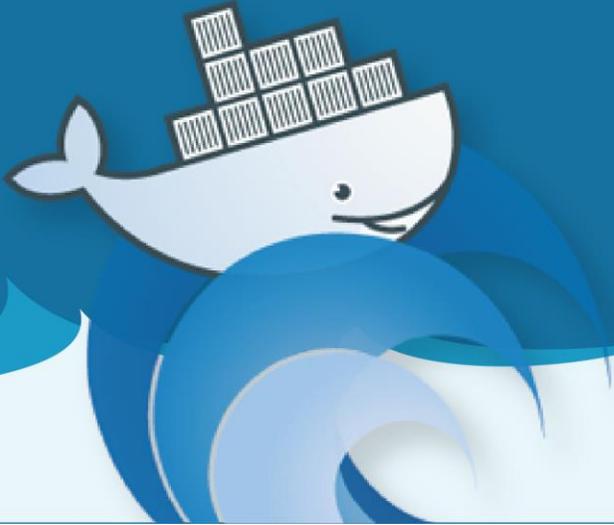


CASE STUDY: How WaveMaker Got Faster, Better, More Agile with Docker



Just a few years back Docker was the awkward adolescent in the world of app development. Cut to 2015, Docker is pulling up alongside big data and IOT as the technology trend that is seismically disrupting the way business run and innovate

At WaveMaker, we've successfully leveraged Docker to orchestrate a seismic shift of our own. We are managing thousands of custom apps built via our Rapid Application Development and Deployment platform but with:

30x

Greater App
Density

50x

Better
Performance

80%

Lower Costs

The Rundown



We had a monolithic build process limiting the number of releases



Utilized excessive resources to support free trial of thousands of users



Required a voluminous and complex operation for managing upgrades, updates and workload migration

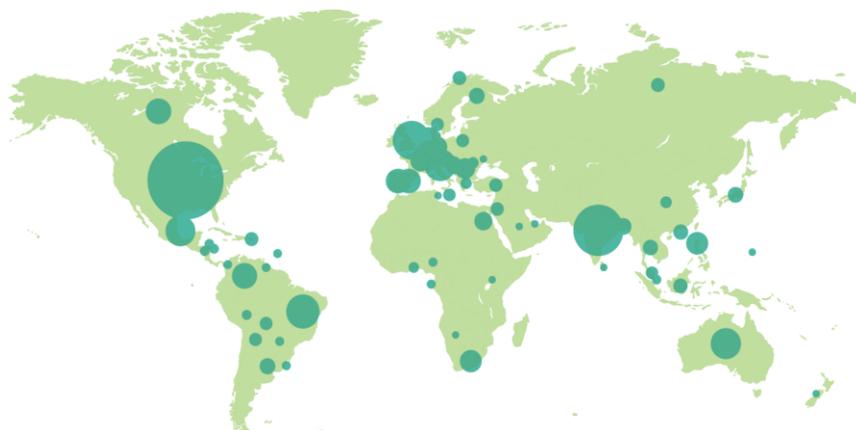
With a developer community growing exponentially, WaveMaker needed to shed some weight quickly or hire a small army to manage the burgeoning application workload.

After weeks of research and testing, we found our diet plan - Docker Containers.

The Docker Impact

Lightweight and Efficient

The technology, like its namesake, allows developers to simply package an application in standard containers and transfer it to virtually any server anywhere. The advantage extends beyond portability. With Docker, there is no longer a need to create virtual machines for each and every app. Fewer VMs, meant we had more processing power for more applications. At the end of WaveMaker Cloud beta, we found that over 2,500 developers from 70 countries were able to successfully run their apps receiving over 4 million hits. The WM cloud platform was able to scale to the above workload provisioning 37,000 containers and transferring around 25GB of app data.



2,500 DEVELOPERS
from 125+ countries

Over 4 Million
Application Hits

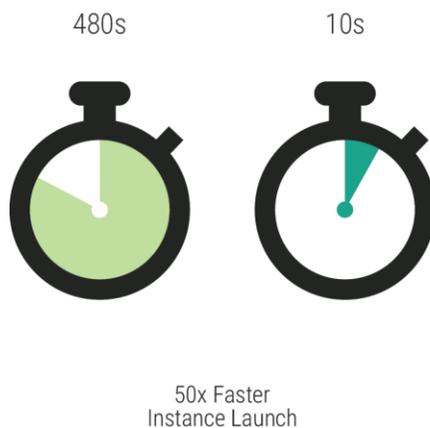
Over 25 GB App
Data Transferred

Over 37,000
Containers Provisioned

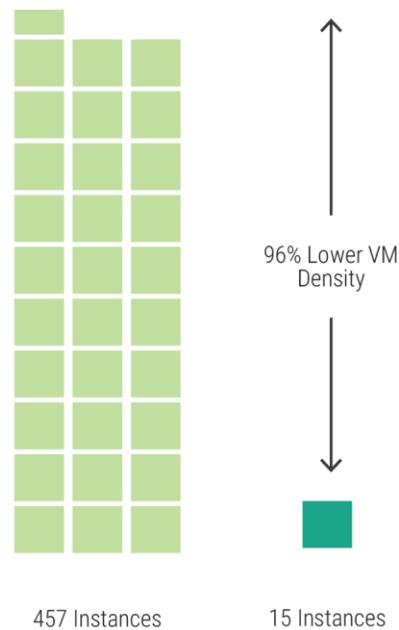
Better Resource Utilization

We further leveraged Docker to reduce resource utilization by hibernating the applications that were not running. As containers can be launched on a web request (less than a millisecond times), we can keep them hibernated and save resources.

