer true today. Not only does an enterprise-grade virtualized CI solution for Xcode based application development exist, but it also excels in two areas that are top of mind in the DevOps sphere: reduced build times and security compliance.

Beware the hidden costs of building your own CI pipeline solution

At MacStadium, we understand the cost of building a secure, highly resilient, cloud orchestrated CI pipeline that supports the rapid deployment of concurrent build jobs using virtualization and ephemeral CI workers, because we have built one with Orka. Even a basic semi-automated cloud platform for CI jobs could easily exceed two million USD in upfront software development costs alone, not to mention the ongoing burden of annual feature maintenance, support, security hardening, and lost opportunity costs. For most enterprises, building a custom CI build pipeline for their Apple applications will never be directly monetized.

Ask yourself the following questions when deciding whether to build your own CI pipeline solution:

- Are you in the DevOps tool business?
- Did you hire app developers to build the company's critical mobile applications or to endlessly tinker with custom CI pipeline infrastructure solutions?
- Is your DevOps budget approaching, matching, even exceeding your software R&D budget? Is your ROI getting harder to justify for this spend?
- Has your release schedule been negatively impacted by issues with your in-house built CI pipeline infrastructure? Is it difficult to get to the root cause of those service impacting issues?

- Is your custom CI platform and toolchain—largely built upon open-source libraries and SDKs—prone to security vulnerabilities?
- Do you keep hearing that macOS administration is complicated and overly time-consuming, negatively impacting software release schedules?
- Is your Macintosh CapEx higher than anticipated because your organization hasn't transitioned to virtualization for Xcode apps? Or do you have unused AWS EDP budget, but your custom CI solution won't migrate easily to Amazon's datacenters?

Why not a fully custom CI build platform for Apple applications?

A fully automated, cloud orchestrated ephemeral CI/CD pipeline with extremely fast build times (less than 5 minutes) and capable of running thousands of CI jobs daily is very expensive to build, sustain and support.

Want a TL;DR? See our TCO/ROI analysis below comparing the popular choices: a fully custom-built solution, Cirrus Labs' Tart/Orchard open-source framework/SDK, and MacStadium's turnkey Orka platform. The chart shows software-only development costs and applicable licensing for a 30-node CI platform with cloud orchestration (up to 60 VMs) with CI tool integration (Jenkins, Gitlab, TeamCity, etc.), and a 20% annual capacity increase rate.

For this side-by-side comparison, we leaned upon our experience building the Orka platform to estimate development costs in each scenario. Regardless of whether you build a CI platform from scratch or use an open-source framework like Tart and Orchard to build your platform, both DIY approaches still require significant upfront development costs—albeit lower for Tart and Orchard—and both approaches are total cost of ownership losers compared to Orka.

When looking at the time to reach breakeven on the investment, the comparison grows even more stark. A fully custom solution or partially custom framework solution has a near six-year break-even time compared to Orka. Six years is a lifetime in technology! Especially with AI/AGI lead DevOps on a close time horizon.

