

Containers' importance in the cloud

So far, you've learned that containers are a major part of cloud computing, and have some useful advantages, like portability. In this reading, you'll dive into why containers are important in the cloud, and examine some of the benefits of using them. You'll also learn about some of their disadvantages.

Containers and the cloud

Containers are important for several reasons. One of their most important features is their ability to function as logical packaging mechanisms. This means that applications in containers can run independently from the environments they're in.

Containers are used to deploy and manage individual services. Major organizations can use containers to run applications used by millions of public users. Microservices is an architectural style that lets a large application be broken into smaller parts that run independently. Each of these parts has its own responsibility realm. An application based on microservices can call many internal microservices to put together its response.

Depending on needs, containers can be scaled up and down to efficiently use resources in the cloud. This is important because cloud computing is the on-demand availability of resources, like storage and infrastructure, as services. The ability to scale containers helps an organization use these resources efficiently.

When an organization decides to migrate to cloud computing from on-premises infrastructure, their transition can be made easier if their apps are containerized. That way, they'll be able to work exactly the same in containers as they did before moving.

Containers can be useful for collaboration, and their mobility makes collaboration a lot easier and more efficient. For example, an infrastructure team can share their container template with a development team so they have a solid baseline to build on.

Benefits of containers

Containers have some benefits that help with the development and deployment of applications in the cloud. These benefits include:

- Developers can examine the application when it's isolated from other applications, because the container has virtual resources that allow the application to run on its own, without needing to work with other applications for resources.

- Containers are mobile. They can run anywhere, so developers can work on them across operating systems, in an on-prem environment, or in the cloud. This is a benefit that allows developers to work on the application and run it from anywhere.
- Containers can be copied and deployed quickly because of their smaller size. This helps software and security testing. Because of rapid deployments, it's easy to destroy and rebuild containers, allowing you to address issues, like fixing newly identified vulnerabilities.
- Operation is consistent, so development and IT operations teams can rely on the applications running the same in containers. This is also true from where the applications are deployed.
- New features can be introduced more quickly.
- Roll-back can be done easily and quickly. For example, you can quickly go back to a previous version of an application if a newer version has errors.
- Containers provide the opportunity to run applications with the least amount of libraries or dependencies required, reducing the attack surface.

Disadvantages of containers

Containers also have some disadvantages. These include, but are not limited to:

- Containers share the same host kernel, meaning a compromised container can affect other containers.
- Containers sometimes require a lot of resources to set up and run.
- Containers are stateless, so they don't store data.
- It can be difficult to network containers.
- Containers are not always compatible with specific container runtimes.

Key takeaways

Containers are used for many tasks in the cloud, and have become a major factor of cloud computing. Containers have several benefits for cloud computing. These benefits include: isolation, mobility, small size, consistency, quick introduction of new features, easy rollbacks, and a minimal number of libraries or dependencies. But, containers also have their disadvantages. Overall, containers can be utilized in a variety of ways, and familiarizing yourself with their functions and uses will improve your effectiveness as a cloud security professional.