EX.NO:09	DESIGN OF WIRELESS LAN ACCESS	REG.NO: URK22AI1048
DATE: 11 -10 -2023		

AIM

To design Wireless LAN access and configure wireless router allowing for remote access from PCs as well as wireless connectivity with WPA2 security.

DESCRIPTION

Designing a secure and efficient Wireless LAN (Local Area Network) access involves careful planning and configuration to ensure seamless connectivity for both wired and wireless devices while maintaining the highest level of security. Below is a detailed description outlining the steps to design and configure a Wireless LAN access with a wireless router, allowing for remote access from PCs and wireless connectivity with WPA2 security

CONFIGURATION COMMANDS

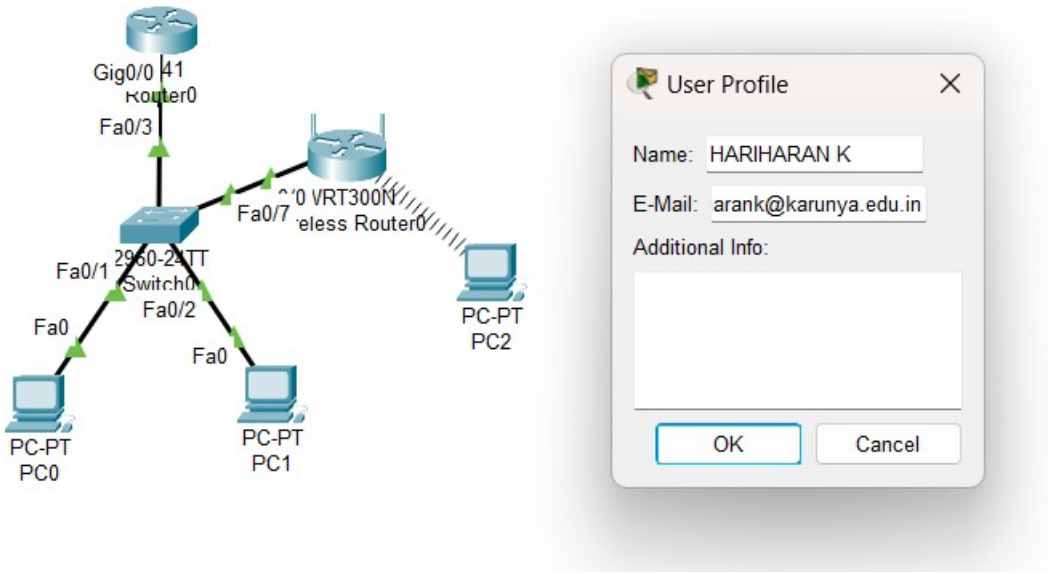
```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int gig0/0
Router(config-if)#no sh
Router(config-if)#int gig0/0.10

Router(config-subif)#encapsulation dot1q 10
Router(config-subif)#ip addr 192.168.10.1 255.255.255.0
Router(config-subif)#
Router(config-subif)#int gig0/0.20

Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip addr 172.168.10.1 255.255.0.0

Router(config)#int gig0/0.30

Router(config-subif)#encapsulation dot1q 30
Router(config-subif)#ip addr 172.17.40.1 255.255.0.0
Router(config-subif)#
Router(config-subif)#end
Router#

Switch>en
Switch#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name soory
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name 1023
Switch(config)#vlan 30
Switch(config-vlan)#name wireless
Switch(config-vlan)#
Switch(config-vlan)#int fa0/1
```

```
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#int fa0/2
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 20
Switch(config-vlan)#int fa0/7
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#int fa0/3
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport trunk allowed vlan 10,20,30
```

PROCEDURE

1. Configure IP Addressing on the Host PCs.
2. Configure Routers and Switch Interfaces.
3. Configure the wireless router (WRT300N) interface.
4. Test and Verify the Configurations.

