

# A CTO's Guide to Multicloud Computing

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Initiatives: [Digital Future](#); [I&O Platforms](#)

The hype around multicloud computing has led to unrealistic expectations. To enable CTOs to make sound cloud decisions, we describe multicloud computing — its benefits, the unrealistic expectations CTOs have about it and how it affects cloud strategy.

## Overview

### Impacts

- Multicloud computing confuses some CTOs, because what constitutes the concept isn't always clear.
- Organizations' ongoing use of the cloud sets them on a path to multicloud computing.
- The hype surrounding multicloud computing has caused CTOs and IT leaders to have unrealistic expectations.
- The use of multicloud computing has many impacts on an organization's overall cloud strategy.

### Recommendations

CTOs responsible for their organizations' digital future must:

- Determine whether they're using multicloud computing by examining whether they're using more than one cloud provider for the same general purpose.
- Move beyond the core cloud benefits by shifting their focus from tactics, such as sourcing and procurement to acceptance (management and governance), and then, potentially, to the use of a multicloud architecture.
- Reframe their expectations of multicloud computing by evaluating portability claims and being realistic about the likelihood that full-functioned abstracted portability platforms will not be available in the 2027 time frame.

- Clarify their cloud strategies by agreeing on definitions of the terms “multicloud computing” and “cloud-native computing,” so that everyone understands the terms and uses them in the same way.

## Strategic Planning Assumption

By 2027, 40% of enterprises will have changed their multicloud expectations, due to a better understanding of the benefits and challenges of multicloud computing.

## Introduction

For most organizations, regardless of size, multicloud computing is inevitable. By 2026, more than 90% of enterprises will extend their capabilities to multicloud environments, which is an increase from 76% in 2020. <sup>1</sup> However, there is a great deal of confusion as to what is meant by multicloud computing. Different people use different multicloud definitions, and adoption maturity varies. Some organizations may be using multicloud computing without realizing it.

CTOs need to know what multicloud computing is and whether their organizations are using it. If your organization *is* using multicloud, you'll need to ensure that your organization's expectations of multicloud computing are realistic, and reset them if they're not. You must also understand multicloud computing's impact on your overall cloud strategy (see Figure 1).

Figure 1: Impacts and Top Recommendations for CTOs

**Impacts and Top Recommendations for CTOs**

Impacts	Top Recommendations
What constitutes multicloud computing can confuse CTOs	<ul style="list-style-type: none"> <li>• Determine whether you're using more than one cloud provider for the same general class of IT solution.</li> </ul>
Organizations' ongoing use of the cloud sets them on the path to multicloud computing	<ul style="list-style-type: none"> <li>• Shift from focusing on tactics such as sourcing and procurement to acceptance (management and governance) and then, potentially, to the use of a multicloud architecture.</li> </ul>
The multicloud hype has caused some to have unrealistic expectations	<ul style="list-style-type: none"> <li>• Evaluate portability claims and be realistic about the likelihood that full-functioned abstracted portability platforms will be available by 2027.</li> </ul>
The use of multicloud computing has many impacts on overall cloud strategy	<ul style="list-style-type: none"> <li>• Agree on definitions of the terms "multicloud computing" and "cloud-native computing" so that everyone is using them in the same way.</li> </ul>

Source: Gartner  
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**Impacts and Recommendations****What Constitutes Multicloud Computing Can Confuse CTOs**

Gartner defines multicloud computing as the use of multiple public cloud providers to provide the same general class of IT solution, workload, application or use case. For example, Amazon Web Services (AWS) and Microsoft Azure are the same general class of IT solution; if your organization is using both, then it's using multicloud computing.

However, it becomes more complicated when other kinds of IT solutions are involved. For example, if your organization uses AWS for infrastructure and also uses Microsoft Office 365, this wouldn't be considered multicloud computing, even though both are from different cloud providers. This is because there's almost no interaction between them and you're not using them for the same thing.

Things become complicated, too, regarding software as a service (SaaS). These application-level types of services often run on the services of infrastructure cloud providers. Sometimes you have to pay attention to what's underneath. For example, some companies, such as SAP, provide their applications, whether SaaS or not, on top of a variety of infrastructure, including that from hyperscale providers, such as AWS, Microsoft and Google. So you might be using another cloud provider without realizing it. You shouldn't have to worry about that, but you do when it often comes to issues such as colocation, latency and integration. SaaS complicates the situation.

If your organization uses multiple packages from different vendors to do the same thing, it's using multicloud computing. For example, you may have two or more ERP or CRM systems from different providers. However, the situation may be only temporary. Perhaps it's the result of activities such as mergers and acquisitions (M&As). This would be a type of multicloud computing, but strategies for dealing with it would be different.