Glovo

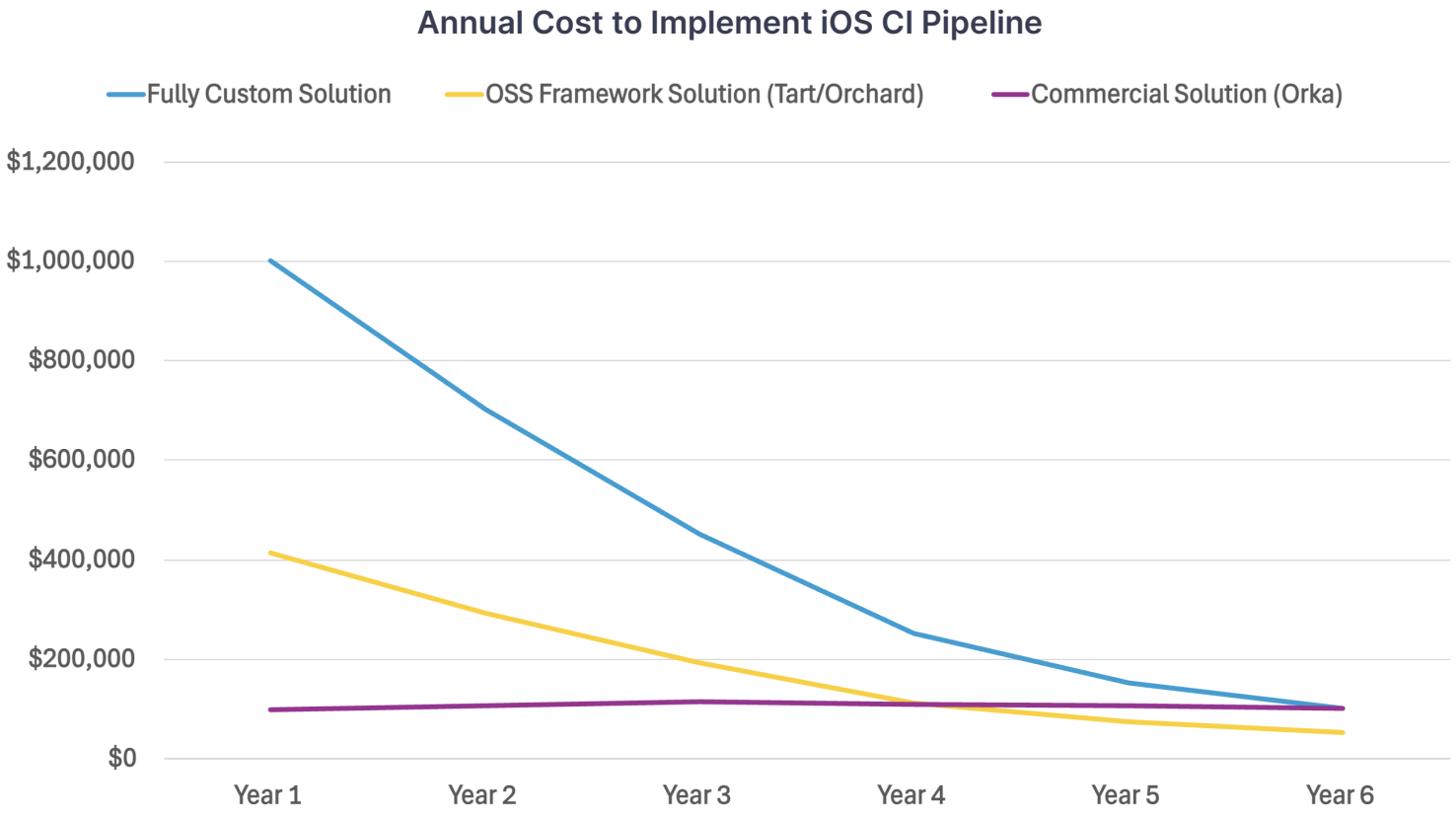
The Glovo team transitioned to Orka on a Mac cloud with MacStadium to handle their iOS app development processes. With Orka, Glovo achieved a 30% reduction in build time, allowing them to increase development throughput and scale the organization faster.
Read the case study

Orka vs. DIY

Ultimately, **Orka is 50% less expensive than the next closest custom-built solution**, but that TCO advantage is even larger under a shorter three-year time horizon, which becomes 65% less expensive than a comparable framework-based platform. Building any solution under today's uncertainty is dead on arrival, whether examined under short or longer timeframes. This also does not include the associated lost opportunity costs by not investing the savings toward revenue-generating projects.

When you choose to "build your own" anything, you must consider both direct and indirect costs. And while we cannot quantify your lost opportunity costs, they are not zero. MacStadium has already invested heavily into a turnkey, enterprise-grade virtualized orchestration platform supporting ephemeral fully automated CI workloads for Apple platform development so that you don't have to do it yourself.

If you are not in the business of selling DevOps solutions (most companies with an iPhone app are not), you will not recoup costs by directly selling your custom solution. Why spend the money developing a duplicate platform when MacStadium already offers the solution you would build yourself? Orka virtualization (and Tart for that matter) also reduces administrative complexity associated with macOS systems. Orka works with development tools that are already familiar to your DevOps team so you can focus on your primary objective: getting to market faster.



It's worth noting that even though the yellow line dips below the purple line in Year 4, it does not mean OSS is a cheaper solution overall. It still costs 50% more than Orka over the full 6-year lifespan.

Orka vs. DIY

The Solution: MacStadium Orka

macOS virtualization and orchestration

Any developers building applications with Xcode can use Orka's virtualization and cloud orchestration tools, designed with proven capabilities from leading DevOps tools such as Docker and Kubernetes. Apple OS developers can deploy containerized CI workloads, just like Android and Linux developers do, without the cost of building a separate CI platform for Apple apps. Orka is ready to be installed anywhere and can run on-premises, on AWS, or in MacStadium's data centers.

MacStadium has prioritized Orka's development in three key areas that matter most to DevOps teams: high availability, build time reduction, and security hardening. Orka is an Apple hypervisor framework, Kubernetes-native, DevOps cloud platform supporting high availability and high-scale concurrent CI workloads. Orka's ephemeral runners can deploy in seconds, compressing build times by 90%.

