**Discussion 4.1 – Stateful Vs. Stateless**

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## Stateful Vs Stateless

Stateless and stateful protocols are fundamentally different from each other. A stateless system sends a request to the server and relays the response (or the state) back without storing any information. On the other hand, stateful systems expect a response, track information, and resend the request if no response is received.

Network protocols are broadly grouped into stateful and stateless structures.

## Stateful Architecture

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 transactions can be affected by the previous ones.

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

Some advantages of the stateful architecture are:

* The statefiul 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”.

Some disadvantages include:

* 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.

## Stateless Architecture

Is a type of Internet protocol where the state of the previous transactions is neither stored nor referenced in subsequent transactions. This is a protocol where a client and server request and response are made in a current state.

Stateless applications manage short-term requests using print servers and a Content Delivery Network (CDN). An excellent example of stateless protocol at work is in the sending of an SMS. Examples of this protocol include: the Hypertext Transfer Protocol (HTTP), Domain Name System (DNS), etc.

Some advantages are:

* 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, while retaining functionality.

Some disadvantages are:

* Network performance may be reduced 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.

Sources:

<https://www.spiceworks.com/tech/cloud/articles/stateful-vs-stateless/#:~:text=Stateful%20tracks%20information%20about%20the,application%2C%20while%20stateless%20does%20not.&text=Stateless%20and%20stateful%20protocols%20are,back%20without%20storing%20any%20information>.