What is a server?



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You may have heard the word server and wondered what it means. A server is a system that provides services to other programs or devices. That is the short answer. The rest of this book explains each part of that sentence and gives you everyday examples. By the end, you will understand what a server is and what it does.



A service is something one thing does for another when asked. For example, handing over a file or a web page is a service. The server is the side that gives the service. The other side asks for it. So a server is simply the giver in this relationship, not the asker. This idea of giving on request is the core of what a server is.



Think of two roles: one side asks, and the other side answers. The side that asks is called the client. The side that answers is the server. The same action looks different from each side: the client sends a request, and the server sends a response. A server is always the answering side in this pattern.



One everyday service is sending a web page. When you type a website address into your browser, a server sends the web page back to you. The server holds the page and delivers it when asked. This is one of the most common jobs a server does. It makes the word server concrete: a page is delivered on request.



Another service is storing files. A server can keep files and hand them back when you request them. For example, you might store photos on a server and download them later from another device. Storing and returning files is a service just like sending a web page. The server is the keeper of the files, ready to give them when asked.



A third example is managing game state. When you play an online game, a server keeps track of what is happening in the game. It remembers the score, the positions of players, and other details. This way, every player sees the same game. The server is the shared memory that keeps the game consistent for everyone.



The word server names two things. First, it can mean the software that provides the service. Second, it can mean the computer that runs that software. Both uses are correct. The context tells you which one is meant. For example, you might say a server is running on a machine, meaning the software, or you might point to a machine and call it a server.



Focus on the software side first. A server program has one main job: wait for requests and answer them. It does not matter what machine it runs on. The role is defined by what the program does, not by the hardware. So when you hear server, you can think of a program whose purpose is to respond to requests from other programs.



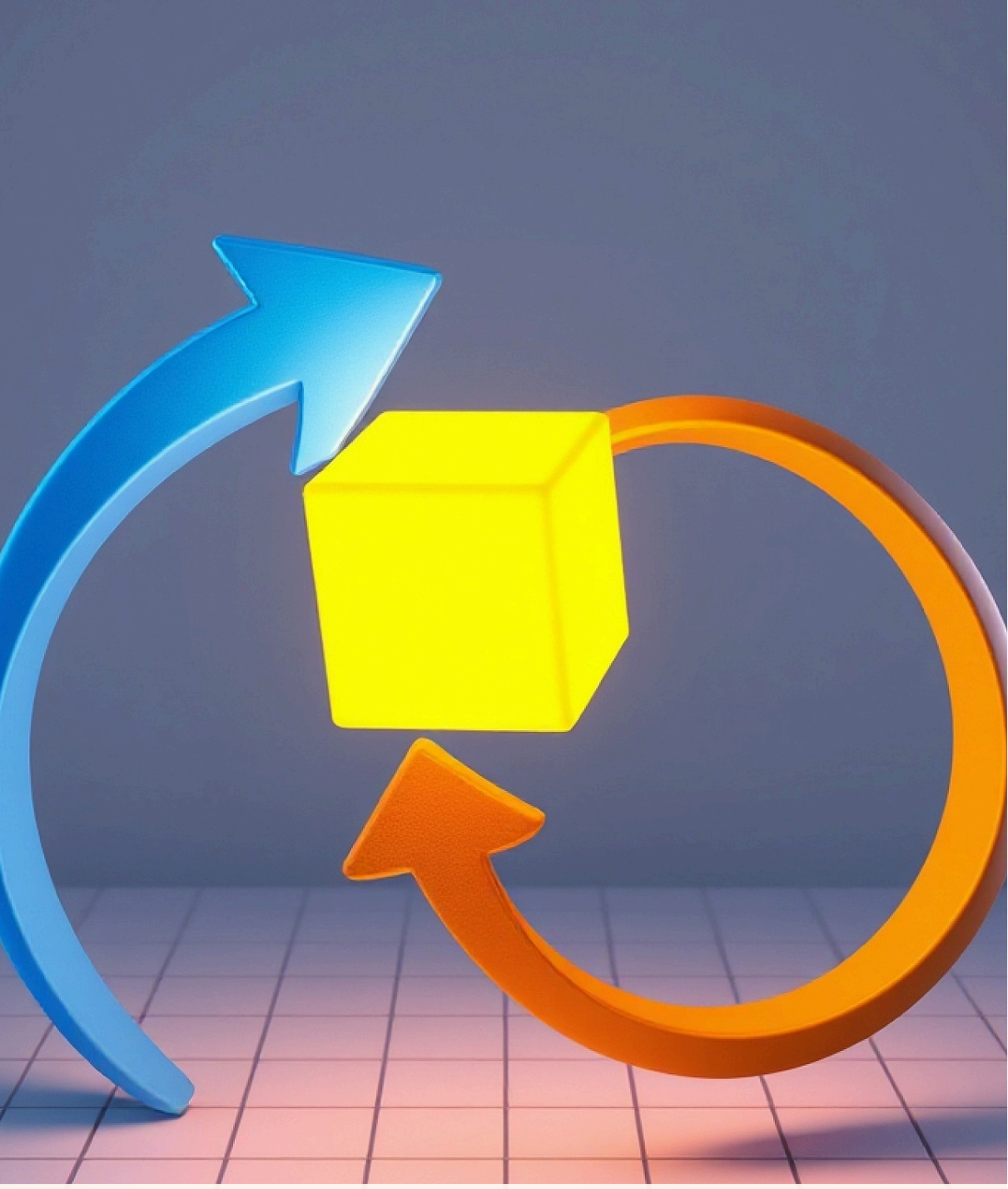
Now focus on the machine side. The computer on which that answering program runs is also called a server. The machine gets this name because of the role its software plays. It is a computer like any other, but it is dedicated to providing services. So a server can be a physical computer that hosts the answering software.



Follow one request from the start. You open a browser and type a web address. The browser asks for a page from a web server. Here, the browser is the client. Its request is the trigger for the service. The browser sends the request across the internet to the server that holds the page.



The web server receives that request. It finds the page that was asked for and sends it back. The browser then displays the page for you. Request and response form one complete round. This round is the heart of the definition: the server answers the client's request with the requested page.



Step back and name the pattern. A request goes out, and a response comes back. Any system that plays the answering part in this pattern is acting as a server. It does not matter what the service is: a web page, a file, or game state. The pattern is always the same: ask, then answer.



Servers do not have to be huge machines in special rooms. A small computer can act as a server. Even a program on an ordinary device can serve others. For example, a laptop can run a server program to share files with other devices on the same network. Size is not what makes a server; providing a service is.



A common mistake is to think server means big computer. Size is not the point. What matters is that the system provides a service to others. A tiny computer can be a server if it answers requests. A large computer that only does personal work is not acting as a server. So do not judge by size; judge by the role.



Another common mistake is to think server means only a physical box. The word can also mean the software role. The same word covers both the program and the machine. So when you hear server, check the context. It might refer to the software that answers requests or to the computer that runs it. Both are valid uses.



Remember the core: a server is the system that provides services to other programs or devices. It can be the software or the machine. Keep in mind the request-and-response pattern. Recall the three examples: sending a web page, storing files, and managing game state. And remember that servers need not be giant machines.