Cloud of Goods –V4

Technology Documentation

Main Architecture

Monolithic Architecture

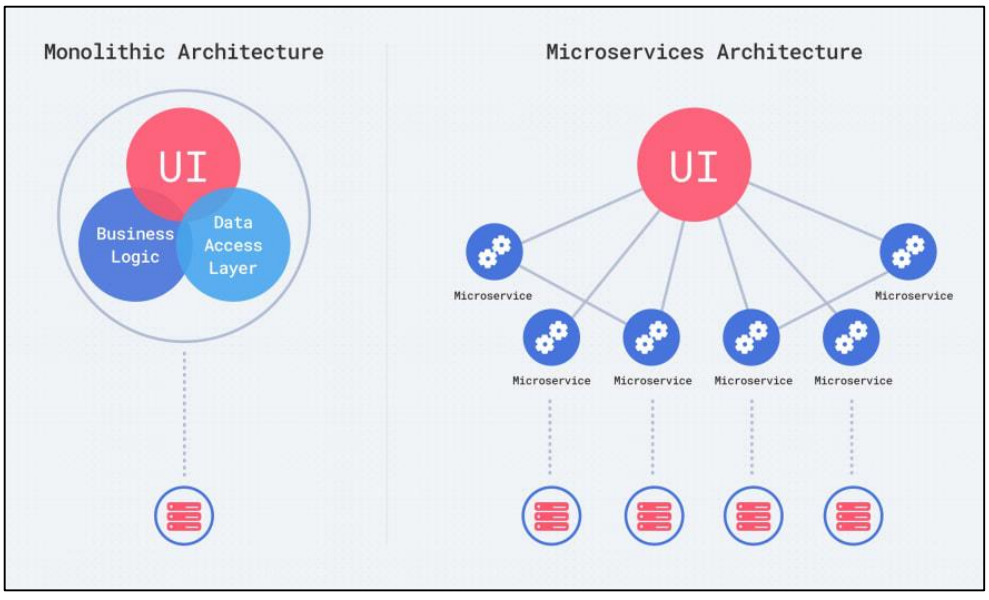
Monolithic architecture is a software design pattern where an application is structured as a single, self-contained unit. In other words, all the application components (such as the user interface, database access, and business logic) are tightly integrated into a single codebase. This makes the application easier to develop, test, and deploy, but it can also lead to difficulty scaling and maintaining the codebase as the application grows.

Advantages of Monolithic architecture:

- Easy to develop and deploy: As all components are integrated into a single codebase, it is easier to develop, test and deploy the application.
- Simpler debugging: As all components are integrated, debugging and troubleshooting become easier as the entire system can be viewed as a single unit.
- Better performance: As the components are integrated, communication between them is faster and more efficient compared to a micro services architecture.

Disadvantages of Monolithic architecture:

- Difficult to scale: As the application grows, it becomes increasingly difficult to scale the monolithic architecture. It becomes harder to update individual components without affecting the entire system.
- Increased complexity: Over time, the monolithic codebase can become increasingly complex, making it harder to maintain and add new features.
- Lack of flexibility: A monolithic architecture may not be suitable for applications that require separate components to be deployed and updated independently.
- Poor resilience: If a single component fails, it can bring down the entire system, which may impact the reliability and availability of the application.



Main Programming Language

PHP

PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open-source general-purpose scripting language that is especially suited for web development and can be embedded into HTML

Advantages of PHP:

- *Easy to learn and use:* PHP has a simple and straightforward syntax, making it easy to learn and use, especially for those with a background in HTML and CSS.
- *Large community and support:* PHP has a large community of users and developers, making it easier to find help and resources when needed.
- *Widely compatible:* PHP is compatible with many operating systems, web servers, and databases, making it a versatile choice for web development.
- *Secure:* PHP has built-in security features, such as protection against SQL injection attacks, and a large community of developers working on security improvements.
- *Open source:* PHP is open source software, meaning it is free to use, distribute and modify, making it a cost-effective choice for web development.
- *High performance:* PHP is optimized for speed and can handle large amounts of data and traffic, making it suitable for large and complex web applications.
- *Large number of libraries and tools:* PHP has a vast number of libraries and tools available, making it easier to add new features and functionality to a web application.

