Micro Focus IT Operations Management Digital Transformation

Transforming large scale Software portfolio with Containers and Microservices at the speed of DevOps

A Technical Journey

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Contents

Summary

The challenges many IT organizations face in achieving their business objectives include how to optimize the mix of old and new technologies, what new processes to put in place, and how to add new skills to their team.

Micro Focus ITOM (IT Operations Management) Software undertook a journey to transform itself to better serve our customers. Our portfolio serves today thousands of enterprise customers, it is built on a rich IT software platform, delivering over 40+ ITOM products that spans multiple decades of technology, and target a wide range of use cases, such as Service Management, Hybrid IT, and analytics monitoring.

This transformation began with setting goals, evaluating and designing new technology architecture, adding and redesigning new operational processes, and identifying and addressing skills gaps on our team.

For DevOps, containerization and microservices hold great potential to provide more efficient resource usage, more flexibility and agility in software development, and faster deployment cycles. For example, Containers allow you to run 6-8X more applications than VMs on the same hardware. While container tool adoption is growing 40% per year, there are many things to consider when adding containers and microservices to further enable your DevOps team.

In this paper, we share the best practices and lessons learned that we gained from our 18-month transformation journey. We set strong goals for product management and DevOps to innovate faster, while protecting existing production grade investments. The results of our journey included a streamlined product portfolio from 40+ products to 5 product suites, shorter release cycles from 6 months to 3 months, average installation time from weeks to hours, software updates from days to almost instantaneous, new tooling for better operations and greatly improved quality, and consistent on-time delivery.

Here is how we did it!

The Transformation Journey Began with Transforming Ourselves

At Micro Focus, we are constantly striving to better serve our customers. To provide the best solutions for our customers, we underwent a journey ourselves to become more agile and deliver innovation faster, streamline our portfolio and lower total cost of ownership (TCO), and optimize the use of our resources to achieve greater efficiencies.

Transformation journey began with clarifying our goals:

1. Improve customer experience with faster product delivery
2. Accelerate time to value by simplifying software maintenance and upgrades for customers
3. Improve integration across products and reduce duplications in development with shared architecture and software components

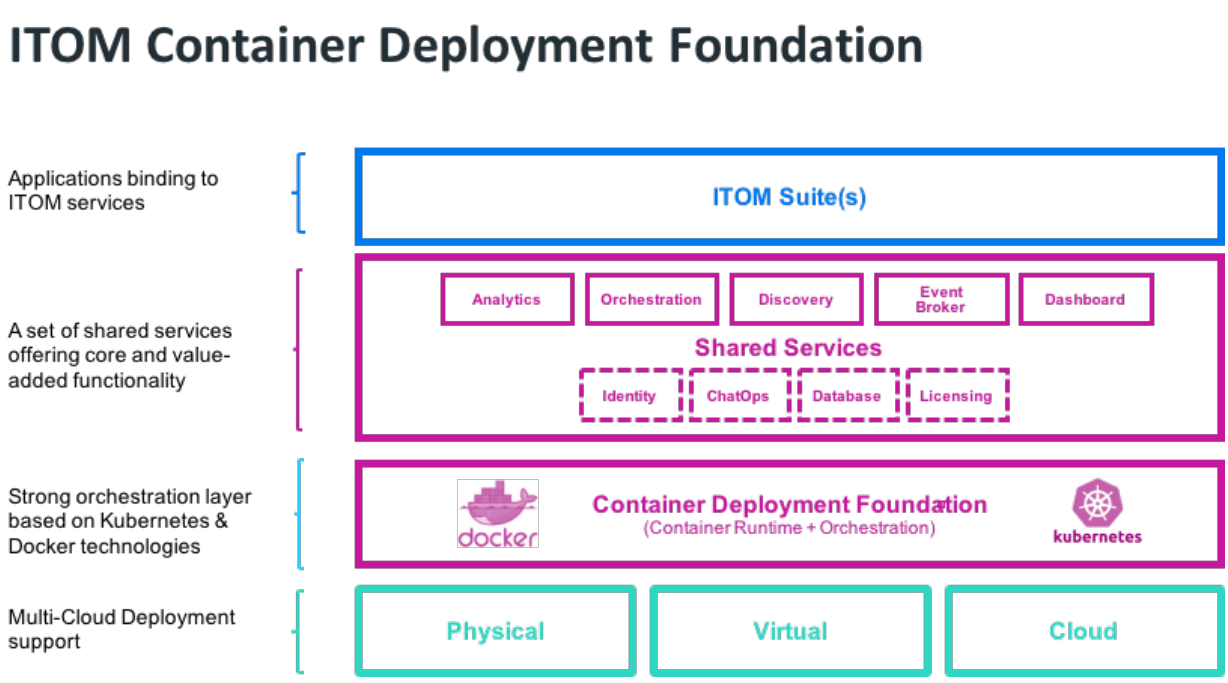
Build a Modern Foundation for Optimized Software Delivery

