



Modernization of DataScan's Infrastructure - Software Containers

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Though technology changes rapidly, DataScan remains committed to making upgrades that are in our Clients' best interest. We do our best to fully understand what challenges impact our Clients and strategize about how to solve those problems.

In this white paper, we debut our infrastructure modernization, particularly our approach to the world of Software Containers. Our goal is to deliver the same standard developed and tested during our Software Development Lifecycle (SDLC) into the Production environment. Software Containers help solve this challenge. We want new software to evolve through our Development (Dev), Quality Assurance (QA), User Acceptance Testing (UAT), and Production (Prod) systems, looking and behaving the same in each environment.

Commonly Asked Questions about Software Containers

Before diving into the benefits of Software Containers, let's first solidify some background knowledge.

1) What are Software Containers?

We like to use two analogies when describing Software Containers - a Shipping Container and a PDF file. Both transport their contents securely and efficiently. In the case of a Shipping Container (e.g., truck, train, boat, etc.), the contents arrive at the destination unchanged from the starting point. Likewise, creating a PDF secures the document's layout and fonts, ensuring that each viewer has the same experience. Everything needed to view or print is all inside the file, the PDF container.

Let's use the Payment Processing logic as an example. We want the logic to run the same way in Prod as it does in our lower environments (QA and UAT). Software Containers are the industry standard to solve for consistency between environments. By bundling our application in Software Containers, we can develop and hand-off between environments, ensuring the Container remains unchanged and free from bugs.

2) What Makes up a Software Container?

Software Containers contain the code and everything needed to run the application (operating system components, storage, network infrastructure, security measures, and code).

3) What Do Software Containers Solve?

Consistency of Deployment (regardless of the environment)

Before Containers, we used Virtual Machines (VM), making consistent deployment in UAT and Prod were difficult. Now with Software Containers, our application will run the same regardless of the deployment

3) What Do Software Containers Solve? (continued)

Stability

With Containers, we can build a standard infrastructure upon hardware that monitors the environment, correct issues, and prevent future bottlenecks. This gives us the freedom to provide a more stable, round-the-clock service with consistency in our testing and deployment. We have also found that deployment speed and scalability are significant benefits that are of particular importance as DataScan moves to a Cloud Hosted Service.

Cloud-Native Architecture

Software Containers leads us towards portability - the future state for DataScan. Software Containers enable us to move the application stack to the Cloud efficiently because, like Shipping Containers, the contents run the same no matter where they deploy. We invested a significant amount of effort and planning during our last Data Center move to migrate the running application between locations. By moving toward a Cloud-Native Architecture, we can use Software Containers to be more agile.

Security

As we have mentioned before, Software Containers transport code and the components needed to run it securely. Taking monthly patches is essential to ensure that the application is secure and reliable. We will discuss this further in the next section.

Benefits of Software Containers for our Clients

Now that we provided a framework for the benefits of Software Containers, we want to explain how they benefit our Clients for the 2021.01 release and beyond.

Before Software Containers, we followed the standard industry practice of applying patches to handle hardware security and bug updates. For many years, we patched our servers during our monthly maintenance window when the environment is temporarily taken down and the underlying servers were updated. Looking forward to the 2021.01 release and beyond, Containers will bundle code and its key components together. Here is our main takeaway for our Clients – staying up to date with monthly patches is critical. Clients will need to take the latest maintenance patch to receive the most recent security fixes. Clients run the risk of exposing themselves to security vulnerabilities and attacks if monthly patches are not taken. Our transition to Software Containers ensures that we maintain our standard of excellence in service while keeping our environments stable and secure.

Closing

As the industry evolves, so do we. Implementing Software Containers is an important part of that evolution. We are excited at the ability to "ship" software from Dev, QA, UAT, and Prod consistently and securely. The stability gives us confidence in knowing what the developer wrote, what QA tested, and what our Clients verified in UAT is deployed to Prod securely and efficiently.