Abstract

Our topic is making use of the data structure Radix trees to fasten IP lookup. Now IP address is structurally a unique address that identifies a device on the internet or any local network. IP stands for Internet protocol which is the set of rules that determine the format of data that is sent through the internet. These data are transfered through the internet to the respective destinations by a device called a router. A router does the job of sending the data packets to the desired destinated IP address. Thus a router will have to store numerous amounts of IP addresses so that when the data packets are recieved by the router it can decide on the path it needs to follow to deliver the data. Thus to keep track of the IP addresses and their corresponding paths, these are stored in a database called Routing table.

In the routing table, the IP addresses are stored in a format called the CIDR method. This method allows to store multiple contiguous IP addresses in a single data pack. It contains 2 parts namely: the prefix and the network mask The fact that some IP address may have same or similar prefixes, leads us to the idea that these IP addresses can be effectively stored in data structures which follow the basic structure of a tree. Thus the most logically used data structures for IP routing are Tries and Radix trees than hash tables. Tries are used to straight-forwardly store IP addresses in a manner that each level down determines the corresponding byte of the IP address. Whereas Radix trees make a space and time-efficient way to represent them, so that more than i bit of data can be stored in a node.

Result:

We found the radix give better performance when compared to trie. Mostly due to it less no of nodes to transverse

The following are the results we found:

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