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PROBLEM STATEMENT

Take an example Subnet of hosts and Obtain a broadcast tree for the subnet.

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To create a broadcast tree for a subnet of hosts, let's go through an example with some specific details, including the IP address, Subnet mask, and the general Process to obtain the broadcast tree.

Example Subnet:

let's assume a network with the following details:

- IP Address: 192.168.1.0

- Subnet mask: 255.255.255.0 (which corresponds to a /24 Subnet).

This gives us a network with a range of 256 IP addresses (from 192.168.1.0 to 192.168.1.255) where the first address is the network address and the last address is the broadcast address.

Step by Step Breakdown: -

1. Calculate Network Details:

- Network Address: 192.168.1.0

- First usable IP Address (Host Range Start): 192.168.1.1

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- ~~least~~ usable IP address (Host Range End):
192.168.1.254
- Broadcast Address : 192.168.1.255

2. Broadcast Tree Concept: A broadcast tree is typically constructed to represent how broadcast packets (e.g. ARP requests or DHCP discovery messages) are forwarded across a network. The tree shows the relationships between switches, routers, and hosts that would receive the broadcast.

• In this simple example, all hosts in the 192.168.1.0/24 Subnet would receive broadcast traffic.

• If this network is using a single switch (no VLAN segmentation), all hosts in the Subnet will be in the same broadcast domain.

• The broadcast message would be forwarded to all the hosts in the Subnet, which means all devices in the range from 192.168.1.1 to 192.168.1.254 would receive the broadcast.

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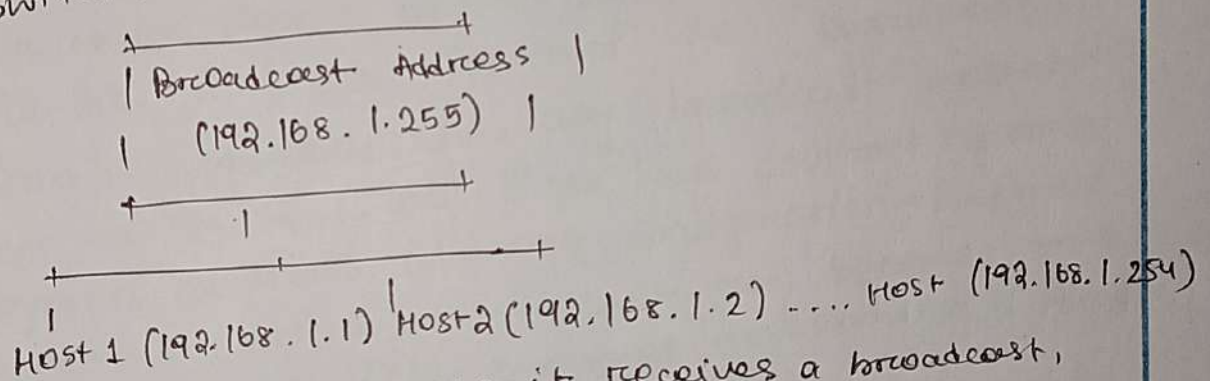
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3. Visualizing the Broadcast Tree :

- ~~• If this network~~
- The root of the broadcast tree is the Broadcast Address (192.168.1.255)
- All hosts from 192.168.1.1 to 192.168.1.254 are branches of this tree
- If there were multiple switches or routes, the tree would also show how broadcast propagate between these devices.

Example of a Simple Broadcast Tree :

Let's assume all devices are connected to a single switch in the network :



- Each device, when it receives a broadcast, responds accordingly (if needed).
- If there were ~~more complex~~ ^{a complex network} components

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like multiple switches or routers,

How the broadcast message Travels.

1. The broadcast message is sent from one host (e.g., 192.168.1.1) to 192.168.1.255.
2. The switch, which doesn't perform filtering based on IP addresses, sends the message to all other devices in the subnet.
3. All devices in the subnet (from 192.168.1.1 to 192.168.1.254) receive the broadcast message.

Conclusion :

The broadcast tree for this subnet is a simple structure where all hosts in the range 192.168.1.1 - 192.168.1.254 are part of the broadcast domain and will receive any broadcast messages sent to 192.168.1.255. If you have additional network segments or more advanced configurations (such as routers or VLANs) the broadcast tree becomes more complex, with multiple branches representing different segments and routers forwarding broadcast traffic accordingly.

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