192.168.(351 \mod 100).0/24 = 192.168.51.0/24

Step 1: Minimum Bits for Host Requirements

1. **Sales Department**: 40 hosts → 2^6 - 2 = 62 (6 bits required)
2. **Marketing Department**: 30 hosts → 25−2=30 (5 bits required)
3. **Engineering Department**: 60 hosts → 26−2=62 (6 bits required)
4. **IT Department**: 20 hosts → 25−2=30 (5 bits required)
5. **Guest Wi-Fi**: 10 hosts → 24−2=14 (4 bits required)

Step 2: Subnetting Plan

Subnet bits available: 8 bits from /24.

Subnet Assignments:

Department	Required Hosts	Bits for Hosts	Subnet Mask	Subnet Size
Sales	40	6	$/26$	64 IPs
Marketing	30	5	$/27$	32 IPs
Engineering	60	6	$/26$	64 IPs
IT	20	5	$/27$	32 IPs
Guest Wi-Fi	10	4	$/28$	16 IPs

Final Subnet Allocation Summary

Subnet	Network Address	Usable Range	Broadcast Address
Sales	$192.168.51.0$	$192.168.51.1 - 62$	$192.168.51.63$
Marketing	$192.168.51.64$	$192.168.51.65 - 94$	$192.168.51.95$
Engineering	$192.168.51.96$	$192.168.51.97 - 158$	$192.168.51.159$
IT	$192.168.51.160$	$192.168.51.161 - 190$	$192.168.51.191$
Guest Wi-Fi	$192.168.51.192$	$192.168.51.193 - 206$	$192.168.51.207$
Future Subnet 1	$192.168.51.208$	$192.168.51.209 - 222$	$192.168.51.223$
Future Subnet 2	$192.168.51.224$	$192.168.51.225 - 254$	$192.168.51.255$