Border Gateway Protocol

Introduction:

The Border Gateway Protocol (BGP) is an exterior gateway protocol used to facilitate inter-domain routing on the Internet. It is the protocol used between autonomous systems (ASes) to exchange routing information and make decisions about the best paths for routing traffic between networks.

Aim of BGP:

The primary aim of BGP is to enable the exchange of routing information between different autonomous systems while ensuring scalability, stability, and policy control in Internet routing. BGP allows networks to make informed decisions about the best routes for reaching destinations across the Internet.

Objectives of BGP:

- Inter-Domain Routing: BGP facilitates the exchange of routing information between different autonomous systems, allowing networks to learn about reachable destinations and their corresponding paths.

- Path Selection: BGP enables networks to select the best paths for routing traffic based on policies, preferences, and network characteristics such as path length, bandwidth, and reliability.

- Traffic Engineering: BGP supports traffic engineering by allowing networks to influence the flow of traffic through the network based on policies and preferences, optimizing resource utilization and network performance.

- Route Aggregation: BGP enables the aggregation of routing information to reduce the size of routing tables and improve scalability in the Internet routing infrastructure.

Steps in BGP Operation:

- Neighbor Establishment: BGP routers establish neighbor relationships with other BGP routers in neighboring autonomous systems to exchange routing information.

- Route Advertisement: BGP routers advertise routes to their neighbors by sending BGP update messages containing information about reachable destinations and their corresponding paths.

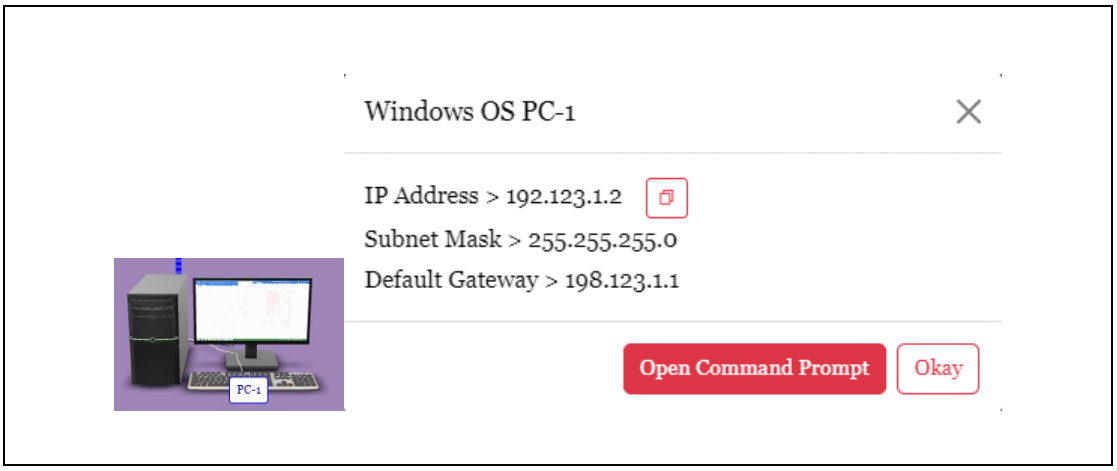
- Route Selection: BGP routers use a set of criteria, including policies, preferences, and attributes such as path length, to select the best routes for reaching each destination.

- Route Propagation: BGP routes are propagated throughout the Internet, with routers making forwarding decisions based on the best routes learned through BGP updates.

