**CLOUDFLARE INTEGRATION IN GRAV**

**Cloudflare**

Cloudflare is a company that provides various services related to internet security, performance, and reliability. Some of its key offerings include:

1. **Content Delivery Network (CDN):** Cloudflare operates a global network of servers that cache static content of websites and deliver it to users from the server location nearest to them. This helps in reducing latency and speeding up website loading times.
2. **DDoS Protection:** Cloudflare offers protection against Distributed Denial of Service (DDoS) attacks, which are malicious attempts to disrupt the normal traffic of a targeted server, service, or network by overwhelming it with a flood of internet traffic.
3. **Web Application Firewall (WAF):** Cloudflare provides a firewall that helps protect web applications from common security threats, such as SQL injection, cross-site scripting (XSS), and other vulnerabilities.
4. **DNS Services:** Cloudflare offers Domain Name System (DNS) services that help organizations manage their domain names, translate domain names into IP addresses, and improve the speed and reliability of DNS queries.
5. **SSL/TLS Encryption:** Cloudflare provides SSL/TLS encryption for websites, ensuring that data transmitted between a user's browser and the website's server is encrypted and secure.
6. **Internet Performance and Reliability:** Cloudflare'snetwork infrastructure is designed to improve internet performance and reliability by optimizing routing, reducing latency, and mitigating network congestion.

**How it useful in Grav**

Basically Grav application is runs on Apache server in Xampp using localhost:8000 port.

**Problem**

* Based on previous task that I went through integration of the LAMA3 model to chatbot in GRAV application. During that I was faced one issue that backend server related to LAMA3 model that present in another network [i.e. Virtual Machine-VM].
* To overcome that problem, I preferred **Ngrok** for Port forwarding or SSL/TLS tunnelling. So now I was able to expose the backend server publicly and able to access in chatbot.
* These SSL/TLS tunnels are temporary tunnels whenever we stop and start the server, it will create new tunnel every time.

**Hence, I decided that create the permanent tunnel for Grav Application. Here comes Cloudflare services was used in this Grav Application.**

**Cloudflare Integration Steps**

**Step 1:**

**Visit:** [Cloudflare Tunnel Creation](https://developers.cloudflare.com/cloudflare-one/connections/connect-networks/)

Basically in Cloudflare service we are mainly focusing on the Tunneling and configuration of tunnel.

**Step 2:**

Once you understand the about tunnelling, now you are ready to do further steps. Now go to downloads and install the Cloudflare based on system requirements.

Visit: [Cloudflare Download](https://developers.cloudflare.com/cloudflare-one/connections/connect-networks/downloads/)

**Step 3:**

After download the Cloudflare go to command prompt and run as administrator

Run the below command to see the version of cloudflare

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**Step 4:**

**Create the Tunnel**

To create and manage tunnels, you will need to install and authenticate cloudflared on your origin server. cloudflared is what connects your server to Cloudflare’s global network.

You have the option of creating a tunnel [via the dashboard](https://developers.cloudflare.com/cloudflare-one/connections/connect-networks/get-started/create-remote-tunnel/) or [via the command line](https://developers.cloudflare.com/cloudflare-one/connections/connect-networks/get-started/create-local-tunnel/). We recommend getting started with the dashboard, since it will allow you to manage the tunnel from any machine.

* [Create a remotely-managed tunnel (dashboard)](https://developers.cloudflare.com/cloudflare-one/connections/connect-networks/get-started/create-remote-tunnel/)
* [Create a locally-managed tunnel (CLI)](https://developers.cloudflare.com/cloudflare-one/connections/connect-networks/get-started/create-local-tunnel/)

The below YouTube link provides in detail information about how to create the permanent tunnel for global access.

[**How to Expose Local Host using Cloudflare Tunnels**](https://www.youtube.com/watch?v=BnWfbv7Fy-k&t=848s)

**Above video link helps me a lot to create the tunnel using Cloudflare, I hope it will help you as well.**

**Thank You**