Disadvantages of PHP:

- *Limited error handling:* PHP has limited error handling, making it more difficult to debug and troubleshoot errors in the code.
- *Lack of modularity:* PHP does not have a built-in modular system, making it harder to manage large and complex codebases.
- *Limited type checking:* PHP does not have strong typing, meaning that variables can change type dynamically, leading to unexpected behavior and bugs.
- *Less secure than other languages:* Despite having built-in security features, PHP is still vulnerable to security issues such as cross-site scripting (XSS) and cross-site request forgery (CSRF) attacks.
- *Performance issues:* PHP can become slow and resource-intensive, especially when processing large amounts of data or serving high traffic websites.
- *Limited concurrency:* PHP has limited concurrency capabilities, meaning that it is not well suited for applications that require high levels of parallel processing.

Web Frameworks

Laravel

Laravel is a PHP framework, which means that it provides a structure and tools for building web applications using PHP. The main difference between PHP and Laravel is that Laravel is a framework built on top of PHP, while PHP is a programming language.

Advantages of Laravel over PHP:

- *Better organization:* Laravel provides a clear and organized structure for building web applications, making it easier to manage complex codebases.
- *Improved security:* Laravel has built-in security features and tools to help prevent common security issues, such as SQL injection and cross-site scripting (XSS) attacks.
- *MVC architecture:* Laravel uses the Model-View-Controller (MVC) architecture, which separates the business logic, data, and presentation layers, making it easier to maintain and scale the application.
- *Eloquent ORM:* Laravel provides a powerful Object-Relational Mapping (ORM) system, which makes it easier to interact with databases and perform complex database operations.
- *Artisan CLI:* Laravel comes with a built-in command-line interface (CLI) called Artisan, which provides a suite of tools for generating code, running database migrations, and other common tasks.
- *Rich ecosystem:* Laravel has a large community of developers and a rich ecosystem of packages and plugins, making it easier to add new features and functionality to an application.

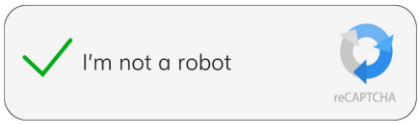
Security

reCAPTCHA

reCAPTCHA is a free service from Google that helps protect websites from spam and abuse.

reCAPTCHA is used to prevent bots and automated scripts from accessing a website and performing malicious actions. The purpose of reCAPTCHA is to ensure that only humans, not bots,

can access a website's content and services. This helps to protect the website from spam, abuse, and malicious activity, and also helps to improve the user experience by ensuring that only real users are able to interact with the site. By using reCAPTCHA, websites can ensure that their content is only accessible to human users, providing a safer and more secure online experience for everyone.



Web Servers

NGINX

NGINX is a web server software. It is used to serve web pages and other content over the internet. It works by listening for incoming requests from clients, such as web browsers, and delivering the requested content in response.

NGINX is widely used for a variety of reasons, including:

- *High performance:* NGINX is known for its high performance and ability to handle a large number of concurrent connections. This makes it a popular choice for websites and applications that receive a lot of traffic.
- *Reverse proxy:* NGINX can act as a reverse proxy, which means that it can route incoming requests to other servers and services. This can help to improve security, performance, and scalability for a website or application.
- *Load balancing:* NGINX can also be used for load balancing, which means that it can distribute incoming requests across multiple servers to help ensure that the load is balanced and that the website or application remains available and responsive.
- *HTTP acceleration:* NGINX can be used to accelerate HTTP traffic, which means that it can help to improve the speed and performance of web pages and other content delivered over the internet.