In order to achieve the expected and lowered TCO for our customers and partners in consuming our updated portfolio, we decided to build and deliver our software over a new common software stack. We called it **Container Deployment Foundation** (CDF).

The use of new technologies and quick adoption of containers in the new stack was a strong answer to some of the early challenges we had been facing when it came to installation, upgrade, and management at scale of those assets, all pre-integrated.

We chose Open Source software - *Kubernetes* from the Cloud Native Computing Foundation (CNCF) and container runtime from Docker - to deliver a new environment for the entire ITOM portfolio. Since then, Kubernetes has emerged as the de-facto leader for container orchestration in the industry.

The new ITOM software foundation was designed from the ground up for easy deployment on any kind of infrastructure, physical, virtual, or cloud. This allows our customers a much greater flexibility when deciding to adopt the most flexible cloud strategy.



As a part of our technical evaluation, we identified several key services that were previously delivered by multiple DevOps teams. These key services were often not consuming the same service versions, imposing additional support and compatibility matrix testing. Shared technologies were developed by one team and made available for consumption via CDF for all product suites. Product teams shared technology, common services, and all-things container orchestration related such as quickly deploy, update, upgrade, and scale their applications.

Create a Centralized Technology & Strategy Office

To link and align all technology mandates and portfolio software architectures, we created a centralized technology & strategy office (TSO). All software mandates, architecture guidelines and best practices have now been centralized at the ITOM business unit level, with each product suite represented by a dedicated architect. Architects across portfolio can collaborate faster, share learnings, and make key technical decisions and act within this governance model. This group acts also as a liaison between company CTO and product architects, communicating and aligning organization on common goals and technical vision.

Allow Each Team to Customize Its Own Strategy

To be least disruptive to the business, each team dedicated a subset of scrum teams to the containerization journey, while working in parallel to deliver business requirements. Team architects performed deep technical analysis of their current portfolio, while the product managers established a route to market with their new offerings. Each team needed to balance between delivering on the current platform and migrating their products onto the new container framework.

After performing technical assessment, TSO architects developed and strategy to their new containerized architecture and chose one of the three routes:

1. Introduce new capabilities only on Container Deployment Foundation but not on the classical platform
2. Migrate existing capabilities onto the new platform with migration tool(s)
3. Hybrid of the approaches 1 and 2 to enable customer to decide what capabilities they want to use on the new architecture and what will remain on the classic

Each product team had to determine what existing capabilities should be containerized, what should be rewritten as a microservice, and what should be left in its original form. Some older products in the portfolio are not easy to move as a set of containers. Products with an n-tier based architecture can be ported as containers as long as we were able to resolve data state. The more recent additions to our portfolio were already container friendly and API driven.

Architecture Status	Approach
Mostly monolithic – even on the MVC patterns	Leave as is and build similar functionality over to a new set of containers and facilitated the migration. Older stack will be phased out over time.
Build on best-practices n-tier architecture	Bring in those key elements over such as middleware and front-end piece as set of containers. Enforce service scaling when possible. Database migration not required as CDF can also plug on external database
Micro-service, API driven implementation	Port as micro-service based containers. Leverage all capabilities offered by the new ITOM stack (see below) to show digital value

In the end, each Suite team took different routes on their own containerization journey based on their customer needs, product requirements and technology capabilities. The outcome of this was the best practices developed by each team for net new and classic architecture coexistence. These practices were shared among all teams.

