VLSM Tree
Major Network: 192.168.0.0/18

Subnet name	Hosts	Network Address	prefix	Subnet Mask	Range	Broadcast Address
Mirpur-10	2502	192.168.0.0	/20	255.255.240.0	192.168.0.1-192.168.15.254	192.168.15.255
Agargaon	2252	192.168.16.0	/20	255.255.240.0	192.168.16.1-192.168.31.254	192.168.31.255
Uttora Center	1702	192.168.32.0	/21	255.255.248.0	192.168.32.1-192.168.39.254	192.168.39.255
Uttora North	1202	192.168.40.0	/21	255.255.248.0	192.168.40.1-192.168.47.254	192.168.47.255
Pallabi	1102	192.168.48.0	/21	255.255.248.0	192.168.48.1-192.168.55.254	192.168.55.255
Shewrapara	702	192.168.56.0	/22	255.255.252.0	192.168.56.1-192.168.59.254	192.168.59.255
UC-Server Lan	6	192.168.60.0	/29	255.255.255.248	192.168.60.1-192.168.60.6	192.168.60.7
Ag-Uc-Un Lan	5	192.168.60.8	/29	255.255.255.248	192.1688.60.9-192.168.60.14	192.168.60.15
Sh-mr10-pal Lan	5	192.168.60.16	/29	255.255.255.248	192.168.60.17-192.168.60.22	192.168.60.23
Ag-mr10 Lan	4	192.168.60.24	/30	255.255.255.252	192.168.60.25-192.168.60.26	192.168.60.27
Mr10-Server Lan	4	192.168.60.28	/30	255.255.255.252	192.168.60.29-192.168.60.30	192.168.60.31
Wan 1	4	192.168.60.32	/30	255.255.255.252	192.168.60.33-192.168.60.34	192.168.60.35
Wan 2	4	192.168.60.36	/30	255.255.255.252	192.168.60.37-192.168.60.38	192.168.60.39
Wan 3	4	192.168.60.40	/30	255.255.255.252	192.168.60.41-192.168.60.42	192.168.60.43
Wan 4	4	192.168.60.44	/30	255.255.255.252	192.168.60.45-192.168.60.46	192.168.60.47
Wan 5	4	192.168.60.48	/30	255.255.255.252	192.168.60.49-192.168.60.50	192.168.60.51

Ip Addressing

Device	Interface	Ipv4 Address	Network Address	Prefix	Subnet Mask	Default Gateway
Router-ag	F0/0	192.168.16.1	192.168.16.0	/20	255.255.240.0	N/A
	F1/0	192.168.60.25	192.168.60.24	/30	255.255.255.252	N/A
	S2/0	192.168.60.29	192.168.60.28	/30	255.255.255.252	N/A
	F4/0	192.168.60.9	192.168.60.8	/29	255.255.255.248	N/A
Router-sp	F0/0	192.168.60.17	192.168.60.16	/29	255.255.255.248	N/A
	F1/0	192.168.56.1	192.168.56.0	/22	255.255.252.0	N/A
	S2/0	192.168.60.30	192.168.60.28	/30	255.255.255.252	N/A
	S3/0	192.168.60.33	192.168.60.32	/30	255.255.255.252	N/A
Router-mr10	F0/0	192.168.60.26	192.168.60.34	/30	255.255.255.252	N/A
	F1/0	192.168.60.18	192.168.60.16	/29	255.255.255.248	N/A
	S2/0	192.168.60.34	192.168.60.32	/30	255.255.255.252	N/A
	S3/0	192.168.60.41	192.168.60.40	/30	255.255.255.252	N/A
	F4/0	192.168.60.37	192.168.60.36	/30	255.255.255.252	N/A
	F5/0	192.168.0.1	192.168.0.0	/20	255.255.240.0	N/A
Router-pal	F0/0	192.168.60.19	192.168.60.16	/29	255.255.255.248	N/A
	S2/0	192.168.60.42	192.168.60.40	/30	255.255.255.252	N/A
	S3/0	192.168.60.49	192.168.60.48	/30	255.255.255.252	N/A
	F4/0	192.168.48.1	192.168.48.0	/21	255.255.248.0	N/A
Router-uc	F0/0	192.168.60.10	192.168.60.8	/29	255.255.255.248	N/A
	F1/0	192.168.60.1	192.168.60.0	/29	255.255.255.248	N/A
	S2/0	192.168.60.50	192.168.60.48	/30	255.255.255.252	N/A

