

IP DIRECTED-BROADCAST

While troubleshooting a network, you need to verify the liveness of hosts in the subnet 192.168.1.64/26. All of the hosts are able to reply to ping requests. How would you confirm the existing nodes using one single command?

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ping 192.168.1.127
```

The 192.168.1.27 is the broadcast address of the 192.168.1.64/26 sub-network so by sending a ping request to this address all the hosts in this subnet will reply (to the broadcast address).

But it is not quite right nowadays as all the Cisco's routers which have IOS version 12.0 or above will simply drop these pings. If you wish to test this function then you have to turn on the "**ip directed-broadcast**" function (which is disabled by default from version 12.0).

The purpose of the "ip directed-broadcast" command is to enable forwarding of directed broadcasts. When this is turned on for an interface, the interface will respond to broadcast messages that are sent to its subnet. Cisco introduced this command in IOS version 10 (and it is enabled by default) but they soon realized this command was being exploited in denial of service attacks and disabled it from version 12.0.

As you can guess, a ping to the broadcast address requires all hosts in that subnet to reply and it consumes much traffic if many are sent. A type of this attack is "smurf attack", in which the attacker tries to borrow the victim's IP address as the source address and sends ICMP packets to the broadcast address of the network. When all the hosts in that subnet hear the ICMP request, they will reply to the computer which the attacker borrowed the IP address from.

You can try this function by enabling "ip directed-broadcast" command in interface mode. Then from the directly connected router issue the ping to the broadcast address of that subnet (or ping 255.255.255.255).