Infographic: Decision Point for Selecting Virtualized Compute — VMs, Containers or Serverless

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Initiatives: Infrastructure for Technical Professionals

Containers and serverless computing enable applications to be virtualized using more cloud-native approaches than before. This Decision Point helps IT technical professionals select a virtualized compute method that will provide the most agile infrastructure for a particular application.

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Decision Point for **Selecting Virtualized Compute**

VMs, Containers or Serverless

Which virtualized compute method should I use to deploy an application?

Before you decide:

- Understand the **key principles.**
- Analyze the **requirements.**
- Evaluate **selection factors.**

Two key principles influence this decision:

1 Long-Term: Optimizing Infrastructure for Cloud-Native Architectures

- Increase software velocity and enable developer agility
- Maximize application scalability
- Reduce technical debt

2 Short-Term: Prioritizing Operational Goals

- Maintain operational compatibility
- Minimize startup costs
- Improve resource utilization

Analyze the requirements.

1. Application Architecture
2. Deployment Infrastructure
3. Independent Software Vendor (ISV) Support
4. Data Persistence Requirements

Evaluate the selection factors to improve automation, efficiency and cost optimization.

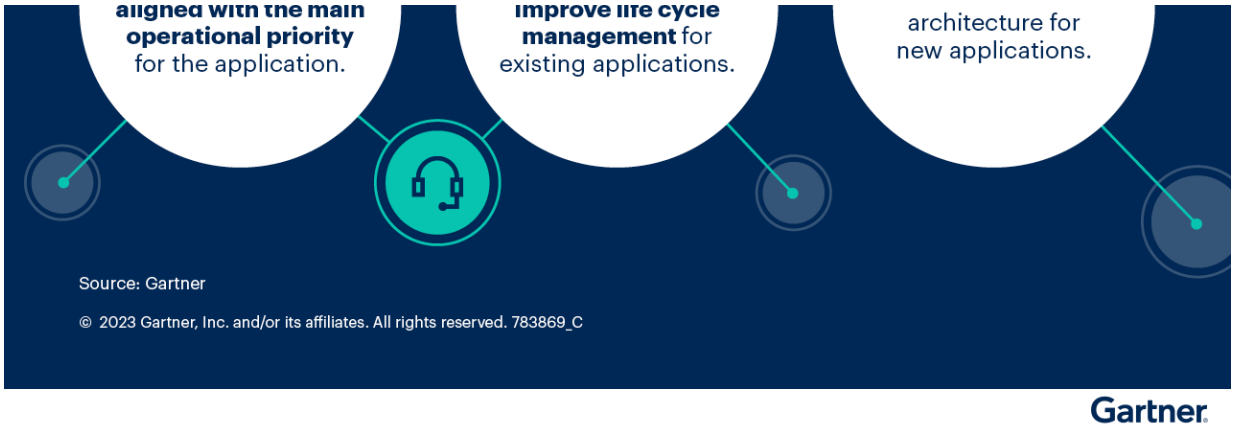
	Virtual Machines	Containers	Serverless
Features	• Virtualize server hardware • Share a single physical server • Have their own copy of an OS	• Virtualize the OS user space • Maintain their own copies of OS libraries • Enable container orchestration using Kubernetes	• Virtualize the application runtime • Use shared resource pool for applications • Provision all necessary resources of the runtime environment and operate them automatically
Reasons to Use	• Require standard operating environments and processes	• Require mobility across on-premises, hybrid and multicloud	• Is committed to one public cloud platform • Require seamless auto scalability
Design Constraints	■ □ □	■ ■ □	■ ■ ■
Portability	■ ■ □	■ ■ ■	■ □ □
ISV Support Level	■ ■ ■	■ ■ □	■ □ □
Storage Integration	■ ■ ■	■ ■ □	■ □ □
IT Control	■ ■ ■	■ ■ □	■ □ □

Final Recommendations

Choose the virtualized compute method **most**

Identify opportunities to **modernize and**

Optimize for cloud-native



Overview

There are a series of virtualization methods within the industry with increasing levels of abstraction. Although these methods make better use of resources by provisioning them at ever-finer granularity while enabling new operational models, the points of differentiation and their applicability across different real case scenarios differ.

The infographic details the attributes of each of the discussed virtualization methods, including Serverless, Containers and Virtual machines but also introduces the different elements you need to consider before choosing the compute method that best fits your requirement prior to deploying any application.

Evidence

This Infographic is intended to guide organizations to select the correct type of virtualized compute method for deploying applications based on these requirements and characteristics. It is based on Gartner's ongoing interactions with clients in inquiries, previously published Gartner research and technical assessments by Gartner analysts.

Today, organizations have multiple options to select an appropriate virtualization method or approach for their application. While each suggested option works with some basic criteria fulfilments, for successful deployment, it is essential to identify and address the critical Principles and Requirements and stay mindful of the recommendations while evaluating the possible selection factors.

For a deeper understanding about the options, please refer to the Decision Point for Selecting Virtualized Compute: VMs, Containers or Serverless.

Recommended by the Authors

Decision Point for Selecting Virtualized Compute: VMs, Containers or Serverless

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