	S3/0	192.168.60.53	192.168.60.52	/30	255.255.255.252	N/A
	F4/0	192.168.32.1	192.168.32.0	/21	255.255.248.0	N/A
Router-un	F0/0	192.168.60.11	192.168.60.8	/29	255.255.255.248	N/A
	S2/0	192.18.60.54	192.168.60.52	/30	255.255.255.252	N/A
	F4/0	192.168.40.1	192.168.40.0	/21	255.255.248.0	N/A
agargaon-PC1	NIC	DHCP	192.168.16.0	/20	255.255.240.0	192.168.16.1
agargaon-PC2	NIC	DHCP	192.168.16.0	20	255.255.240.0	192.168.16.1
sp-PC1	NIC	DHCP	192.168.56.0	/22	255.255.252.0	192.168.56.1
sp-PC2	NIC	DHCP	192.168.56.0	/22	255.255.252.0	192.168.56.1
mar10-pc1	NIC	192.168.0.2	192.168.0.0	/20	255.255.240.0	192.168.0.1
mar10-pc2	NIC	192.168.0.3	192.168.0.0	/20	255.255.240.0	192.168.0.1
pal-PC1	NIC	DHCP	192.168.48.0	/21	255.255.248.0	192.168.48.1
pal-PC2	NIC	DHCP	192.168.48.0	/21	255.255.248.0	192.168.48.1
uc-PC1	NIC	192.168.32.2	192.168.32.0	/21	255.255.248.0	192.168.32.1
uc-PC2	NIC	192.168.32.3	192.168.32.0	/21	255.255.248.0	192.168.32.1
un-PC1	NIC	DHCP	192.168.40.0	/21	255.255.248.0	192.168.40.1
un-PC2	NIC	DHCP	192.168.40.0	/21	255.255.248.0	192.168.40.1
UttoraN-printer	NIC	192.168.40.4	192.168.40.0	/21	255.255.248.0	192.168.40.1
Pallabi-printer	NIC	192.168.48.4	192.168.48.0	/21	255.255.248.0	192.168.48.1
Email Server	NIC	192.168.60.38	192.168.60.36	/30	255.255.255.252	192.168.60.37
DHCP Server	NIC	192.168.60.5	192.18.60.0	/29	255.255.255.248	192.168.60.1
DNS Server	NIC	192.168.60.6	192.18.60.0	/29	255.255.255.248	192.168.60.1