In addition to the core cloud benefits of agility, scalability and elasticity, multicloud computing has many potential benefits which include the potential to:

- Lower the risk of cloud provider lock-in
- Provide best-of-breed capabilities for specific use cases
- Provide service resilience and migration opportunities
- Give global companies access to public cloud services in different geographic locations

#### *Recommendations:*

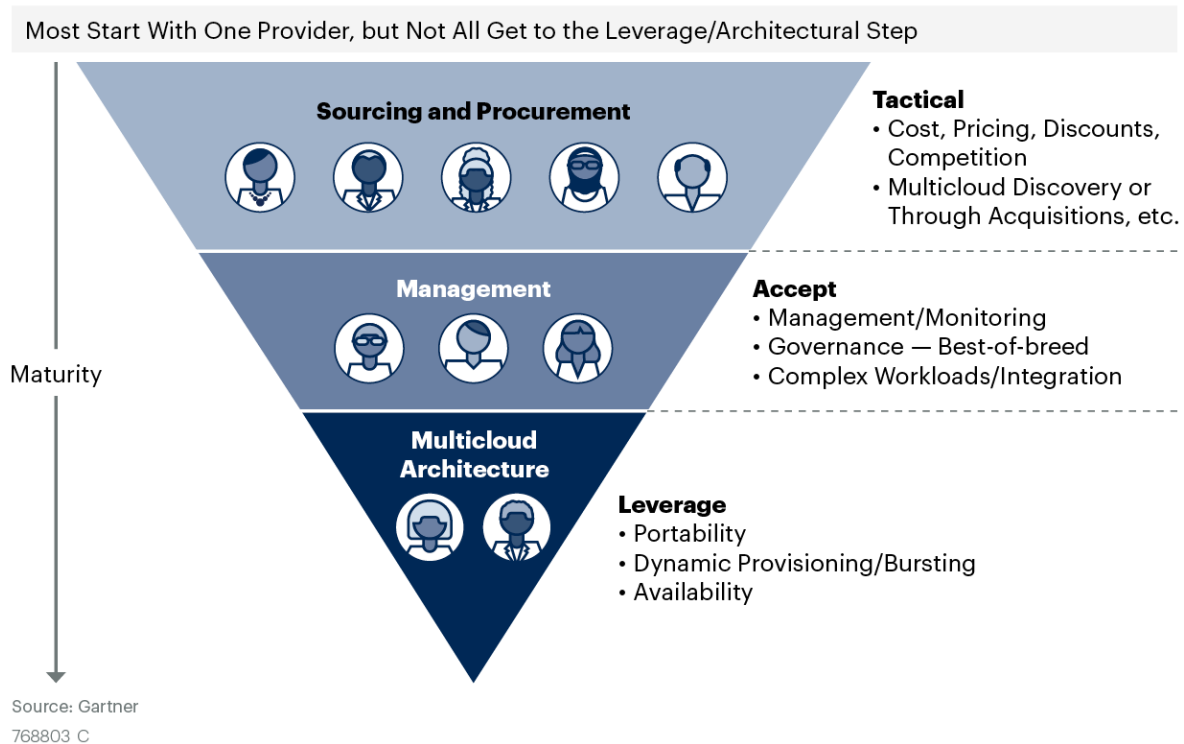
- Determine whether you're using multicloud computing by examining whether you're using more than one cloud provider for the same general class of IT solution.
- Accept that multicloud computing is an unavoidable reality for most organizations.
- Analyze the impacts of your use of SaaS, because it might run on infrastructure from another cloud provider.

## Organizations' Ongoing Use of the Cloud Sets Them on the Path to Multicloud Computing

If your organization is like most, you probably started with one cloud provider. You were successful, so you continued to do more in the cloud. This is the first of three steps in the multicloud progression (see Figure 2). Most organizations progress in a pattern similar to this.

**Figure 2: Multicloud Progression**

### Multicloud Progression



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### Step 1. Approach Tactically

At this point, you're following a tactical approach. You're focusing on things such as cost, pricing, discounts and competition. You're also probably discovering that your organization is using other cloud providers. You may have a best-of-breed principle in your cloud strategy that encourages you to use multicloud computing. Alternatively, you may discover that you've been using multicloud computing without realizing it — for example, you're using AWS, but discover the use of Microsoft Azure in your organization. Or you may be using multiple clouds as a result of M&As, rather than an intentional decision.

