

Introduction To Networking: HackTheBox

Name: Daniel Mwendwa Mwithui

ADMNO. CS-SA04-23080

Program: Security Analyst

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Introduction

In this module, we will explore the basics of how computers communicate with each other. We'll cover important topics like proxies, network models such as ISO and TCP/IP, topologies, subnetting, IP addresses, MAC addresses, TCP/UDP protocols, key exchange mechanisms, authentication protocols and cryptography. Subnetting is the only section that is tested on, however, we will go through each section learning and add a brief notes on conclusion of what each section explains.

Task 1: subnetting

Subnetting is a technique used in computer networking to divide a large network into smaller subnetworks called subnets. This technique is relevant for understanding network configurations, identifying IP addresses within a subnet, and calculating important network parameters.

We will be using the steps below to calculate the decimal representation, network address and broadcast address. Otherwise, you can use a free online subnetting calculator on this link <https://www.adminsub.net/ipv4-subnet-calculator/10.200.20.0/27>

1. Determine the subnet mask: The subnet mask is a binary value that defines the network and subnet portions of an IP address. It consists of a series of 1s followed by a series of 0s. The number of 1s represents the network portion, while the number of 0s represents the host portion.
2. Apply the subnet mask to the IP address: By performing a bitwise AND operation between the subnet mask and the IP address, you obtain the network address. The result is the decimal representation of the network address.
3. Calculate the broadcast address: To find the broadcast address, flip all the host portion bits in the binary representation of the subnet mask. Perform a bitwise OR operation between the inverted subnet mask and the network address. The result is the decimal representation of the broadcast address.
4. Determine the decimal representation: Convert the binary representation of the network address and broadcast address to decimal notation for easy interpretation.

Here is a screenshot for the completion of this section.

IPv4 Subnet Calculator



Yo

IP address: (e.g. 192.168.1.1)
Netmask: (subnet mask, CIDR or wildcard)



Calculation results			
Address	10.200.20.0	00001010.11001000.00010100.000 00000	
Netmask	255.255.255.224 = 27	11111111.11111111.11111111.111 00000	
Wildcard	0.0.0.31	00000000.00000000.00000000.000 11111	
Network	10.200.20.0/27	00001010.11001000.00010100.000 00000	Class A
Broadcast	10.200.20.31	00001010.11001000.00010100.000 11111	
First IP	10.200.20.1	00001010.11001000.00010100.000 00001	
Last IP	10.200.20.30	00001010.11001000.00010100.000 11110	
Hosts/Net	30	nnnnnnnn.nnnnnnnn.nnnnnnnn.nnn hhhhh	Private

+ 2

Submit the decimal representation of the subnet mask from the following CIDR: 10.200.20.0/27

255.255.255.224

Submit

+ 2

Submit the broadcast address of the following CIDR: 10.200.20.0/27

10.200.20.31

Submit

+ 3

Split the network 10.200.20.0/27 into 4 subnets and submit the network address of the 3rd subnet as the answer.

10.200.20.16

Submit

Here is the completion for this module and the sharable link.

Link: <https://academy.hackthebox.com/achievement/820341/34>



Conclusion.

Completing the Introduction to Networking module at HackTheBox has been an eye-opening experience. I've learned the basics of how computers communicate and how to keep my information safe. I now understand concepts like proxies (for secure internet access), network models (how networks are organized), topologies (how devices are connected), subnetting (dividing networks into smaller parts), IP addresses (unique device identifiers), MAC addresses (unique network card identifiers), VPNs (secure ways to connect to a network), TCP/UDP (different ways data is sent over the internet), key exchange mechanisms (establishing secure communication), authentication protocols (verifying identities), and cryptography (keeping information safe). This knowledge will empower me to make better decisions online and protect myself from potential risks.