Web Server	NIC	192.168.60.4	192.18.60.0	/29	255.255.255.248	192.168.60.1

Commands

```
Router-ag:
Router-ag>
Router-ag>en
Router-ag#
Router-ag#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router-ag(config)#
Router-ag(config)#enable secret router-ag
Router-ag(config)#line
Router-ag(config)#line con
Router-ag(config)#line console 0
Router-ag(config-line)#login
% Login disabled on line 0, until 'password' is set
Router-ag(config-line)#password router-ag
Router-ag(config-line)#login
Router-ag(config-line)#exit
Router-ag(config)#line vty 0 4
Router-ag(config-line)#login
% Login disabled on line 132, until 'password' is set
% Login disabled on line 133, until 'password' is set
% Login disabled on line 134, until 'password' is set
% Login disabled on line 135, until 'password' is set
% Login disabled on line 136, until 'password' is set
Router-ag(config-line)#password router-ag
Router-ag(config-line)#login
Router-ag(config-line)#exit

Router>en
Router#conf t
Router(config)#no ip domain-lookup
Router(config)#hostname Router-ag
Router-ag(config)#int f0/0
Router-ag(config-if)# ip address 192.168.16.1 255.255.240.0
Router-ag(config-if)# no shut

Router-ag(config-if)#int f1/0
Router-ag(config-if)#ip address 192.168.60.25 255.255.255.252
Router-ag(config-if)#no shut

Router-ag(config-if)#int s2/0
Router-ag(config-if)#ip address 192.168.60.29 255.255.255.252
Router-ag(config-if)#clock rate 64000
Router-ag(config-if)#no shut
Router-ag(config)#int s3/0
Router-ag(config-if)#
Router-ag(config-if)#ip address 192.168.60.57 255.255.255.252
Router-ag(config-if)#clock rate 64000
Router-ag(config-if)#no shut

Router-ag(config)#ip route 0.0.0.0 0.0.0.0 192.168.60.58
Router-ag(config)#
Router-ag(config)#router rip
Router-ag(config-router)#default ?
```

```
  originate  Distribute a default route
Router-ag(config-router)#default-
Router-ag(config-router)#default-information ori
Router-ag(config-router)#default-information originate

Router-ag(config-if)#end
Router-ag#copy run start

ISP:
Router(config)#hostname ISP
ISP(config)#no ip domain-lookup
ISP(config)#int s2/0
ISP(config-if)#
ISP(config-if)#ip address 192.168.60.58 255.255.255.252
ISP(config-if)#no shut
ISP(config-if)#end
ISP#copy run start


ROUTER-SP:


Router-sp>
Router-sp>en
Router-sp#
Router-sp#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router-sp(config)#enable secret router-sp
Router-sp(config)#line console 0
Router-sp(config-line)#password router-sp
Router-sp(config-line)#line vty 0 4
Router-sp(config-line)#password router-sp
Router-sp(config-line)#end
Router-sp#
%SYS-5-CONFIG_I: Configured from console by console

Router-sp#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

Router>en
Router#conf t
Router(config)#no ip domain-lookup
Router(config)#hostname Router-sp
Router-sp(config)#int s2/0
Router-sp(config-if)#ip address 192.168.60.30 255.255.255.252
Router-sp(config-if)#no shut
Router-sp(config-if)#int f1/0
Router-sp(config-if)#ip address 192.168.56.1 255.255.252.0
Router-sp(config-if)#no shut
Router-sp(config-if)#int f0/0
Router-sp(config-if)#ip address 192.168.60.17 255.255.255.248
Router-sp(config-if)#no shut
```

Router-sp(config-if)#int s3/0
Router-sp(config-if)#ip address 192.168.60.33 255.255.255.252
Router-sp(config-if)#clock rate 64000
Router-sp(config-if)#no shut
Ruter-sp(config-if)#end
Router-sp#copy run start

Router-mr10:

Router#en
Router#
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#hostname Router-mr10
Router-mr10(config)#
Router-mr10(config)#enable secret router-mr10
Router-mr10(config)#line console 0
Router-mr10(config-line)#password router-mr10
Router-mr10(config-line)#line vty 0 4
Router-mr10(config-line)#password router-mr10
Router-mr10(config-line)#end
Router-mr10#
%SYS-5-CONFIG_I: Configured from console by console

Router-mr10#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

Router>en
Router-mr10#conf t
Router-mr10(config)#no ip domain-lookup
Router-mr10(config)#int s2/0
Router-mr10(config-if)#ip address 192.168.60.34 255.255.255.252
Router-mr10(config-if)#no shut
Router-mr10(config-if)#int f4/0
Router-mr10(config-if)#ip address 192.168.60.37 255.255.255.252
Router-mr10(config-if)#no shut
Router-mr10(config-if)#int f5/0
Router-mr10(config-if)#ip address 192.168.0.1 255.255.240.0
Router-mr10(config-if)#no shut
Router-mr10(config-if)#int f0/0
Router-mr10(config-if)#ip address 192.168.60.26 255.255.255.252
Router-mr10(config-if)#no shut
Router-mr10(config-if)#int f1/0
Router-mr10(config-if)#ip address 192.168.60.18 255.255.255.248
Router-mr10(config-if)#no shut
Router-mr10(config-if)#int s3/0
Router-mr10(config-if)#ip address 192.168.60.41 255.255.255.252
Router-mr10(config-if)#clock rate 64000
Router-mr10(config-if)#no shut
Router-mr10(config-if)#end