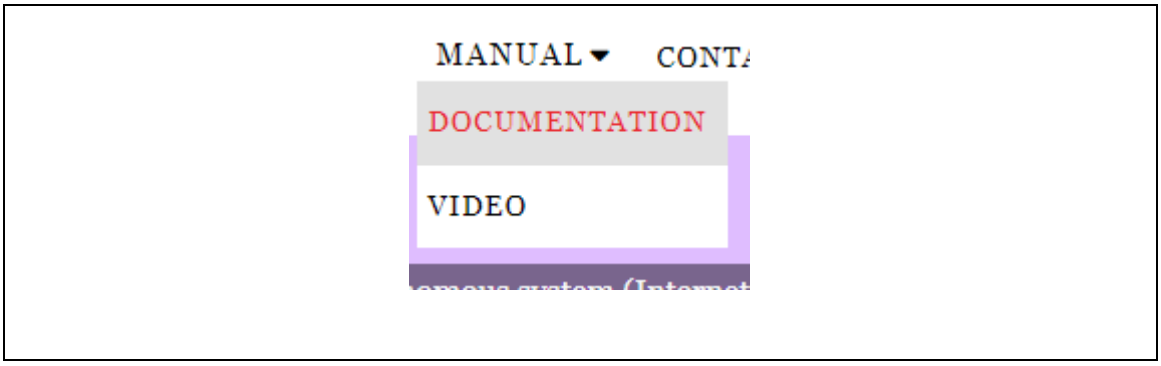
Conclusion:

In conclusion, BGP is a critical protocol for inter-domain routing on the Internet, enabling the exchange of routing information between autonomous systems and the selection of optimal paths for routing traffic. By providing scalability, stability, and policy control in Internet routing, BGP plays a crucial role in ensuring the efficient and reliable operation of the global Internet infrastructure.

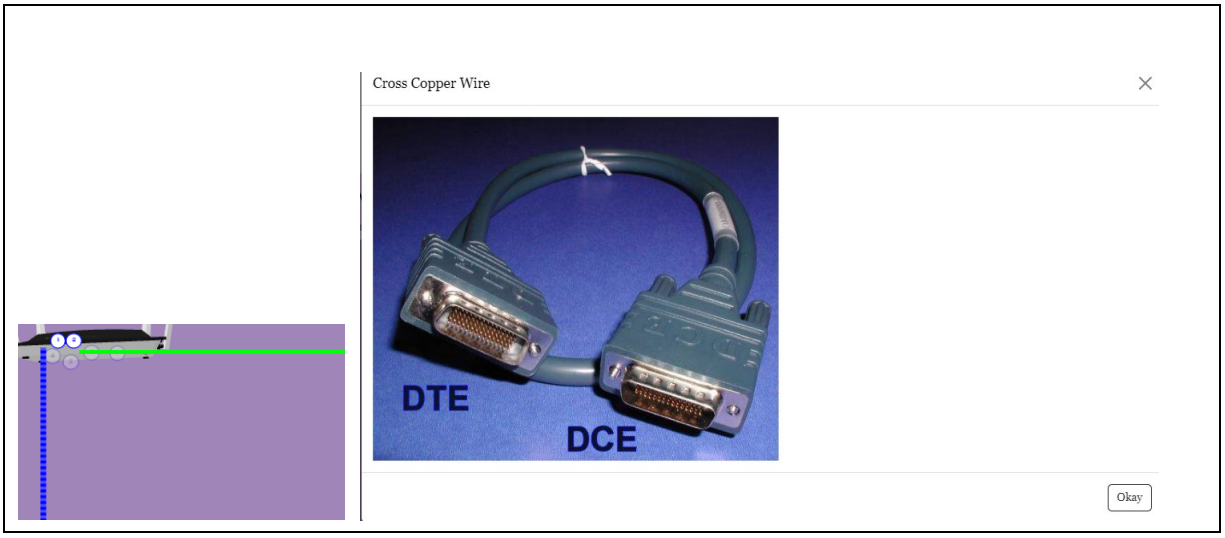
1. If you want know IP Address Subnet Mask or Default Gateway of any PC you can click on blue square as shown below:



2. Click on “Manual” to view Presentation on ARP topic:

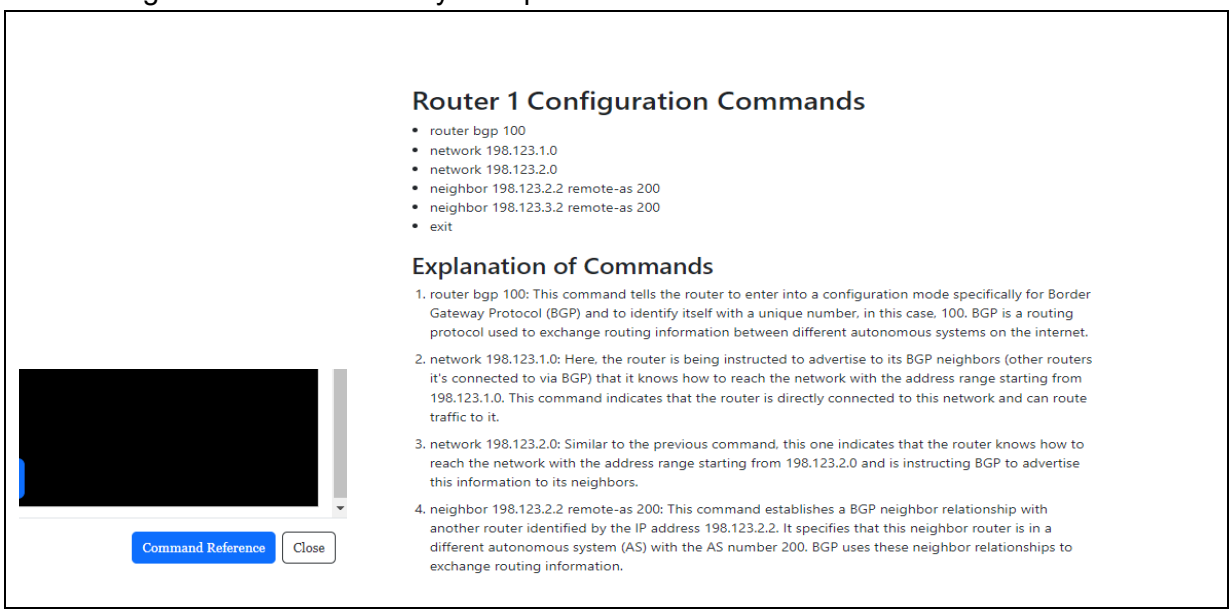


3. Click on wire colors “Red”/” Blue”/” Green” to view wire details:



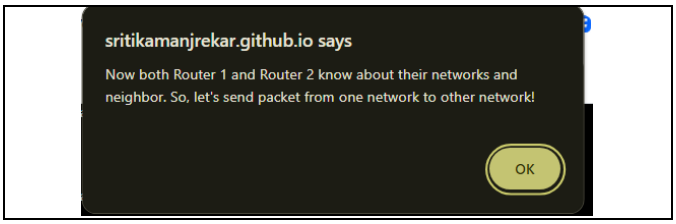
4. Let’s start performing BGP in AR World!!! To configure Router 1 and Router 2 Click on “BUTTON-2 of router” :

5. Ping the command one by one provided in the command reference



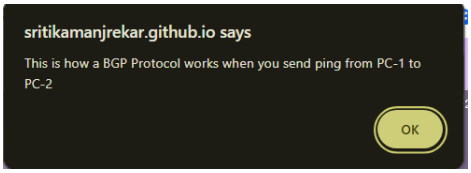
6. After performing all the command you will get message that all the network are connected to router

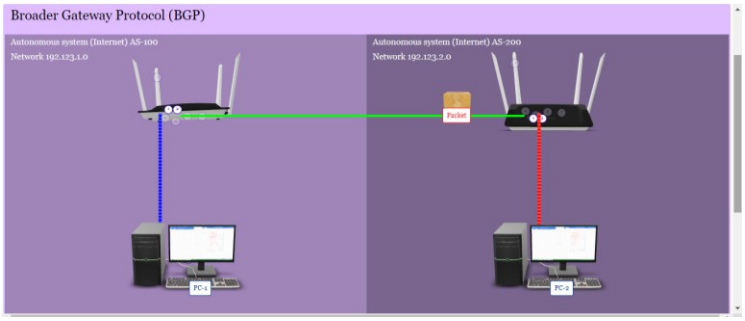
7. Follow the same process for Router 2 . after that this message will pop up



8. Open the commad prompt of any pc and paste the ip address of that pc and close the window to see packet transfer

9. These how packet are transferred once the packet transformation is completed you will get pop up message of “this is how bgp protocol works”





Bonus!!! You can also zoom in network devices with mouse to look around to take a look