Persistent

Unlocking Speed, Scalability, and Cloud-Readiness: **Persistent Containerizes IBM Product Master**

The birth of e-commerce and the growth of complex supply chains have created a significant challenge for manufacturers and other product-driven organizations. Now, more than ever, they need to continuously supply partners and employees with the latest product and pricing information in near-real time, automatically. Learn how Persistent modernized an industry leading PIM application with Red Hat OpenShift-based containerization technology. The result is faster deployments, scalability, and multi-cloud readiness.

IBM Product Master — formerly known as IBM InfoSphere Master Data Management Collaborative Edition — has been a trusted solution for industries from retail and manufacturing to banking, telecom and government, providing product information management (PIM) and master data management (MDM) capabilities to perform three critical functions:

Collecting disparate types of product information from a variety of upstream providers like product developers, suppliers, agencies and marketers and systems like ERPs/PLMs/ CRM, data pools and so on.

Ensuring the information is complete, current and consistent based on the organization's unique business rules, data shapes and data governance.

Delivering this product and pricing information instantly to downstream channels like e-Commerce platform, marketplaces, print media, data pools and so on.

"Say you're shopping on Walmart or Amazon's website for a bike for your child," explains Anup Gandhi, Chief Product Architect & Offering Manager — IBM Product Master at Persistent. "The bike listings will provide highly detailed information about weight, what type of wheels and components it has, warranty information, all the photos and videos that are so critical to e-commerce, along with any rebates or special pricing that may be available in that geography at that time.

"That's not being keyed in by the retailer," Gandhi says, "It's all delivered by an MDM platform like IBM Product Master."

Architecting for the future

Offered as an on-premise solution targeted for enterprise-level organizations, the pervasive and explosive growth of data being created—and the need to manage it—has created demand for IBM Product Master's capabilities at both ends of the organization spectrum. Mid-sized businesses wanted an MDM solution that could deliver value quickly and was focused on their specific needs and budgets, while enterprises needed additional scalability and speed to accommodate the accelerating volume and velocity of product data.

In late 2018, Gandhi and the Persistent IBM Product Master development team looked closely at the solution's architecture, identifying three opportunities to align the solution with the evolving needs and market trends of the organizations and industries it serves:

1\ Accelerate time to value: At the time, IBM Product Master's deployment was highly manual, requiring a great deal of setup after the software was downloaded and installed. "We were hearing from customers that it was taking three or four days, even up to a week, to get the application up and running," Gandhi recalls. "Customers today don't have that kind of patience, especially in organizations that lack the dedicated IT support internally."

2\ Improve scalability: IBM Product Master had the inherent ability to scale rapidly based on the organization's needs and workflows, including schedulers to handle import/export functions and other automated tasks. But every time a user needed to increase from one to two workflows, it required manual intervention. As Gandhi put it, "somebody would have to go and configure a bunch of settings. You did not have the ability to scale up automatically depending on the load."

3\ Enable multi-cloud: Initially designed as an on-premise solution, IBM Product Master wasn't optimized for the world of public, private, hybrid or multi-cloud deployments at the time. As more applications adopted the software-as-a-service (SaaS) model, this limitation increasingly became a barrier to digital transformation for many current and prospective customers.

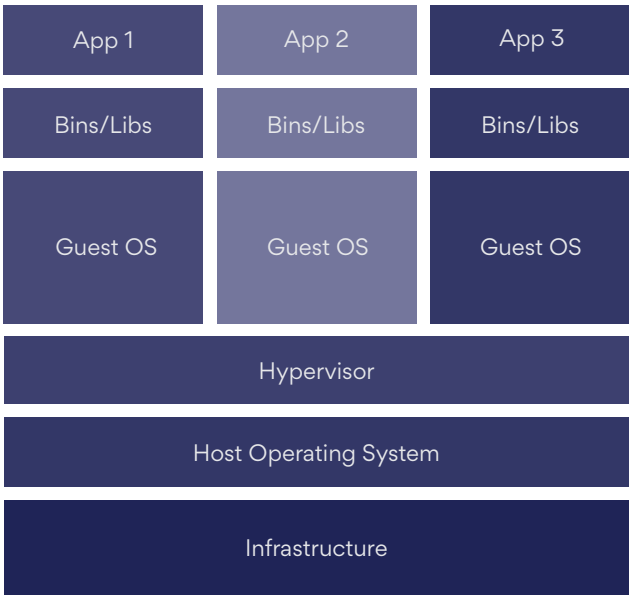
To unlock the breakthrough performance improvements in speed, scalability and cloud compatibility customers required, the Persistent team realized they needed to do more than just evolve the software – they needed to containerize it.

Modernization through containerization

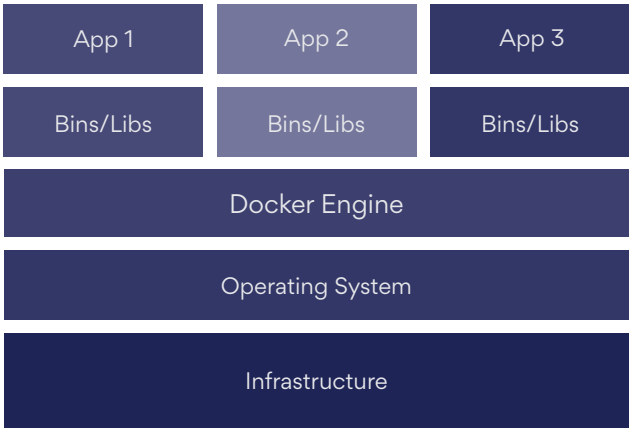
As a development partner for IBM, Persistent isn't focused solely on IBM Product Master; the company has more than 11,000 software and systems engineers and developers across the globe supporting a number of other complex software applications from leading technology brands, including IBM's Enterprise Lifecycle Management (ELM) application development toolset.

