



CENTRE FOR DIPLOMA STUDIES

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

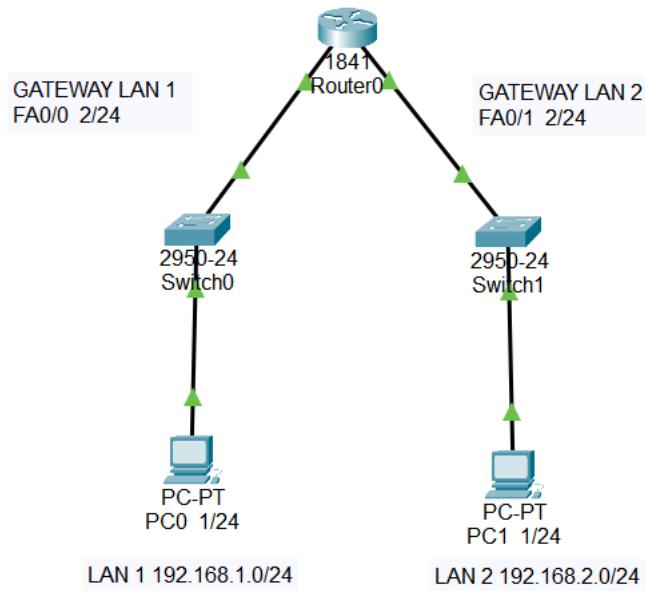
PBL 3 (LAB 7)

DAT21502 DATA COMMUNICATION

AND NETWORK

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SECTION	6
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Question 1- STATIC AND DYNAMIC ROUTING PROTOCOL CONFIGURATIONS



a) Assign IP addresses to the :

i. PCs

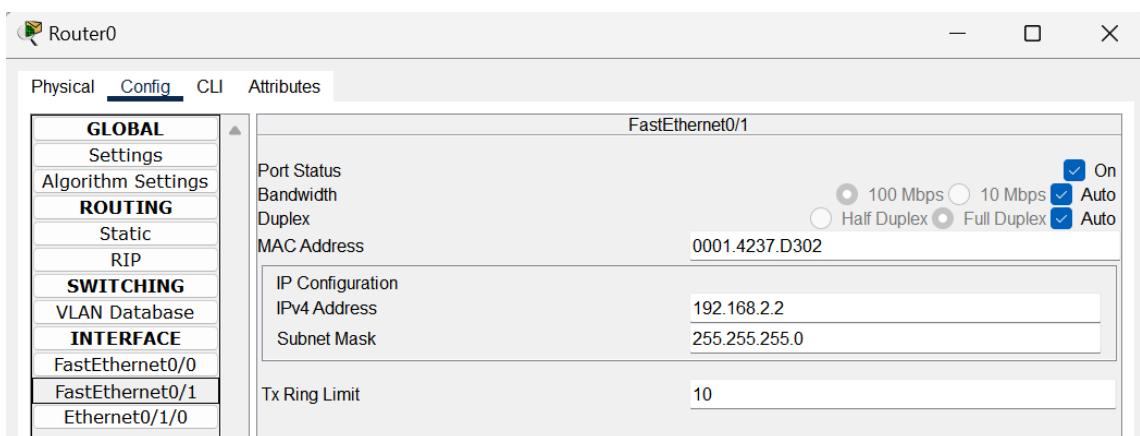
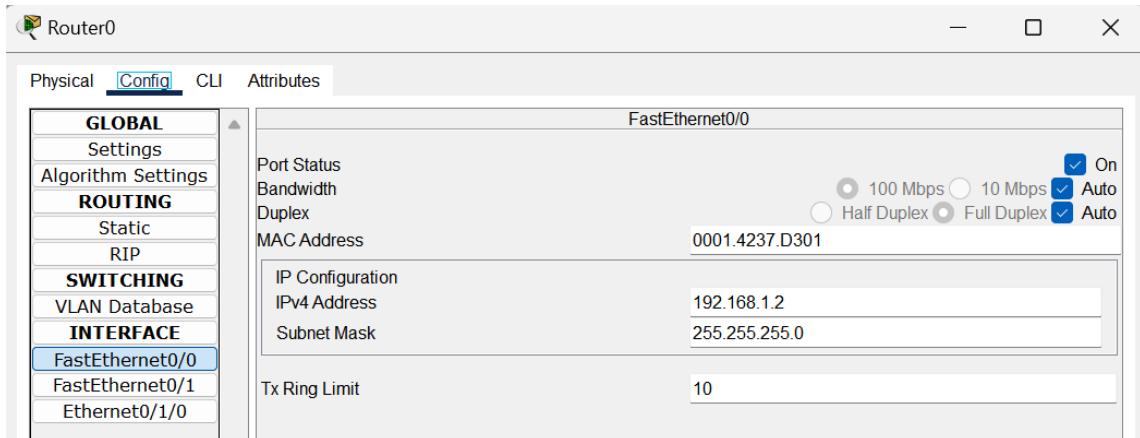
PC0 1/24

