**What is Stateful?**

*Stateful tracks information about the state of a connection or application.* **stateful** microservices **require some kind of storage** on the host who serves the requests. Keeping the state is critical for a stateful service. ***Stateful systems expect a response, track information, and resend the request if no response is received.***

* The server processes requests based only on information relayed with each request and doesn’t rely on information from earlier requests – this means that the server doesn’t need to hold onto state information between requests (or the state can be held into an external service, like a database)
* Different requests can be processed by different servers
* The fact that any service instance can retrieve al service state necessary to execute a behavior from elsewhere enables resiliency, elasticity, and the ability for any available service instance to execute any task at all

**What is stateful architecture?**  
Stateful architecture or application describes a structure that allows users to store, record, and return to already established information and processes over the internet. It entails transactions that are performed using past transactions as a reference point. In stateful applications, the current transaction can be affected by the previous ones.

Because of this, a stateful application uses the same server to process its requests. Stateful transactions can be likened to an ongoing discussion with statements made based on already established facts. In stateful transactions, you can pick up from wherever in situations where there is an incomplete transaction.

A stateful application maintains the state of every session irrespective of the importance. Stateful architecture is used as a foundation for several existing technologies today. The File Transfer Protocol (FTP) and the Telnet were good examples of stateful architecture. Some very vital applications that use stateful architecture are online banking and email. The key advantages of the stateful concept are as follows:

* The stateful protocol can deliver better performance because it stores information that helps future transactions.
* Stateful architecture has an excellent extra security layer, making it very popular in the banking and finance sector for online transactions.
* Stateful protocols are intuitive due to their ‘memory.’

There are also a few downsides one should note:

* Memory must be included as part of the server architecture for data storage.
* The server bears a considerable burden on the functionality of the entire application, so stateful applications need an intricate server.
* Performance is partly dependent on the efficiency of the network memory. This means continuous management throughout the time the service is being offered.

**What is StateLess?**

*Stateless does not tracks information about the state of a connection or application.* A stateless service can work using only pieces of information available in the request payload, or can acquire the required pieces of information from a dedicated stateful service, like a database. ***A stateless system sends a request to the server and relays the response (or the state) back without storing any information.***

* Stateful services are either a database or based on an internet protocol that needs a tight state handling on a single host
* The server processes requests based on the information relayed with each request and information stored from earlier requests
* The same server must be used to process all requests linked to the same state information, or the state information needs to be shared with all servers that need it

**What is stateless architecture?**

A stateless architecture or application is a type of Internet protocol where the state of the previous transactions is neither stored nor referenced in subsequent transactions. Each request sent between the sender and receiver can be interpreted and does not need earlier requests for its execution. This is a protocol where a client and server request and response are made in a current state. In addition, the status of the current session is not retained or carried over to the next transaction.

Stateless applications manage short-term requests using print servers and[a Content Delivery Network (CDN).](https://www.spiceworks.com/tech/networking/articles/what-is-content-delivery-network/) An excellent example of stateless protocol at work is in the sending of an SMS. Examples of stateless protocols include Hypertext Transfer Protocol (HTTP), Domain Name System (DNS), etc. The key advantages of the stateless concept are as follows:

* Stateless protocols can bounce back rapidly in the event of system malfunction as no state is maintained or needs to be preserved.
* It minimizes the number of resources, including storage, that would be otherwise needed to maintain transactions.
* Stateless architecture can be easily scaled up or down, as the case may be while retaining functionality.

There are also a few downsides one should note:

* Network performance may reduce because of the large amount of data sent out repetitively.
* Stateless architecture is less capable of carrying out some functions due to a lack of information storage.