At this stage, some of the tactics focus on price. To obtain good discounts, you may be trying to:

- Obtain a big volume discount from one provider, which may result in other benefits
- Encourage competition, playing one provider off against another in an effort to drive down costs

However, neither of these approaches works well, because costs aren't dramatically different among cloud providers. These approaches are also of limited use, unless your goal is to focus only on price.

## Step 2. Accept

At this point, you must accept that you need to deal with multicloud computing. It's an unavoidable reality for most organizations and where most organizations are. Next, you'll need to decide how your organization will manage and govern it. Management usually means tools (often starting with things such as single-pane-of-glass tools) and governance.

The governance effort involves deciding where to place new workloads and how to classify different providers. First, select your primary cloud provider. The more mature your organization is in its use of cloud computing, the more likely it is that you have secondary and/or specialty providers. You may, for example, use one provider for new development and a different one for certain kinds of workloads, such as heavy data and analytics and machine learning (ML). You may use other providers for the "lift and shift" of legacy workloads.

In this step, you will also provide guidance on how to deal with different providers. For example, you could attempt to diversify by targeting an even split among providers.

You'll also probably have to deal with complex workloads and integration. Those workloads may span multiple clouds, usually doing different things in each. Although this is a type of stovepipe approach, it's common.

## Step 3. Leverage

You may not reach this step — most organizations don't, and most don't need to. This is where you use multiple providers via an architectural approach. This involves such issues as portability, which extends beyond applications to data and skills.

This is also the step in which you may consider rarely implemented things, such as dynamic provisioning and workload placement based on pricing and cloud bursting. These have been much debated in the cloud world, but seldom done because they're difficult, and aren't appropriate in many cases.

Another aspect of the leverage step is trying to use multiple cloud providers to address availability issues. This is a relatively new topic in multicloud computing. It's the result of concern about cloud concentration risk (i.e., becoming too dependent on one cloud provider). Some people are trying to minimize their cloud concentration risks and exposure on availability and business continuity by being able to fail over from one provider to another. Many regulators are beginning to require organizations to address cloud concentration risk in some way. However, this isn't the best way to achieve an active availability goal.

#### *Recommendations:*

- Shift from focusing on tactics such as sourcing and procurement to acceptance (management and governance) and then, potentially, to the use of a multicloud architecture.
- Don't assume that multicloud computing means that you must use multiple providers dynamically and portably — few organizations do.
- Select a primary provider and secondary or specialized ones, even though you're likely to be using multicloud computing.

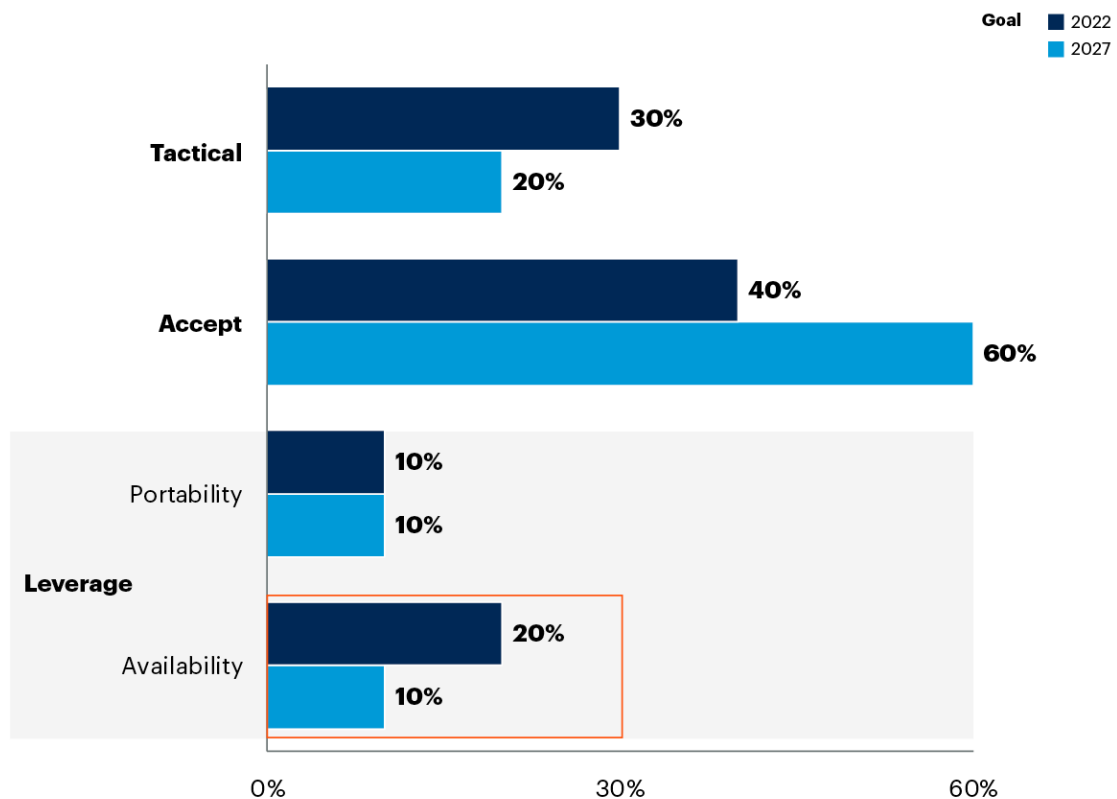
## The Hype Surrounding Multicloud Computing Has Caused CTOs and IT Leaders to Have Unrealistic Expectations

