Workshop No. 3 Subnetting

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1 Introduction

This document presents the development of the Subnetting and Network Design Workshop for the fictitious company EntregaYa, a delivery service in Colombia. Subnets have been designed for different locations in order to improve the organization, security and scalability of the corporate network.

2 Network Overview

Because the company is big I decided to use the Class B private IP address as it allows me to have a large number of IP addresses with the following range:

172.16.0.0/16

This range provides a total of 65,536 available IP addresses, allowing segmentation into subnets for each company location.

3 Location Specifications

EntregaYa has offices in Colombia, as shown below:

Location	Devices	Scalability	Bandwidth	Security
Headquarters (Bogotá)	400	520	High (10 Gbps)	VLAN for IT and administration
Development office (Medellín)	150	210	High (5 Gbps)	Internal firewall, segmentation
Development office (Cali)	100	130	Medium (2-5 Gbps)	Obligatory VPN
Data center (Bogotá)	70	85	Very high (40 Gbps)	Strict segmentation
Secundary data center (Medellín)	50	60	High (20 Gbps)	Secure backup
Customer Service Center (Barranquilla)	200	260	High (5 Gbps)	VLAN for calls and data
Commercial office (Bucaramanga and Cartagena)	80	112	Medium (1-2 Gbps)	Basic segmentation
Logistics and Distribution Center (Cota)	60	90	Medium (1 Gbps)	Separate networks
Delivery Network	1000+	1500	Variable (3-10 Gbps)	VPN, firewalls
Network Stores	500+	650	High (5 Gbps)	Access control

Table 1: Location Specifications

4 Subnetting Plan

The following table shows the subnet assignment for each location:

Location	**IP range's**	**Subnet mask**
Headquarters (Bogotá)	172.16.0.0 - 172.16.1.255	/23 (510 IPs)
Development office (Medellín)	172.16.2.0 - 172.16.2.255	/24 (254 IPs)
Development office (Cali)	172.16.3.0 - 172.16.3.255	/24 (254 IPs)
Data center (Bogotá)	172.16.4.0 - 172.16.4.127	/25 (126 IPs)
Secundary data center (Medellín)	172.16.4.128 - 172.16.4.255	/25 (126 IPs)
Customer Service Center (Barranquilla)	172.16.5.0 - 172.16.5.255	/24 (254 IPs)
Commercial office (Bucaramanga and Cartagena)	172.16.6.0 - 172.16.6.127	/25 (126 IPs)
Logistics and Distribution Center (Cota)	172.16.6.128 - 172.16.6.255	/25 (126 IPs)
Delivery Network	172.16.8.0 - 172.16.11.255	/22 (1022 IPs)
Network Stores	172.16.12.0 - 172.16.13.255	/23 (510 IPs)

Table 2: Subnetting Plan

5 Conclution

The network design allows for the scalability of EntregaYa, with adequate segmentation, security and efficient use of IP addressing. This model provides flexibility for future branch integrations and emerging technologies.