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A new technology is about to become one of IT's most valuable tools. It is serverless computing, which allows one to build and run applications and services without thinking about servers. With serverless computing, you don't need to provision, scale, and manage any servers. Everything required to run and scale a high-availability application is handled by a cloud service provider.



What Is Serverless Computing?

Serverless computing is a new way of hosting applications on infrastructure that end users do not manage. Serverless architectures let developers and users execute tasks without worrying about servers, virtual machines, or the underlying compute resources.

Serverless computing is a cloud-computing execution model in which the cloud provider dynamically allocates compute and storage resources on the fly. Code execution is fully managed by the cloud provider. By adding another layer of abstraction atop the cloud infrastructure, serverless computing allows developers and users to not have to worry about managing and maintaining the servers that are executing their applications. For these people, worrying about infrastructure is a chore they can readily do without. Serverless computing relieves them of that burden.

Of course, servers are still needed to run the applications. The name 'serverless' simply highlights the fact that end users do not have to manage the servers that run their code.

With serverless computing, the cloud infrastructure allocates just those compute resources needed to run the user's code. It uses only the precise amount of compute resources needed to complete the task – no more, no less. Pricing is based on the actual amount of resources consumed by an application, rather than on pre-purchased units of capacity. Thus, if the application is not running, there is no cost.

AWS Lambda, from Amazon (described later), was the first product released to the marketplace to provide serverless computing.

Functions

A serverless computing architecture executes *functions*. A function is a single-purpose block of code. A service is assembled from a set of functions.

Developers can access functions from a library to build their services. There is no need for them to consider server infrastructure as they create an application.

Events

Every time an event is received, the serverless platform executes the functions associated with that event. Thus, users can execute code without worrying about the underlying infrastructure or the management of servers.

Customers pay a fraction of a penny every time a function is executed.

Services

Services are triggered by events. The resources required to execute a service are created at the time of the event. Therefore, this results in a very resource-efficient way to build applications.

Being event-driven means that a company is only charged for compute processing when the code is running. Thus, serverless computing is very cost-efficient.

It should be noted that legacy applications cannot run within a serverless environment. They must be rewritten.

Benefits

There are many benefits to serverless computing:

- There is no server management since there is no need to provision or maintain any servers. The cloud allocates all necessary resources on a need basis.
- Scaling is flexible. Resources are added as necessary by the cloud and are retired when no longer needed.
- High availability is achieved. There is no need to architect for this capability since the cloud provides high-availability services.
- There is no idle capacity sitting around waiting to be used. There is no need to provision for processing capacity or storage.
- Organizations can abandon infrastructure administration. There is no need to provision, configure, and manage infrastructure.
- Libraries of functions and services reduce the amount of code developers need to write from scratch.
- Developers can run test and production environments in minutes.
- Security is enhanced. Automatic scaling helps mitigate the risk of DDoS attacks and cripples attackers from targeting operating system vulnerabilities.
- There is no charge to the customer when the customer's code is not running.

Serverless computing allows one to define individual API end points that perform actions once they are triggered by the application code. The underlying system will handle provisioning of appropriate infrastructure in order to manage the load.

Building serverless applications means that developers can focus on their core product instead of worrying about managing and operating servers or runtimes, either in the cloud or on-premises.

Concerns

The major concern is that serverless computing is an immature market. Monitoring, logging, development, and debugging tools are non-existent or only marginally developed. Security functions are still emerging. Each vendor has its own set of products, so vendor lock-in is a problem. Once implemented, it is difficult to port to another platform.

Since functions must be accessed from a library when needed, performance can suffer from function latency if it has been a while since a function's last invocation.

Amazon Lambda

Amazon was the first to bring to market a serverless computing environment. Named 'AWS Lambda,' it provides Functions as a Service (FaaS).

AWS Lambda was introduced in 2014 and was inspired by Amazon's Simple Storage Service (S3). Whereas S3 stores objects, and you don't know where, AWS Lambda manages functions, and you have no control over those functions. When an event happens, AWS Lambda executes the functions associated with that event.

The customer does not need to pay for dedicated servers or capacity in advance. The customer only pays for the compute time used.

Summary

Serverless computing is a new paradigm in the IT arsenal. With serverless computing, applications can be executed without any effort being put forth to provision or manage servers. The serverless computing environment handles all of that for you. This gives developers the ability to focus on what they are supposed to be doing – managing applications or creating new applications.

Acknowledgements

Information for this article was taken from the following sources:

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[Wikipedia](#)