PERFORMANCE



VM DENSITY

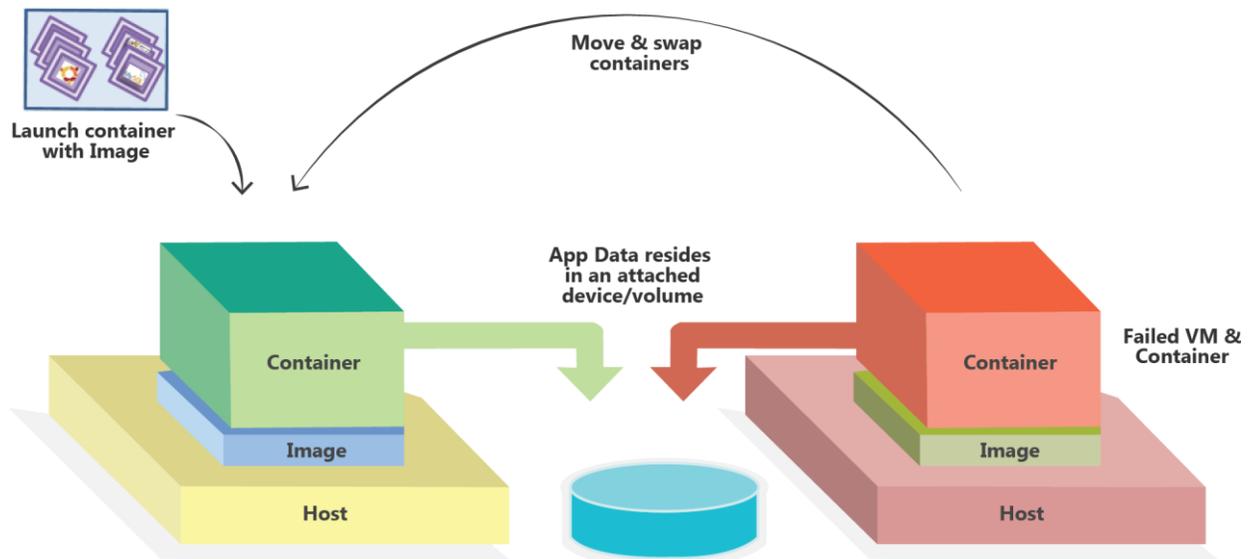


Microservice Architecture

We built the platform with Microservice Architecture increasing the maintainability of the platform. The components of the Cloud Platform were broken into multiple smaller services, which run as Docker containers. Other than providing the modularity, the agility of the whole release process has increased. Now we perform daily builds to the staging environment and production release happens weekly.

True Portability with Volume Layer Technology

With WaveMaker's innovative volume layer technology, we were able to make the containers truly portable along with data associated with them. The Volume Layer allows WaveMaker to abstract the changed data to a separate volume, which is then used for simplified upgrades and container migrations from one instance to another. This enables automatic incremental snapshots which can be used for effective backup and recovery.



Smooth Sailing? Almost.

Our Docker implementation turned out to be remarkably quick ride but what true blue technology project is complete without some hiccups.



The Docker engine is almost entirely dependent on the host operating system for security. We had to ensure resource allocation and access control via application whitelisting and DevOps tool chain.



The applications cannot store persistent data within the file system as the Docker file system is ephemeral. When the container was shut down, the data was lost. We needed to store data on an attached device for backups and recovery mechanisms.



Docker does not provide deeper visibility into resources and application usage. Hence, we could not monitor the health of the running containers, which was actually critical to the IT admins. We had to build monitoring support for container and instance visibility in the form of intuitive dashboards.

The Bottom Line: Can Enterprise Use Docker Out-of-the-Box

Not Really. Docker provides a DIY tooling framework, which is a container based infrastructure that can run application workloads along with the app stack. Given the unique requirements of an enterprise, Docker alone is not sufficient. Orchestration is required on top of Docker to enable deployment integration, setting up multiple environments for development, testing & production and container provisioning.

WaveMaker has leveraged its own learning with Docker in its enterprise version of the product WaveMaker Enterprise (WME), which provides powerful container management capabilities provided on top of Docker for:



Manageability: Manages container life-cycle, application workloads and app deployment environments for various teams in an enterprise with an easy-to-use GUI based console.



Orchestration: Provides the ability to do continuous delivery for application stack with minimum configuration required to launch the application in different environments. Other than that, WME facilitates upgrades, roll out new software packages, migration to different hosts etc...effectively with innovative Volume Layer technology.



Optimization: Effectively utilizes resources through hibernation, resource allocation strategies and provides visibility into container utilization parameters.



Security: Offers complete developer isolation and access control for development and devops teams within an enterprise.



Reliability: Offers frequent incremental snapshots of the container data which helps in recovering the container in case of system failures.

Contact: <http://www.wavemaker.com/about/contact/>

About us:

WaveMaker's software platform revolutionizes how enterprises build, deliver and manage modern custom applications, improving business agility and fostering innovation. WaveMaker leverages the latest trends and technologies in Rapid App Development (RAD) such as multi-device auto-responsive interfaces and componentized app assembly, Docker for app-optimized container deployment on private infrastructures, and APIs and Microservices Architecture (MSA) for scalable integration. WaveMaker, Inc., a Pramati Technologies company, is headquartered in Mountain View, CA with offices in Hyderabad, India.

For more information, visit www.wavemaker.com, or like us on **Facebook**, follow us on **Twitter**, or connect with us on **LinkedIn**.