**FULL DNS + APACHE + WINDOWS INTEGRATION LAB GUIDE**

# LAB OBJECTIVE:

Set up a full DNS (BIND) server on Linux to resolve domain names for Apache HTTP server and access it via DNS from a Windows client.

# PART 1: LINUX DNS SERVER SETUP (BIND)

### Step 1: Install BIND

sudo yum install bind bind-utils -y

### Step 2: Enable and Start named

sudo systemctl enable named  
sudo systemctl start named

### Step 3: Configure /etc/named.conf

Edit:

sudo nano /etc/named.conf

Modify:

listen-on port 53 { any; };  
allow-query { any; };

Add zone at the bottom:

zone "karan.local" IN {  
 type master;  
 file "/var/named/karan.local.db";  
};

### Step 4: Create Zone File

sudo cp /var/named/named.localhost /var/named/karan.local.db  
sudo nano /var/named/karan.local.db

Zone File Content:

$TTL 86400  
@ IN SOA ns1.karan.local. root.karan.local. (  
 2025062401 ; Serial  
 3600 ; Refresh  
 1800 ; Retry  
 604800 ; Expire  
 86400 ) ; Minimum TTL  
  
@ IN NS ns1.karan.local.  
ns1 IN A 192.168.115.84  
www IN A 192.168.115.84

### Step 5: Set Permissions

sudo chown root:named /var/named/karan.local.db  
sudo chmod 640 /var/named/karan.local.db

### Step 6: Check Configuration

sudo named-checkconf  
sudo named-checkzone karan.local /var/named/karan.local.db

### Step 7: Restart named

sudo systemctl restart named

### Step 8: Allow DNS Through Firewall

sudo firewall-cmd --permanent --add-service=dns  
sudo firewall-cmd --reload

# PART 2: APACHE HTTPD SETUP

### Step 1: Install Apache

sudo yum install httpd -y

### Step 2: Start and enable Apache

sudo systemctl enable httpd  
sudo systemctl start httpd

### Step 3: Create VirtualHost for DNS Name

sudo nano /etc/httpd/conf.d/karan.local.conf

Content:

<VirtualHost \*:80>  
 ServerName www.karan.local  
 DocumentRoot /var/www/html  
 <Directory "/var/www/html">  
 AllowOverride All  
 Require all granted  
 </Directory>  
</VirtualHost>

### Step 4: Restart Apache

sudo systemctl restart httpd

### Step 5: Allow HTTP through firewall

sudo firewall-cmd --permanent --add-service=http  
sudo firewall-cmd --reload

# PART 3: WINDOWS CLIENT CONFIGURATION

### Step 1: Set Linux DNS as primary DNS server

* Open Control Panel > Network and Internet > Network and Sharing Center
* Click “Change adapter settings”
* Right-click your active adapter (Wi-Fi / Ethernet) > Properties
* Select: Internet Protocol Version 4 (TCP/IPv4) > Properties
* Set DNS to:

Preferred DNS server: 192.168.115.84  
Alternate DNS server: (leave blank)

### Step 2: Clear Windows DNS Cache

ipconfig /flushdns

### Step 3: Verify DNS resolution

nslookup www.karan.local

Expected output:

Server: 192.168.115.84  
Name: www.karan.local  
Address: 192.168.115.84

### Step 4: Open Browser

http://www.karan.local

✅ Your Apache web page should open successfully!

# LAB COMPLETE: FULL DNS + HTTP + WINDOWS INTEGRATION SUCCESS!

# BONUS TESTING COMMANDS

### Test directly from Linux server:

dig @127.0.0.1 www.karan.local  
dig @192.168.115.84 www.karan.local

### Monitor BIND Logs:

sudo journalctl -xeu named.service

**YOU HAVE NOW BUILT A REAL ENTERPRISE LEVEL DNS + HTTP ENVIRONMENT**