## What is round-robin DNS?

Round-robin [DNS](https://www.cloudflare.com/learning/dns/what-is-dns/) is a load balancing technique where the balancing is done by a type of DNS server called an [authoritative nameserver](https://www.cloudflare.com/learning/dns/dns-server-types/), rather than using a dedicated piece of load-balancing hardware. Round-robin DNS can be used when a website or service has their content hosted on several redundant web servers; when the DNS authoritative nameserver is queried for an [IP address](https://www.cloudflare.com/learning/dns/glossary/what-is-my-ip-address/), the server hands out a different address each time, operating on a rotation. This is particularly useful when the redundant web servers are geographically separated, making traditional load-balancing difficult. Round-robin is known for it’s ease of implementation, but it also has strong drawbacks.

A DNS server with round-robin enabled will have multiple different [A records](https://www.cloudflare.com/learning/dns/dns-records/dns-a-record/), each with the same domain name but a different IP address. Each time the DNS server is queried, it sends the IP address to which it most recently responded with to the back of the queue, operating on a loop. The IP addresses in a round-robin DNS server are like baseball players in a batting lineup: each one gets a turn and then is moved to the back of the line.

## **What are the drawbacks of Round-Robin DNS?**

The round-robin method doesn’t always provide evenly-distributed load balancing because of both DNS [caching](https://www.cloudflare.com/learning/cdn/what-is-caching/) and [client-side](https://www.cloudflare.com/learning/serverless/glossary/client-side-vs-server-side/) caching. If a user makes a DNS query to a particularly high traffic [recursive resolver](https://www.cloudflare.com/learning/dns/dns-server-types/) for a particular website, that resolver will cache the website’s IP, potentially sending a heavy amount of traffic to that one IP.

Another drawback is that round-robin cannot be depended upon for site reliability; if one of the servers goes down, the DNS server will still keep that server’s IP in the round-robin rotation. So if there are 6 servers and one is taken offline, one in six users will be denied service. In addition, round-robin DNS does not account for server load, transaction time, geographical distance, and other factors that traditional load balancing can be configured for.

Some advanced round-robin services have methods to overcome a few of the drawbacks, such as the ability to detect unresponsive servers and take them out of the round-robin rotation, but there is no way around the caching issue. Many DNS providers, like [Cloudflare DNS](https://www.cloudflare.com/dns/) support round-robin DNS.