Router-mr10#copy run start

Router-pal:

Router>en
Router#
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#hostname Router-pal
Router-pal(config)#enable sec
Router-pal(config)#enable secret router-pal
Router-pal(config)#line c
Router-pal(config)#line console 0
Router-pal(config-line)#password router-pal
Router-pal(config-line)#line vty 0 4
Router-pal(config-line)#password router-pal
Router-pal(config-line)#end
Router-pal#
%SYS-5-CONFIG_I: Configured from console by console

Router-pal#copy r
Router-pal#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

Router-pal(config)#
Router-pal(config)#no ip domain-lookup
Router-pal(config)#
Router-pal(config)#int f0/0
Router-pal(config-if)#ip address 192.168.60.19 255.255.255.248
Router-pal(config-if)#no shut
Router-pal(config-if)#int f1/0
Router-pal(config-if)#ip address 192.168.60.45 255.255.255.252
Router-pal(config-if)#no shut
Router-pal(config-if)#int f4/0
Router-pal(config-if)#ip address 192.168.48.1 255.255.248.0
Router-pal(config-if)#no shut
Router-pal(config-if)#int s2/0
Router-pal(config-if)#ip address 192.168.60.42 255.255.255.252
Router-pal(config-if)#no shut
Router-pal(config-if)#int s3/0
Router-pal(config-if)#ip address 192.168.60.49 255.255.255.252
Router-pal(config-if)#clock rate 64000
Router-pal(config-if)#no shut

Router-uc:

Router>en

```
Router#
Router#conf t
Router(config)#hostname Router-uc
Router-uc(config)#no ip domain-lookup
Router-uc(config)#int s2/0
Router-uc(config-if)#ip address 192.168.60.50 255.255.255.252
Router-uc(config-if)#no shut
Router-uc(config-if)#int s3/0
Router-uc(config-if)#ip address 192.168.60.53 255.255.255.252
Router-uc(config-if)#clock rate 64000

Router-uc(config-if)#int f0/0
Router-uc(config-if)#ip address 192.168.60.10 255.255.255.248
Router-uc(config-if)#no shut
Router-uc(config-if)#int f1/0
Router-uc(config-if)#ip address 192.168.60.1 255.255.252.248
Router-uc(config-if)#no shut

Router-uc(config-if)#int f4/0
Router-uc(config-if)#
Router-uc(config-if)#ip address 192.168.32.1 255.255.248.0
Router-uc(config-if)#
Router-uc(config-if)#no shut

Router-uc>
Router-uc>en
Router-uc#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router-uc(config)#enable secret router-uc
Router-uc(config)#line console 0
Router-uc(config-line)#password router-uc
Router-uc(config-line)#login
Router-uc(config-line)#line vty 0 4
Router-uc(config-line)#password router-uc
Router-uc(config-line)#end
Router-uc#
%SYS-5-CONFIG_I: Configured from console by console

Router-uc#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

Router-un:
Router>en
Router#
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
Router(config)#hostname Router-un
Router-un(config)#
Router-un(config)#no ip domain-lookup
Router-un(config)#
Router-un(config)#int f0/0
```

Router-un(config-if)#
Router-un(config-if)#ip address 192.168.60.11 255.255.255.248
Router-un(config-if)#
Router-un(config-if)#no shut

Router-un(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router-un(config-if)#
Router-un(config-if)#int f0/1
%Invalid interface type and number
Router-un(config)#
Router-un(config)#int f0/1
%Invalid interface type and number
Router-un(config)#int f1/0
Router-un(config-if)#ip address 192.168.60.57 255.255.255.252
Router-un(config-if)#no shut