IP Configuration	
Interface	FastEthernet0
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.1.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.2
DNS Server	0.0.0.0

PC1 1/24

IP Configuration	
Interface	FastEthernet0
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.2.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.2
DNS Server	0.0.0.0

ii. Router interface fa0/0 and fa0/1



b) Configure router's routing protocol using :

i. Static routing protocol

```

Router#
Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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, 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

C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/1

Router#
  
```

ii. Dynamic routing protocol

```

Router#
Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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, 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

C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    192.168.2.0/24 is directly connected, FastEthernet0/1

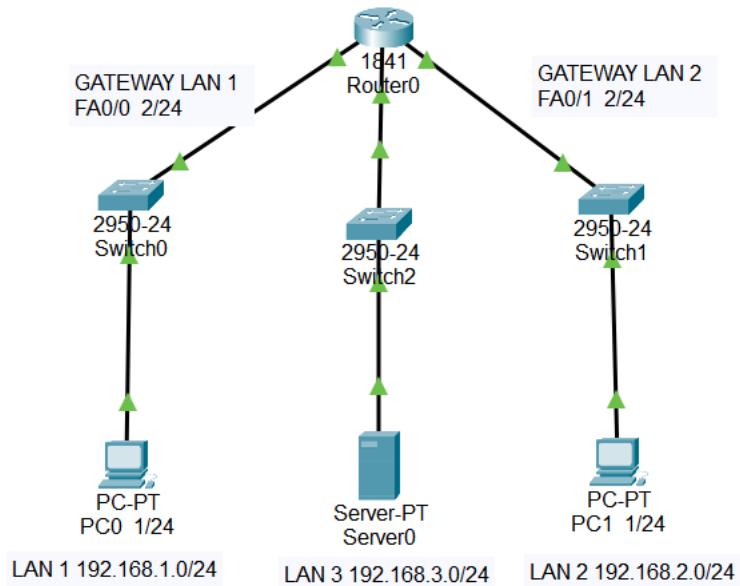
Router#

```

c) Test the connection between LANs.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
●	--	PC0 ...	Router0	ICMP	■	0.000	N	0	(edit)	(delete)
●	--	PC1 ...	Router0	ICMP	■	0.000	N	1	(edit)	(delete)
●	--	PC0 ...	PC1 1/24	ICMP	■	0.000	N	2	(edit)	(delete)

d) Add one server using a new LAN and attached to the Router. Configure the router so that all PCs can access the server.



Server0

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

DHCP Static

IPv4 Address: 192.168.3.1

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.3.2

DNS Server: 0.0.0.0

Router0

Physical **Config** CLI Attributes

GLOBAL
Settings
Algorithm Settings

ROUTING
Static
RIP

SWITCHING
VLAN Database

INTERFACE
FastEthernet0/0
FastEthernet0/1
Ethernet0/1/0

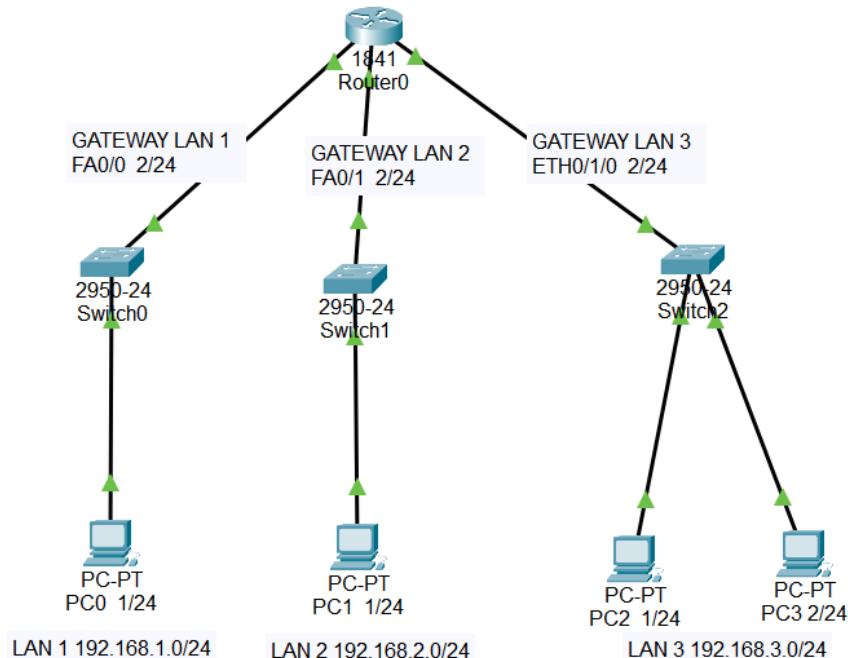
Ethernet0/1/0

Port Status: On
Bandwidth: 10 Mbps
Duplex: Auto
MAC Address: 00D0.BC6B.9040
IP Configuration
IPv4 Address: 192.168.3.2
Subnet Mask: 255.255.255.0
Tx Ring Limit: 10