Unrealistic expectations of the benefits of multicloud computing are prevalent. However, we expect that, by 2027, 40% of enterprises will have changed their multicloud expectations, due to a better understanding of the benefits and challenges of multicloud computing (see Figure 3).

Figure 3: 40% of Organizations Will Change Their Multicloud Expectations by 2027

**40% of Organizations Will Change Their Multicloud Expectations by 2027**

Percentage of Respondents



n = 286 (for 2022 Data)  
Source: Gartner Webinar 2022  
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One common misunderstanding is that adding another cloud provider to address cloud concentration risk via business continuity (BC) planning and disaster recovery (DR) will fix the issue. It won't. This would work only if the different providers were exactly the same, which they're not. Solving BC/DR issues is much easier within a cloud provider ecosystem.

In a Gartner webinar poll, 30% of respondents said their expectations of multicloud computing were tactical in nature (e.g., cost and pricing discounts, which correspond with Step 1 of the multicloud progression).<sup>2</sup> We expect that figure to decrease to 20% by 2027, as people realize that multicloud computing won't drive down costs, especially as multiple clouds often bring *increased* operational costs.



In the same poll, 40% of respondents said they had to accept and deal with multicloud computing (this corresponds with Step 2 of the multicloud progression). We expect that percentage to soar to 60% by 2027, as more people recognize that they're unlikely to gain cost savings from using multiple clouds, and they accept the inevitability of multicloud.

Portability is a big part of the leverage step of the multicloud journey (Step 3). There has been a longstanding debate about portability, with overclaims and underdelivery the norm. In our poll, 10% of respondents expected portability. We don't expect that percentage to change much by 2027, as we don't expect a big breakthrough that will affect portability as an issue.

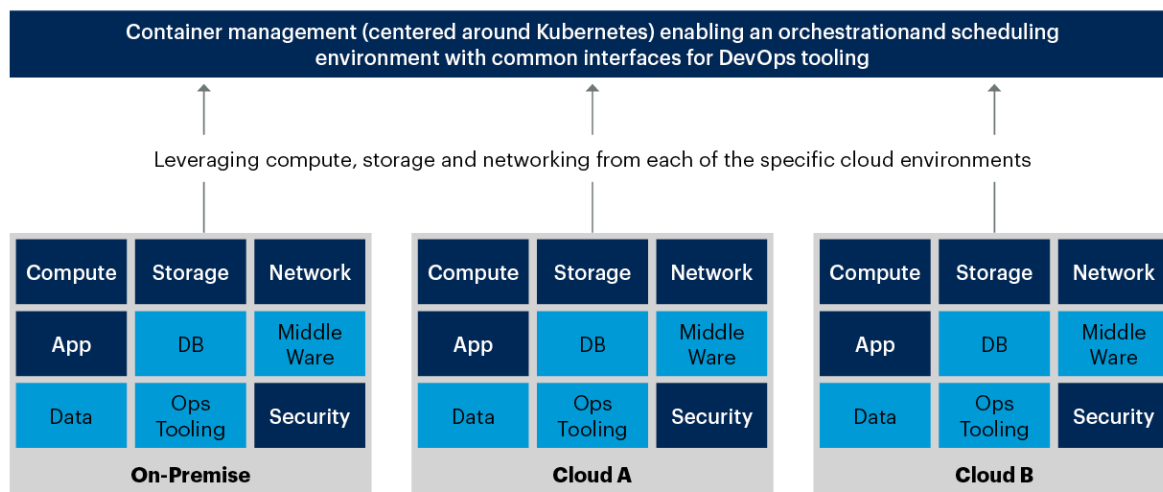
Also in the leverage phase, 20% of our poll respondents expected multicloud computing to increase availability. We believe that percentage will be 10% by 2027, as people realize the impracticality. All cloud providers have their own mechanisms for achieving high availability in their ecosystems. They have availability zones and regions, APIs and different kinds of tools to enable you to take advantage of high-availability capabilities. People will realize it's easier and less expensive to use those features in a single cloud provider's ecosystem than to try to increase availability by using multiple clouds with multiple different approaches.