Router-un(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, changed state to up

Router-un(config-if)#int f4/0
Router-un(config-if)#
Router-un(config-if)#ip address 192.168.40.1 255.255.248.0
Router-un(config-if)#no shut

Router-un(config-if)#
%LINK-5-CHANGED: Interface FastEthernet4/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet4/0, changed state to up

Router-un(config-if)#int s2/0
Router-un(config-if)#ip address 192.168.60.54 255.255.255.252
Router-un(config-if)#no shut

Router-un>
Router-un>en
Router-un#
Router-un#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router-un(config)#
Router-un(config)#enable secret router-un
Router-un(config)#line console 0
Router-un(config-line)#password router-un
Router-un(config-line)#line vty 0 4
Router-un(config-line)#password router-un
Router-un(config-line)#end
Router-un#
%SYS-5-CONFIG_I: Configured from console by console

Router-un#copy run start
Destination filename [startup-config]?
Building configuration...
[OK]

Routing:

Router-un:
Router-un>en
Router-un#conf t
Router-un(config)#
Router-un(config)#ip route 192.168.16.0 255.255.240.0 192.168.60.53
Router-un(config)#ip route 192.168.60.0 255.255.255.248 192.168.60.53
Router-un(config)#ip route 192.168.32.0 255.255.248.0 192.168.60.53
Router-un(config)#ip route 192.168.60.48 255.255.255.252 192.168.60.53
Router-un(config)#ip route 192.168.48.0 255.255.248.0 192.168.60.53
Router-un(config)#ip route 192.168.60.44 255.255.255.252 192.168.60.53
Router-un(config)#ip route 192.168.60.40 255.255.255.252 192.168.60.53
Router-un(config)#ip route 192.168.0.0 255.255.240.0 192.168.60.53
Router-un(config)#ip route 192.168.60.36 255.255.255.252 192.168.60.53
Router-un(config)#ip route 192.168.60.32 255.255.255.252 192.168.60.53
Router-un(config)#ip route 192.168.56.0 255.255.252.0 192.168.60.53
Router-un(config)#ip route 192.168.60.28 255.255.255.252 192.168.60.53
Router-un(config)#ip route 192.168.60.16 255.255.255.248 192.168.60.53
Router-un(config)#ip route 192.168.60.24 255.255.255.252 192.168.60.53
Router-un(config)#ip route 192.168.16.0 255.255.240.0 192.168.60.9 5

Router-uc:
Router-uc>en
Router-uc#conf t
Router-uc(config)#
Router-uc(config)#ip route 192.168.40.0 255.255.248.0 192.168.60.54
Router-uc(config)#ip route 192.168.60.56 255.255.255.252 192.168.60.54
Router-uc(config)#ip route 192.168.48.0 255.255.248.0 192.168.60.49
Router-uc(config)#ip route 192.168.60.44 255.255.255.252 192.168.60.49
Router-uc(config)#ip route 192.168.60.40 255.255.255.252 192.168.60.49
Router-uc(config)#ip route 192.168.60.16 255.255.255.248 192.168.60.49
Router-uc(config)#ip route 192.168.0.0 255.255.240.0 192.168.60.49
Router-uc(config)#ip route 192.168.60.36 255.255.255.252 192.168.60.49
Router-uc(config)#ip route 192.168.60.32 255.255.255.252 192.168.60.49
Router-uc(config)#ip route 192.168.56.0 255.255.252.0 192.168.60.49
Router-uc(config)#ip route 192.168.60.28 255.255.255.252 192.168.60.49
Router-uc(config)#ip route 192.168.16.0 255.255.240.0 192.168.60.9
Router-uc(config)#ip route 192.168.60.24 255.255.255.252 192.168.60.49

Router-pal:

Router-pal#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router-pal(config)#
Router-pal(config)#router rip

