

# Paving the Way with Open Source



*Multi-cloud and hybrid cloud deployments introduce significant complexity.*

**Frank DiMuzio**, Emerging Technology Lead for Red Hat, discusses how open source lays a foundation for simpler, more flexible and business-smart cloud deployment.

## **What trends and opportunities are emerging as state and local governments move toward multi-cloud and hybrid cloud deployments?**

Multi-hybrid cloud, as we call it, brings both incredible capabilities and additional complexity. Most trends revolve around creating a consistent operating mode across different environments. There are more differences between cloud platforms than people realize. State and local governments need to consider how they can standardize application and security architecture and design best practices between clouds and on-prem environments. It's also important to train staff on how to efficiently navigate these various environments and toolsets. These complexities give agencies an opportunity to bring in modern tools, processes and paradigms faster than they normally might — for example, container technology, DevOps principles and agile development methodology, or even data center and infrastructure automation.

## **How does an open source approach support a cloud smart strategy?**

Overall, there's a realization that the cloud isn't a silver bullet and that to be successful, organizations need to look at cloud adoption holistically. They need to take best practices into account when it comes to securing the environment, training and enabling staff, and even

engaging in the procurement process. Open source supports a cloud smart strategy by helping eliminate vendor lock-in risk and technical debt. By using open source technology and an open source cultural process — where there's transparency, collaboration and the ability to iterate quickly — organizations can solve their business problems and adapt their requirements based on emerging best practices. They're not beholden to proprietary systems that may create friction for innovation and are potentially costly to replace, upgrade or move to the cloud. There can be significant licensing fees if an organization is running certain proprietary software and wants to move to the cloud. Including open source in your cloud smart strategy provides total flexibility on the technology side as well as the financial management side.

## **What tools can help organizations better manage and secure hybrid and multi-cloud environments?**

You want a strategy that ensures workloads are portable, consistent and secure across cloud and on-premises environments. And you want to do that without risk of lock in. Linux container technology is one of the primary ways to achieve this because it allows you to package up an application and all its runtime dependencies, and then ensure consistent deployment across any infrastructure. You can build once and run anywhere. We see containers as foundational to a comprehensive application modernization platform that features tooling to deploy, manage and maintain those applications across the cloud.

## **What is the role of open source technology in cloud-based data visualization, analytics, automation and other innovation?**

As discussed earlier, organizations need consistency across different clouds and their on-premises environment. It's the only way to manage things at scale. A lot of the research and development of these new tools that adds value and drives new capabilities — data visualization, analytics, automation and so on — is being done in open source communities; so I would encourage government agencies to consider using and contributing to these tools. More importantly, if organizations standardize on open source tools, it's easier to leverage them across clouds and on-prem. It also lets organizations adapt more quickly and take advantage of new tools and capabilities as business needs evolve.

## **What are the implications of cloud-native development and approaches such as containerization?**

This is a huge area because it implies so much technology and organizational change for state and local governments. Containers and supporting technologies such as Kubernetes allow agencies to deploy applications more quickly and on a broader set of infrastructure. Ultimately, this improves the overall experience for citizens and for internal agency customers. Citizens and businesses expect governments to provide services and user experiences that are as responsive, flexible and meaningful as their private sector experiences. To do that successfully, agencies must bring in this technology. They also should consider organizational change — things like using DevOps and lean or agile development methodology, working more collaboratively with the lines of business and end users, and getting constant feedback to make real-time changes. All of these best practices help accelerate modernization.

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