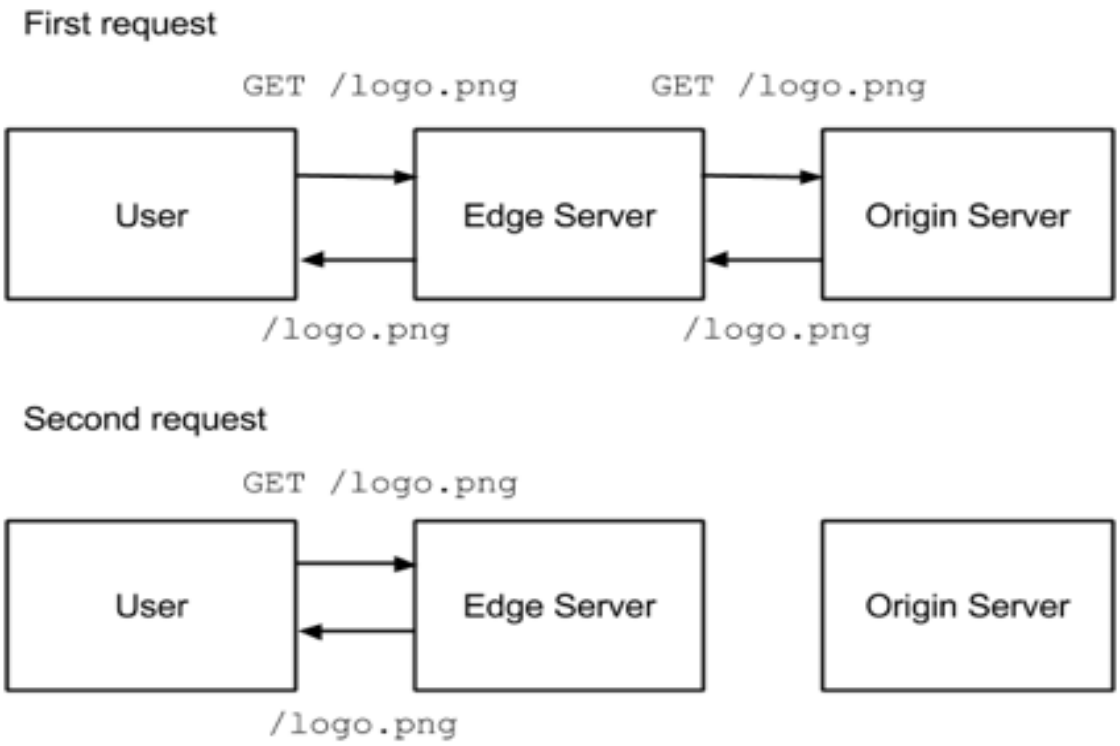
CDN

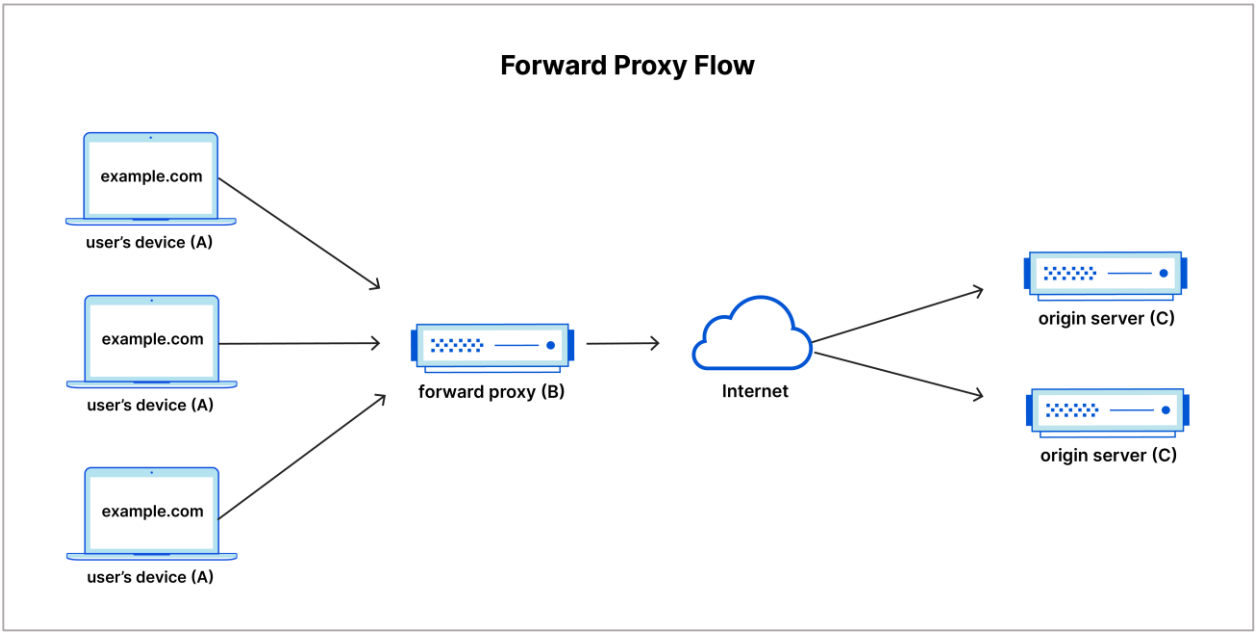
Amazon Cloudfront

A CDN like CloudFront (Forward Proxy –default)works by storing copies of content on multiple edge locations around the world. When a user requests content from a website that uses CloudFront, the request is redirected to the nearest edge location, which then delivers the content to the user. This helps to reduce the distance that the content has to travel, which results in faster delivery times and improved performance for the user.

- If the content is already in the edge location with the lowest latency, CloudFront delivers it immediately.

- If the content is not in that edge location, CloudFront retrieves it from an origin that you've defined—such as an Amazon S3 bucket, a MediaPackage channel, or an HTTP server (for example, a web server) that you have identified as the source for the definitive version of your content.