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
●	Successful	PC0 ...	Server0	ICMP	■	0.000	N	0	(edit)	(delete)
●	Successful	PC1 ...	Server0	ICMP	■	0.000	N	1	(edit)	(delete)
●	Successful	Router0	Server0	ICMP	■	0.000	N	2	(edit)	(delete)

Question 2 – ROUTING BETWEEN VLAN

- a) Add network in **Question1** with a new network having a switch and two PCs name the network as LAN3 and configure the router again so that all PCs is connected to each other.

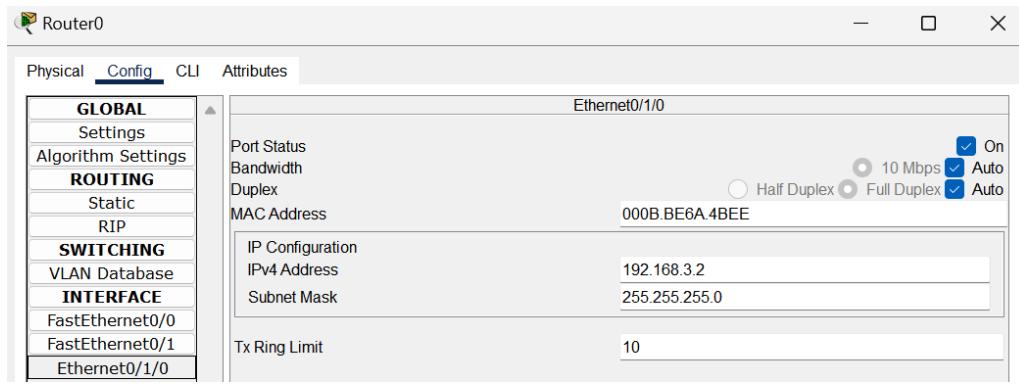


PC2 1/24

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.3.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.3.2
DNS Server	0.0.0.0

PC3 2/24

IP Configuration	
Interface	FastEthernet0
IP Configuration	
<input type="radio"/> DHCP	<input checked="" type="radio"/> Static
IPv4 Address	192.168.3.3
Subnet Mask	255.255.255.0
Default Gateway	192.168.3.2
DNS Server	0.0.0.0



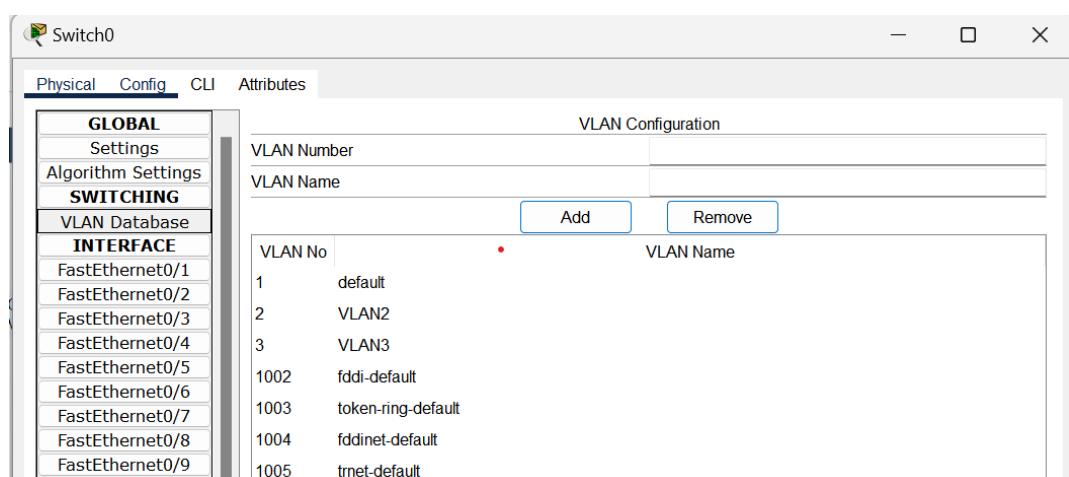
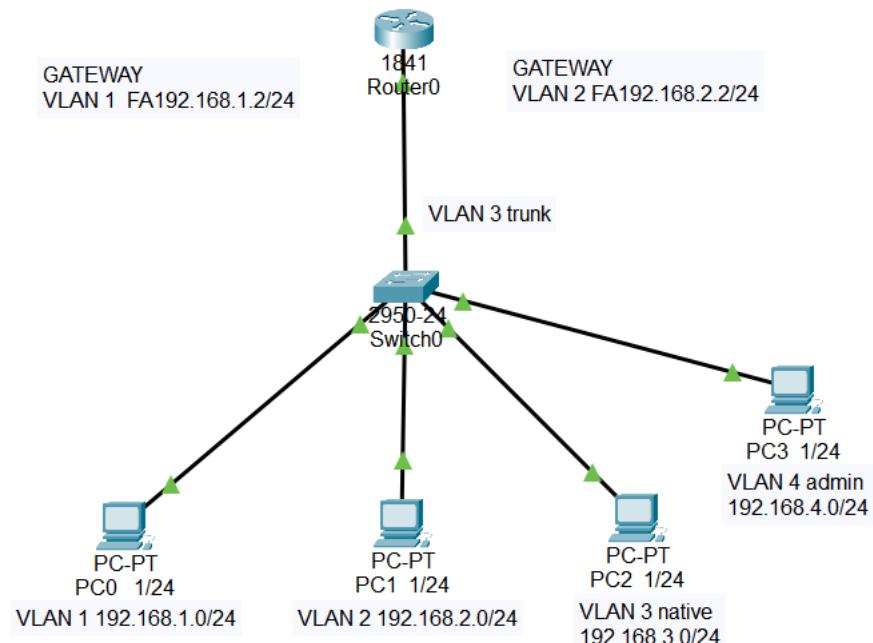
b) Test the connection between LANs. Also test the connection to the server