TOPOLOGY DIAGRAM

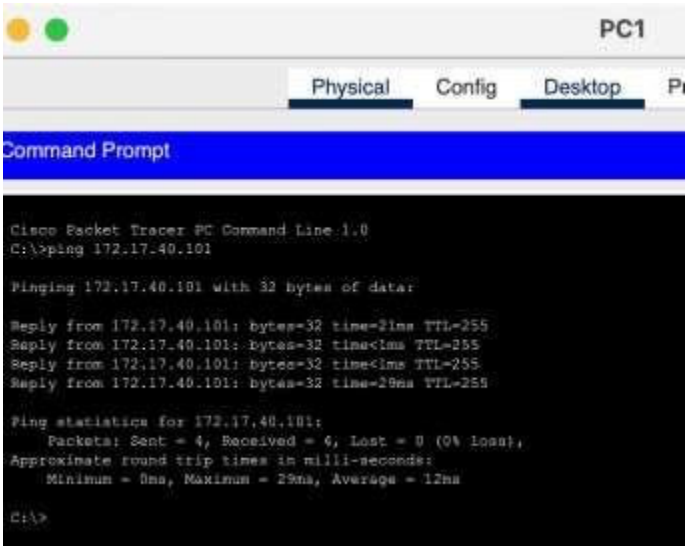


ADDRESSING TABLE

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1	Gig0/0.10	192.168.1.1	255.255.255.0	NA
	Gig0/0.20	172.168.1.1	255.255.0.0	NA
	Gig0/0.30	172.17.40.1	255.255.0.0	NA
PC0	NIC	192.168.1.2	255.255.255.0	192.168.1.1
PC1	NIC	172.168.10.2	255.255.0.0	172.168.10.1
PC2	NIC	172.17.40.101	255.255.0.0	172.17.40.1
WRT300N	WLS	172.17.88.25	255.255.0.0	172.17.88.1

OUTPUT

Screenshot of successful ping from Wireless LAN PC to remote PC.



Screenshot of show running-config of Switch

```
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
 switchport access vlan 10
 switchport mode access
!
interface FastEthernet0/2
 switchport access vlan 20
 switchport mode access
!
interface FastEthernet0/3
 switchport trunk allowed vlan 10,20,30
 switchport mode trunk
!
interface FastEthernet0/4
!
```

Screenshot of show running-config of Router

```
 speed auto
!
interface GigabitEthernet0/0.10
 encapsulation dot1Q 10
 ip address 192.168.10.1 255.255.255.0
!
interface GigabitEthernet0/0.20
 encapsulation dot1Q 20
 ip address 172.168.10.1 255.255.0.0
!
interface GigabitEthernet0/0.30
 encapsulation dot1Q 30
 ip address 172.17.40.101 255.255.255.0
!
interface GigabitEthernet0/1
```

Screenshot of Routing table

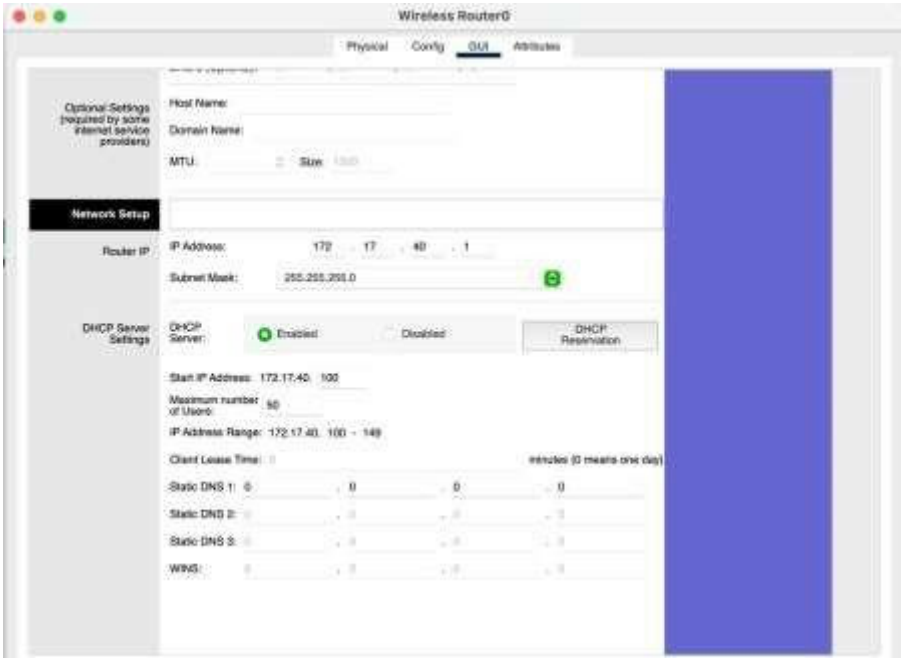
```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     172.17.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.17.40.0/24 is directly connected, GigabitEthernet0/0.30
L       172.17.40.101/32 is directly connected, GigabitEthernet0/0.30
     172.168.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.168.0.0/16 is directly connected, GigabitEthernet0/0.20
L       172.168.10.1/32 is directly connected, GigabitEthernet0/0.20
     192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/0.10
L       192.168.10.1/32 is directly connected, GigabitEthernet0/0.10
```

Screenshot of show vlan brief

```
soorya>sh vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/4, Fa0/5, Fa0/6, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
10   soory                             active    Fa0/1
20   1023                              active    Fa0/2
30   wireless                          active    Fa0/7
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

Screenshot of Wireless Router GUI of wireless access and security.

Screenshot of Wireless Router GUI of the network setup.



Screenshot of Wireless Client

RESULT

The above topology was created and the packets and the data was transmitted between the PCto another wireless PC, the desired output was achieved from the above topology.