Router-pal(config-router)#version 2
Router-pal(config-router)#no auto-summary
Router-pal(config-router)#network 192.168.48.0
Router-pal(config-router)#network 192.168.60.48
Router-pal(config-router)#net
Router-pal(config-router)#network 192.168.60.40
Router-pal(config-router)#network 192.168.60.16
Router-pal(config-router)#passi
Router-pal(config-router)#passive-interface f4/0
Router-pal(config-router)#passive-interface f1/0

Router-mr10:

Router-mr10(config)#router rip
Router-mr10(config-router)#version 2
Router-mr10(config-router)#no auto-summary
Router-mr10(config-router)#passive-interface f4/0
Router-mr10(config-router)#passive-interface f5/0
Router-mr10(config-router)#network 192.168.60.40
Router-mr10(config-router)#network 192.168.60.16
Router-mr10(config-router)#network 192.168.60.24
Router-mr10(config-router)#network 192.168.60.32
Router-mr10(config-router)#network 192.168.0.0
Router-mr10(config-router)#network 192.168.60.36

Router-mr10(config)#ip route 192.168.60.0 255.255.255.248 192.168.60.50
Router-mr10(config)#ip route 192.168.32.0 255.255.248.0 192.168.60.50
Router-mr10(config)#ip route 192.168.60.52 255.255.255.252 192.168.60.50
Router-mr10(config)#ip route 192.168.40.0 255.255.248.0 192.168.60.50

Router-sp:

Router-sp(config)#ip route 192.168.60.0 255.255.255.248 192.168.60.50
Router-sp(config)#ip route 192.168.32.0 255.255.248.0 192.168.60.50
Router-sp(config)#ip route 192.168.60.52 255.255.255.252 192.168.60.50
Router-sp(config)#ip route 192.168.40.0 255.255.248.0 192.168.60.50

Router-sp(config)#router rip
Router-sp(config-router)#
Router-sp(config-router)#
Router-sp(config-router)#version 2
Router-sp(config-router)#network 192.168.56.0
Router-sp(config-router)#network 192.168.60.32
Router-sp(config-router)#network 192.168.60.28
Router-sp(config-router)#network 192.168.60.16
Router-sp(config-router)#no auto-summary
Router-sp(config-router)#passive-in
Router-sp(config-router)#passive-interface f1/0

Router-ag:

Router-ag(config)#router rip

Router-ag(config-router)#version 2
Router-ag(config-router)#no auto-summary
Router-ag(config-router)#passive-interface f0/0
Router-ag(config-router)#network 192.168.16.0
Router-ag(config-router)#network 192.168.60.28
Router-ag(config-router)#network 192.168.60.24
Router-ag(config-router)#network 192.168.60.8

ip route 192.168.60.0 255.255.255.248 192.168.60.10
ip route 192.168.32.0 255.255.248.0 192.168.60.10
ip route 192.168.40.0 255.255.248.0 192.168.60.11
ip route 192.168.60.52 255.255.255.252 192.168.60.10

DHCP configuration:

Router-ag:
Router-ag>en
Router-ag#conf t
Router-ag(config)#int f0/0
Router-ag(config-if)#ip helper-address 192.168.60.5
Router-ag(cofig-if)#end
Router-ag#copy run start

Router-sp:
Router-sp>en
Router-sp#conf t
Router-sp(config)#int f1/0
Router-sp(config-if)#ip helper-address 192.168.60.5
Router-sp(cofig-if)#end
Router-sp#copy run start

Router-pal:
Router-pal>en
Router-pal#conf t
Router-pal(config)#int f4/0
Router-pal(config-if)#ip helper-address 192.168.60.5
Router-pal(cofig-if)#end
Router-pal#copy run start

Router-un:
Router-un>en
Router-un#conf t
Router-un(config)#int f4/0
Router-un(config-if)#ip helper-address 192.168.60.5
Router-un(cofig-if)#end
Router-un#copy run start

Assumptions

#Public Users Should be in a separate LAN to secure the server and office devices.For that another router from station main router will connect public user.A wireless device installed on that router.

#Only one station will connect with ISP Router(Agargaon Station) directly to provide internet to reduce cost

#printers should be restricted from outside.