Orka utilizes OCI-compliant images secured by a singed digest key and utilizing extremely efficient compression (80% smaller sparse image size), reducing image storage costs. Orka supports transport layer security (TLS) across all endpoints, allows service accounts, role-based access (RBAC), and supports single sign-on (SSO) to the platform. Orka supports open-source adapters for CI build tools like Jenkins, GitHub Actions, GitLab, TeamCity, Buildkite, and more. You can think about the Orka ecosystem like the Docker ecosystem, but for macOS development.

Orka Ecosystem for Apple DevOps

Orka Desktop: a free Apple virtualization application with a user-friendly interface to create, configure and share Apple virtual machines locally with support for OCI compliant images.

Orka Engine: an Apple virtualization tool to create, configure, and automate the deployment of Apple macOS virtual machines stored as OCI compliant images.

Orka Cluster: a Kubernetes-native hybrid cloud offering for fully automated CI/CD pipelines running large numbers of build and test workloads across many macOS nodes supporting permanent or ephemeral runners that run on-prem or in public clouds.

Orka Hub: an image marketplace for Orka OCI images offering the latest versions of macOS with necessary tools to quickly adopt new releases of macOS and Xcode.

The Open-Source Software (OSS) Dilemma

Support, development cost, and security vulnerabilities

Many companies choose to use open-source software for their CI solution, but this comes with support challenges, high costs, and security susceptibility.

Building your own CI platform based on open-source software can be risky for businesses since you would be supporting it yourself. The open-source communities are notorious for rapidly developing features but then neglecting all but the most severe bugs. MacStadium understands the criticality of a CI/CD pipeline and prioritizes bug fixes over feature development for our customers. MacStadium also offers support service level agreements (SLAs) to ensure service disruptions are kept to a minimum. Open-source solutions do not offer support agreements and individuals who submitted software code into the project are certainly not obligated to support their work under a time commitment. Orka also leverages Kubernetes metrics which number over 450 unique metrics to aid observability and monitoring of the platform. Other competing solutions such as Tart and Orchard pale in comparison offering only a small fraction of the observability metrics as Orka.

Making matters even more complicated are security compliance considerations for your chosen CI/CD pipeline solution. The many levels of dependencies and packages associated with open-source solutions allow for cyber threats to be introduced by malicious actors. OSS-based solutions such as Tart and Orchard create significant risk not only to sensitive intellectual property assets, but also the stability and availability of the system.

Adding the financial risks from security threats to an open-source solution can increase the total cost of ownership of a custom solution. At MacStadium, we have chosen not to open-source many critical components of the Orka ecosystem to ensure tight control over security threats introduced by outside development. Recognizing the rising importance of security hardening, Orka's software regression testing has incorporated cybersecurity threat tests for each release since Orka 3.0.

With the transition to Orka, Swift Package Index gained a scalable, secure environment to run thousands of builds. Now the team can handle over 350,000 builds a month without any manual intervention, freeing them to focus on improving the Swift Package Index and serving the Apple developer community.
Learn more

Orka vs. DIY

Conclusion

Why Orka is the best choice for iOS development teams

Regardless of what your internal DevOps and iOS application teams are conveying about building a custom in-house CI/CD pipeline solution, the simple fact is Orka can beat any custom solution in the metrics that matter most to business decision-makers: return on investment and total cost of ownership.

Orka is used by hundreds of organizations around the world and in nearly every Apple Store segment, from business and finance to games and AI. The overwhelming majority of our customers have been developing their applications on Orka for multiple years and regard Orka as a best-in-class CI/CD pipeline platform for any size enterprise.

MacStadium offers the only turnkey, secure, enterprise CI/CD platform for Apple virtualization, with CI integrations and OCI compliant images all with the world-class orchestration and observability of Kubernetes. And you can run it anywhere you have Macs—on-prem, on a hyperscaler, or at MacStadium.

In a modern age rarity, the best solution is also the most cost effective. Join other enterprise companies in adopting Orka's CI/CD ecosystem for your Apple platform builds with the confidence you are making the correct business decision for your organization!

- Kubernetes-native
- Built to scale to hundreds of Apple silicon nodes
- Drastically increases build speeds for mobile app development
- Provides more granular control over build agents + fast customization
- Creates standardized and reliable development environments
- Eliminates bottlenecks by having easy access to the latest Apple OS
- Reliable virtualization and orchestration exactly when and where your team needs it

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