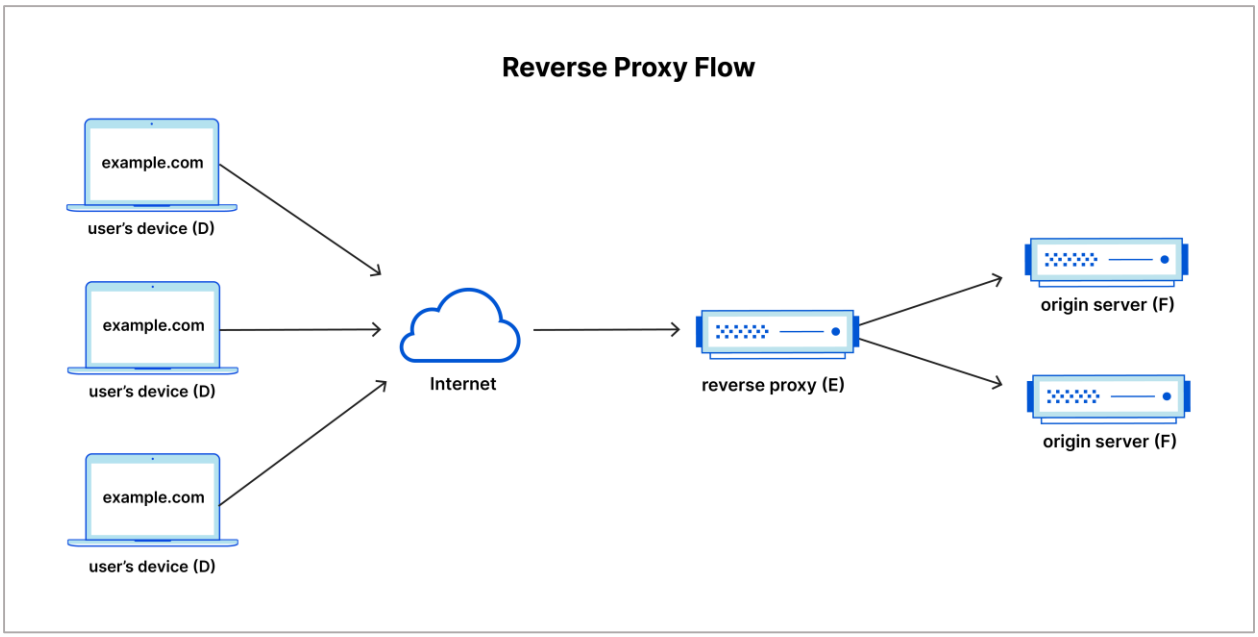




Cloudflare (Conflict)

Cloudflare (Reverse proxy) is a Content Delivery Network (CDN) service that is used to distribute content, such as web pages, images, videos, and other assets, to end-users across the internet with low latency and high transfer speeds.

A CDN like Cloudflare works by storing copies of content on multiple edge locations around the world. When a user requests content from a website that uses Cloudflare, the request is redirected to the nearest edge location, which then delivers the content to the user. This helps to reduce the distance that the content has to travel, which results in faster delivery times and improved performance for the user.



Analytics

Google Analytics

Google Analytics is a platform that collects data from your websites and apps to create reports that provide insights into your business.