Adopt the Open Source Model Internally

We also created an ITOM Inner Sourcing Project, a development model that allows diverse teams within the organization to participate or build software using the Open Source distributed and collaboration model. We identified key areas where we could use additional staff to accelerate innovation. Inner Sourcing came especially useful for the Shared Services organization as they could scale out their development team to deliver a shared capability or a feature that could be re-used by the entire organization.

A good example was the quick introduction of the Business Value Dashboard (BVD) within the Network Operation Management Suite, a service that originally available on our Operations Bridge Suite. It allows a nice and intuitive dashboard and reporting capabilities for upper management to review live key metrics of their environment. Expect similar offerings to come to the other ITOM offerings as a true shared service that can be adopted quickly.

Develop Faster Release Cycles and Use Agile Methodologies

We accelerated our release cycles from 6-9 months to 3 months across the product suites and CDF itself. Product Managers can now act on customer requests much faster. To achieve this faster release cycle, DevOps took full advantage of agile methodologies, including a strong CI/CD process to support the software delivery from development to production, identifying any manual steps in the build, test, and

delivery process that could be automated, and integrate as early as possible with a continuous adoption of Container Deployment Foundation.

The development teams used best in class CI/CD tools & processes– some from our Micro Focus DevOps portfolio, some Open Source software - to build and test the entire solution early in the release cycle, no longer delegating the Suite level testing to some Solutions or Post-Integration group. Testing was done earlier and more often, which improved considerably the quality of the software based on the pre-integrated suite capabilities.

Such environment is very close to how a customer and/or partner would run and thereby eliminating or reducing late integration testing. Due to the shorter release cycle, QA cycles also got reduced, forcing QA teams to build greater test automation as part of their effort, improving R&D test driven development approach to software development.

Automate Software Deployments and Upgrades

One of the major benefits of container-based architecture is the ability to introduce new and updated capabilities without disrupting the general operations of the infrastructure. The new container-based delivery of the software allows for almost instant introduction of the new and updated capabilities. Testing and functional regression cycles are now greatly reduced.

This approach is beneficial for a development organization and for customers. DevOps team can isolate and introduce new features in a modular manner in container format. Customers can receive information of the new or changed capabilities similar via update notification like an iPhone and choose when and how to apply the changes. The almost instant-on distribution of container images is very powerful and allows for new use cases to be completely automated such as software deployments and upgrades.

Keep the Technology Foundation Secure

As with any new technology, security was a top priority as we built and deployed CDF. Our move to containers provided an opportunity to revisit our security policies and services for a continuous delivery process for both offline and runtime environments. To manage the many container images per Suite, including a set of containers that's shared among them, we built a delivery pipeline that secured the publishing and delivery of our digital assets into customer's environments.

Here are the steps we took

1. Secured container images with continuous scanning and signing processes. All images are scanned for malware and security vulnerabilities. Containers are signed every time a new image is tagged and made available in our Docker registry.
2. Used Docker hub private repositories where we had built a secure environment that allowed our DevOps organization to securely deliver our assets
3. Customer and partner downloads from Docker Hub private repositories the right set of container images based on contract entitlement
4. Protected our customer environments from running non-Micro Focus signed containers

Conclusion

The new “IT” modernization journey involves using new technology, establishing new processes, building new tooling, and training staff to develop new skills.

The Container Deployment Foundation (CDF) allowed Micro Focus ITOM to incorporate agility and speed to deliver a better product suite experience to our customers, combining it with the wealth of capabilities that did not have to be redeveloped from scratch. Our Product Management and DevOps teams have aligned with the more modern approach to product and services delivery to provide faster innovation, simplified management, and integration for our partners and customers.

With the release of our new container-based ITOM suites earlier in the year, we are already able to see the success of our ongoing transformation. Customers and partners are able to evaluate, deploy and upgrade at a much faster pace than before while leveraging a common set of pre-integrated ITOM services.

We will carry those principals forward and continue our transformation under Micro Focus to become the 7th largest pure play software company in the world and drive innovation forward.

About the Author

If you want to know more about Micro Focus ITOM transformation, contact Patrick Deloulay, Sr. ITOM Product Manager (linkedin.com/in/pdeloulay/). He is driving the Container Deployment Foundation agenda and its adoption within ITOM and beyond enabling a new software collaboration model across Micro Focus.

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