For the last five years, Persistent's developers have been increasingly using containerization to modernize applications and prepare them for a cloud- and DevOps-driven world. Containerization has become a leading trend in software development as an alternative (or companion to) virtualization. It involves encapsulating or packaging up software code and all its dependencies so that it can run uniformly and consistently on any infrastructure. The methodology and technology have matured, resulting in measurable benefits for developers and operations teams, as well as overall software infrastructure.

"A lot of the benefits our application developers were seeing after containerization supported our own goals for IBM Product Master," says Gandhi. "So, in late 2018 we started containerizing IBM Product Master for what would ultimately become version 12.0."



Virtual Machines



Containers

Pathway to application modernization

Persistent's developers began by identifying the key aspects of IBM Product Master that could be reduced to what Gandhi calls "the smallest footprint possible" workflows, scheduler and other key services. The team broke down what was essentially one big file with the binaries underneath into individual microservices — packages of self-contained software code ready to be containerized.

The container base image had to be simple and small enough that it could integrate well, taking advantage of process isolation and the ability to be moved easily. "Based on our experience with containerization, we knew to package only the required software dependencies in each container image, to help reduce the disk and memory footprint." Gandhi says.

Persistent relied on Docker Engine, the industry's leading container runtime, to ensure the containerized applications could run with consistency anywhere, on any infrastructure. Docker supported the Open Container Initiative protocols, ensuring the containers they built could be plugged into any standard-compliant platform. This allowed Persistent to recently take advantage of Red Hat's OpenShift containerization platform. "OpenShift supports the same protocols as Docker and offers additional premium value-added services that make application management even easier," says Gandhi.

The next step was to create an orchestration layer that would expedite and automate the deployment, management, scaling, and networking of the containers themselves. The choice at the time was Kubernetes. Not only does Kubernetes eliminates many of the manual processes involved in deploying and scaling containerized applications, but it was built by Google with flexibility in mind.

Kubernetes allows users to cluster together groups of physical or virtual machines as hosts, and these hosts can span hosts across public, private, or hybrid clouds, which makes it an ideal platform for hosting cloud-native apps that require rapid scaling.

"Kubernetes allowed us to address two of the three alignment and growth opportunities we sought for IBM Product Master, and it happened to be the industry standard as well as an open standard," Gandhi explains. "The choice was easy."

Benefits of containerization

With IBM Product Master Version 12.0 successfully containerized and running on multiple platforms in beta since March 2019, the advantages have been profound in the 12 months that have followed.

Time to value — "Time to value was an area of focus for us initially," says Gandhi. "Customers needed to start seeing value from their investment in hours and days, not weeks."

Persistent's own experts would normally take one or two days to deploy a new instance, and new customers would need up to a week. "Now it takes us an average of 10 minutes to have a new instance of IBM Product Master up and running on any leading cloud platform," Gandhi says with pride. "Customers with no experience with an MDM solution are live in just a few minutes with just a few clicks. It couldn't be easier."

Scalability — With Docker and Kubernetes managing the application's computer, storage, and networking needs automatically, scalability issues are a thing of the past for IBM Product Master. "Users now have the ability to scale up and scale down as their needs change, automatically," Gandhi explains. For example, if the CPU utilization on a particular workflow container image is close to 50%, Kubernetes automatically spawn another instance of workflow to handle the additional load.

"All of that happens in the background automatically, seamlessly, no manual intervention required," he says. "That action takes three or four minutes, tops."

One IBM Product Master grocery customer in Europe conducts 500,000 updates every week, since their product prices change daily. In the past they would need to manually schedule this action each time ensure the load remained balanced during these critical updates.

"Now," Gandhi says, "when the load increases rate, the platform automatically spawns another container, and that whole load gets processed automatically instead of somebody monitoring and managing it manually every Friday night."

Multi-cloud ready — "By relying on Docker and Kubernetes for containerization and orchestration, IBM Product Master is not only cloud-ready; it's cloud native," says Gandhi.

IBM Product Master allows users to deploy on AWS, Microsoft Azure, IBM Cloud, and other leading cloud providers with all the necessary efficiency, robustness, flexibility and security modern architectures demand.

By leveraging Docker/Kubernetes, in addition to the benefits listed above, the IBM Product Master team has also cleared the path for getting the product available on IBM Cloud Pak for data (CPD) with relative ease as the CPD platform natively supports Docker/Kubernetes via OpenShift.

"Through containerization, Persistent has been able to fully modernize a trusted software solution relied on by industries around the world," Gandhi concludes. "IBM Product Master delivers all the benefits of product information and data management manufacturers and retailers depend on, but it also integrates all the cloud capabilities, scalability and time to value businesses expect today and in the years to come."