



Bitnami Stacksmith Optimizing Applications for Cloud Migration

“50% of Enterprises state cloud migration as a top priority”¹

In a time when there is a clear shift away from the traditional corporate datacenter to public and private cloud infrastructure, modern applications are being built and delivered to take advantage of these distributed cloud architectures.

But what about the legacy applications still running in corporate traditional datacenters today? The fact is that, regardless of the growth of cloud computing, most businesses still rely heavily on legacy software and in-house applications that are hosted in their on-premises datacenters. Recent data shows that:

- less than 20% of x86 workloads have been migrated to the cloud
- only 20% of applications in the cloud today are cloud-native
- only 15% of new enterprise applications being developed are cloud-native

So, can you take a legacy application and move it to the cloud even though it wasn't designed for the cloud? And even if you can, does it make sense to do so?

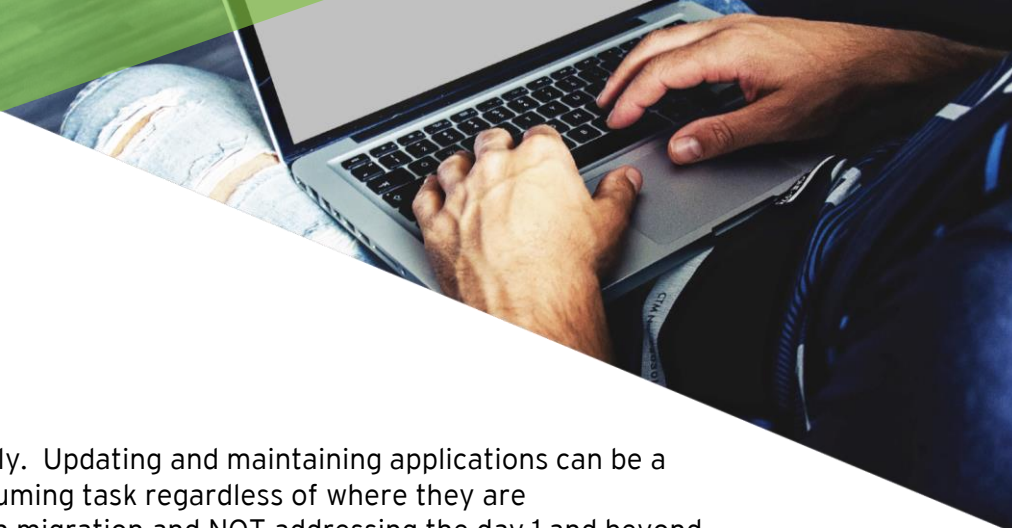
Well, yes, you can, and yes, it does. Of course, in some cases the ideal approach would be to rewrite your applications to take full advantage of the latest platforms, languages, and frameworks. But that is not always feasible, particularly for companies whose primary function is not developing and delivering software.

Companies today are far more likely than 10 or 15 years ago to want to be laser-focused on delivering core business outcomes - and to shed or outsource as many of the peripheral functions as possible. And maintaining a rapidly aging datacenter (think end-of-lifed infrastructure and platforms) is eating up a larger amount of IT's time, money, and expertise. In such an environment, supporting and updating applications is becoming a significant burden.

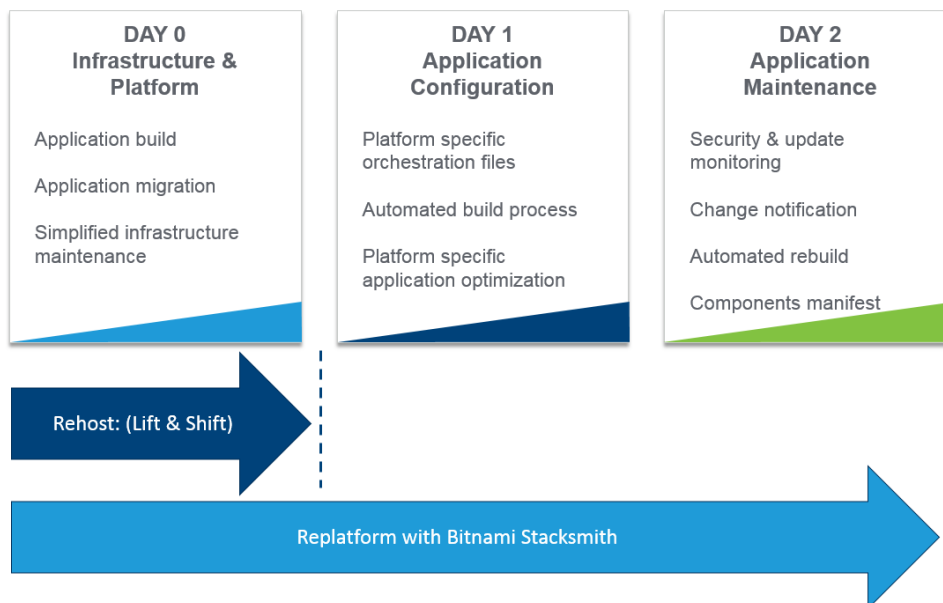
“50% of Enterprises state cloud migration as a top priority”¹

All of this adds up to a scenario whereby it makes sense to downsize your datacenter and migrate applications to the cloud. But aside from rewriting your applications, companies have been left to choose between abandoning them in favor of a SaaS offering, or rehosting (“lift & shift”) them as simple VMs where possible.