Another misconception is that a general-purpose, full-functioned, higher-level platform construct will make underlying clouds irrelevant, as everything will be abstracted and portable. This won't be realistic by 2027.

Some people believe such an "uberplatform" will mask abstraction and move it to another level, so that there's no need to worry about any of the details of the different cloud providers underneath it. This will use things such as containers, cloud-native characteristics and portability. Again, this expectation is unrealistic. It won't be possible to have such a generic, comprehensive way of providing access to all capabilities from all providers.

Figure 4 shows such an uberplatform. It uses Kubernetes as an example of a container orchestration and management software that provides a version of such a platform. However, it provides access to only subsets of the capabilities of the underlying cloud providers. This is extremely complex, expensive and difficult to achieve. Don't expect such a layer to be created, other than in certain bounded situations. (For more, see [Navigating the Omnipresent Cloud Era](#).)

Figure 4: Multicloud Kubernetes Example

**Multicloud Kubernetes Example**

Source: Gartner  
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*Recommendations:*

- Evaluate portability claims and be realistic about the likelihood that full-functioned, abstracted portability platforms will not be available in the 2027 time frame.
- Eliminate cost savings from your reasons for using multicloud computing, because the operational costs of using multiple clouds will make savings elusive.
- Don't expect multicloud computing to address DR and availability issues — it's more realistic to handle these in a cloud provider ecosystem.

**Multicloud Computing Has Many Impacts on an Organization's Overall Cloud Strategy**

Concepts such as cloud-native and multicloud computing are appearing more often in organizations' cloud strategies. They appear mainly as principles that drive cloud decision making. These principles are instrumental in making a cloud strategy real and in unlocking the power of the cloud by using the concepts described in [The Cloud Strategy Cookbook, 2023](#).

Your multicloud computing status can affect many aspects of your overall cloud strategy. Many organizations state multicloud computing as a principle when devising their cloud strategy, but most don't define it. Some people use the term "multicloud computing" to refer to an architectural approach only (Step 3).

By saying they want to follow a multicloud strategy or that they already follow one, they may be setting themselves up for a "tug of war" between cloud-native and multicloud computing. Cloud-native and multicloud computing can be key principles driving your cloud strategy, but they can cause confusion and, sometimes, even contradiction.

In particular, cloud-native and multicloud computing can be in conflict or they can reinforce each other. This depends on which meaning you use for the principle. For cloud-native computing, two meanings are in potential conflict (see [A CTO's Guide to Cloud-Native: Answering the Top 10 FAQs](#)):

1. Container-native computing uses Kubernetes and containers for some degree of portability. This is aligned with a multicloud architecture goal.
2. The use of the underlying capabilities of the cloud provider, which we refer to as "cloud service provider native" (CSP-native), encourages the use of features specific to a CSP, making portability more difficult.

If you have an architectural approach to multicloud computing and you have a view of cloud-native computing that focuses on containers and portability, you're aligned and heading in the same direction. However, if you equate cloud-native with CSP-native, your organization can become locked into that provider. In this case, your principles aren't aligned. Also, most don't advance to the architectural approach, so you should focus on aligning with more-tactical approaches or the acceptance of stovepipes.

#### *Recommendations:*

- Agree on definitions of the terms "multicloud" and "cloud-native," so that everyone is using them in the same way.
- Use multicloud and cloud-native principles in alignment, not contradiction.

## Evidence

<sup>1</sup> See [Forecast Analysis: Infrastructure Services, Worldwide](#).

<sup>2</sup> We presented The Cloud Strategy Cookbook Webinar on 4 May 2022 and polled the audience. There were 286 respondents. We asked the question: "What best describes your organization's multicloud situation?"

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## Recommended by the Author

Some documents may not be available as part of your current Gartner subscription.

[Navigating the Omnipresent Cloud Era](#)

[The Future of Cloud Computing in 2027: From Technology to Business Innovation](#)

[The Cloud Strategy Cookbook, 2023](#)

[A CTO's Guide to Cloud-Native: Answering the Top 10 FAQs](#)

[Quick Answer: Why Do Organizations Adopt Multicloud Infrastructure?](#)

[A Multicloud Strategy Is Complex and Costly, but Improves Flexibility](#)

[Your Cloud Strategy Needs to Be Bimodal](#)

[6 Best Practices to Create a Cloud Management Services Offering in the World of Multicloud and Hybrid Cloud](#)

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