Rehosting (lift & shift) can appear to be an attractive option, as it is a ‘light touch’ solution that doesn't require you to revise or rewrite your application code. And it does get your application out of the datacenter. But that's pretty much where the benefits of rehosting end. Remember, the difficulties of maintaining the data center infrastructure - the ‘day 0’ tasks - represent only part of the challenge. Rehosting only addresses your day 0 challenges.



But isn't that enough? Well, not really. Updating and maintaining applications can be a burdensome, manual, and time-consuming task regardless of where they are deployed. Completing an application migration and NOT addressing the day 1 and beyond application side challenges means that, even after the migration, manual tasks will continue to consume a large proportion of your (expensive) IT staff's time, leaving little time for optimizing performance, or implementing solutions that can streamline and improve business processes (IT based growth initiatives). In addition, this lift & shift approach offers little to no additional cloud benefit in the form of scalability or automation.



The good news is that there is a way to migrate AND gain application-level benefits WITHOUT having to dive into your application code. Bitnami has productized much of the tooling and automation it developed and has been using for years to package, deploy, and maintain a library of over 150 open-source applications for all of the major cloud providers and container platforms. The Bitnami engine has delivered thousands of packaged applications to cloud marketplaces, which are deployed more than 1 million times every month.

Bitnami is now applying that proven automation and maintenance engine to Stacksmith, a new self-service tool you can use to replatform (package and optimize) your applications and migrate them to the cloud. Stacksmith automates the manual tasks associated with building and updating software, optimizes the package for deployment to the target platform you choose, and makes it easy to maintain and update these applications in the future.

Re-platforming with Stacksmith requires about the same effort as rehosting - it, too, is a light touch solution that does not require you to update your application code. And re-platforming with Stacksmith delivers everything you get when rehosting, yet also offers many application level automation and simplification benefits. In addition to delivering on your day 0 goals, Stacksmith also delivers day 1 and beyond improvements.



Let's take a closer look at the application level day 1 and beyond improvements you will get when you use Stacksmith to replatform your application:

Automation of Application Packaging and Updating

Automation is a huge part of the value you get with Stacksmith. For most companies, the process for updating server applications is difficult and manual, and eats up a lot of IT's time.

Stacksmith automates this process. It uses a straightforward approach that takes your input - you select the application template and OS, point Stacksmith to your application code, decide on your target platform(s), define a first boot script to wire the application to its database, and optionally provide a build script. Then, Stacksmith pulls together all the required components and gives you an image and a deployment template optimized for your target cloud platform. And the deployment templates are editable and customizable, so you can tailor them to suit your application stacks and build requirements. It is really that easy.

In addition to automating the image building and re-building process, Stacksmith also automates the creation of a build manifest (a comprehensive list of all the dependencies and versions that go into your image), the monitoring of the manifest dependencies for updates, and the notification process that alerts you when patches or new versions are available.

All of this automation provides a tremendous level of simplification of a process that was formerly complicated and manual. The real benefit here is that this automation will free up the time of your highly skilled IT staff, allowing them to focus on other projects, such as growth initiatives, instead of maintaining and updating applications.

Transparency and Visibility of Exactly What Goes into your Application Builds

This benefit is a result of how Stacksmith operates, and as mentioned above, it too is automated. For every build process, Stacksmith creates a declarative build manifest, listing all dependencies such as OS, languages, libraries and modules in the build, including their version numbers. It is no longer necessary to manually track all the things that go into a build in a spreadsheet (or worse).

This manifest gives Stacksmith a way to track the package contents for updates (more on this benefit later), but it also enables a host of additional benefits, including: simplified compliance verification (the manifest gives your security team visibility into what's actually running and enables auditors to verify things like what code touched key data, etc.); the delivery auditable builds; versioning control; and the ability to rebuild a server from a point in time. In this way, Stacksmith helps you establish and maintain your audit and compliance goals.

Deployment Templates that Optimize your Application Builds for your Destination Platform

During the build process, Stacksmith creates not only the repackaged application image, but also a deployment template. This template defines the 'how, where, and what' of your application architecture for the cloud platform you choose. We create a Cloud Formation Template if you



choose AWS, for example, and a Helm chart for Kubernetes. Creation of these deployment templates not only requires knowledge of the application and its dependencies, but also of the nuances of the target platform. These templates are complex and difficult to produce even if you have cloud experience.

Here, Stacksmith lets you really leverage Bitnami's extensive experience in packaging applications. Bitnami has built and maintained so many packaged applications for all the cloud and container platforms that we know all the ins-and-outs and unique requirements that each presents. This is where you benefit. We deliver the image and deployment template that are fully optimized for your target platform. This makes it easy to 'get it right' even if you have little cloud experience. And if you do have experience, the templates are flexible and configurable, so you can modify them to suit your needs.

Ability to Gain Cloud Experience and Make the Shift to the Cloud at your own Pace

Stacksmith is an end-to-end self-service tool designed to:

- take limited input from you (your application code, related run scripts, selection of your desired output platform etc.)
- rebuild the application for you, and
- deliver the new application image and template you need so you can deploy the application to your chosen platform.

What we do in that rebuild process is complex and incorporates our significant experience doing just this. We handle the complexity so you don't have to. We enable you to achieve cloud-optimized results even if you don't have much cloud knowledge or experience.

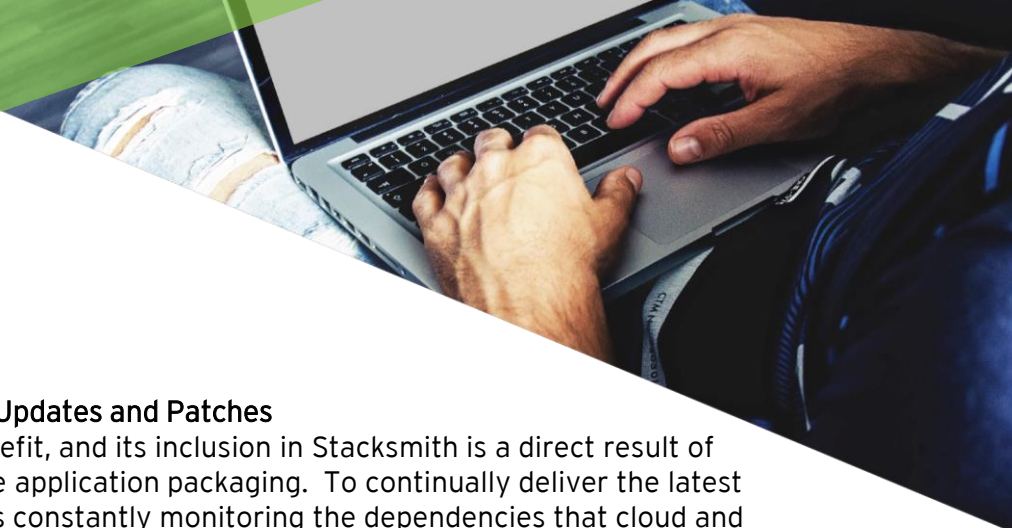
Not only does Stacksmith facilitate that transition for you, but we do so in a transparent process that allows you to learn, gain cloud experience and confidence, and make the shift to the cloud at your own pace. And for those who wish to go deeper, components such as the editable deployment templates we produce let you do just that.

Open and Flexible

Some migration solutions support only a single cloud platform or destination format. That approach requires you to make a decision that can lock you into a single provider for better or worse. And usually, you are making this decision without much experience, inhibiting your ability to make a decision with a full understanding of its potential future implications.

Stacksmith supports multiple platforms and output formats, giving you broad choice. With Stacksmith, you can create VMs and cloud images optimized for each of the major cloud platforms and / or containers. This means you retain platform choice. It also means that one build process can deliver any output you want. You can even create multiple outputs from a single build process.

So Stacksmith gives you great flexibility without vendor or platform lock-in. Not even to Bitnami - by design, your application builds are stored in your own cloud account, so you retain them even if you stop using Stacksmith.



Provides Continuous Monitoring for Updates and Patches

Continuous monitoring is a huge benefit, and its inclusion in Stacksmith is a direct result of Bitnami's long history of open source application packaging. To continually deliver the latest updated application builds, Bitnami is constantly monitoring the dependencies that cloud and container applications rely on - operating systems, languages, libraries, and other modules. Stacksmith will now perform this same function for all the dependencies that go into the build of your application. And again, dependency monitoring is another example of a task that is automated by Stacksmith.

Here's how it works. In the build process, Stacksmith creates the build components manifest that was described above. After the build is complete, Stacksmith continuously monitors these components and notifies you when updates or patches become available. You can then decide if and when to rebuild your applications to incorporate the updates. And since we have automated the build process, updating is easy to accomplish. This feature makes it easy for you to keep your applications up to date and secure, thereby delivering peace of mind.

Summary - Automate, Optimize, Migrate and Maintain with Stacksmith

Bitnami has built the tool you need to automate the migration and maintenance of business applications from your on-premises datacenter to a container or cloud platform. If you have software that your business is relying on today that you want to migrate out of your datacenter to a cloud or container platform, yet cannot or will not re-architect it for the cloud, you can still gain significant cloud benefits by replatforming using Stacksmith.

Kickstart your modernization and cloud transformation initiatives with Stacksmith. Accomplish your migration goals with a light touch approach that does not require application re-architecting, yet does alleviate many of the day 1 and beyond application maintenance pain points you experience today.

¹ McKinsey&Company, 'Leaders and laggards in enterprise cloud infrastructure adoption' By Nagendra Bommadevara, James Kaplan, and Irina Starikova. <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/leaders-and-laggards-in-enterprise-cloud-infrastructure-adoption>