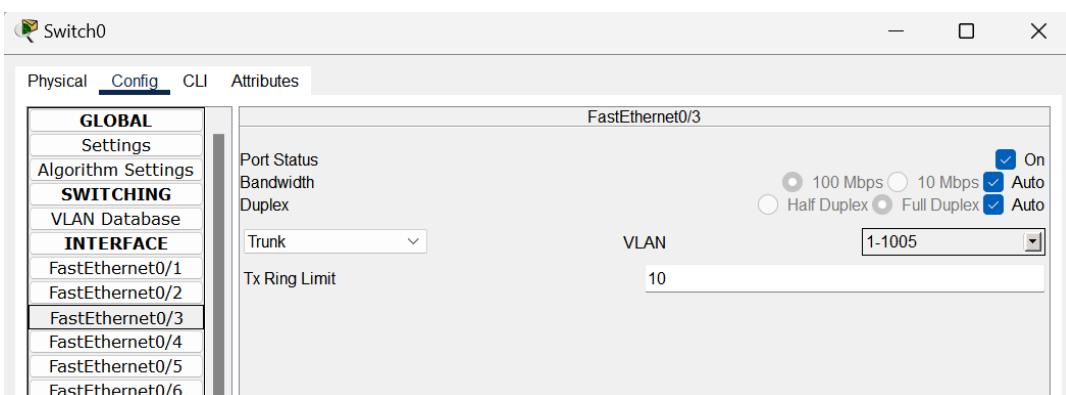
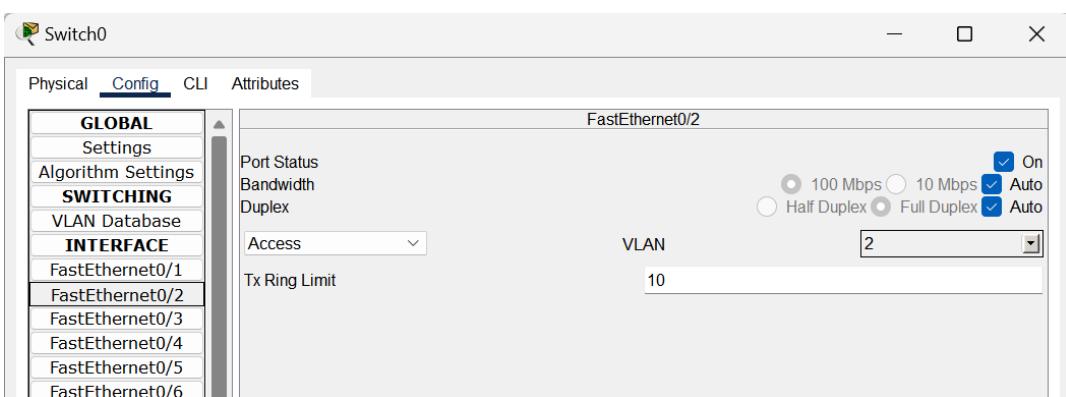
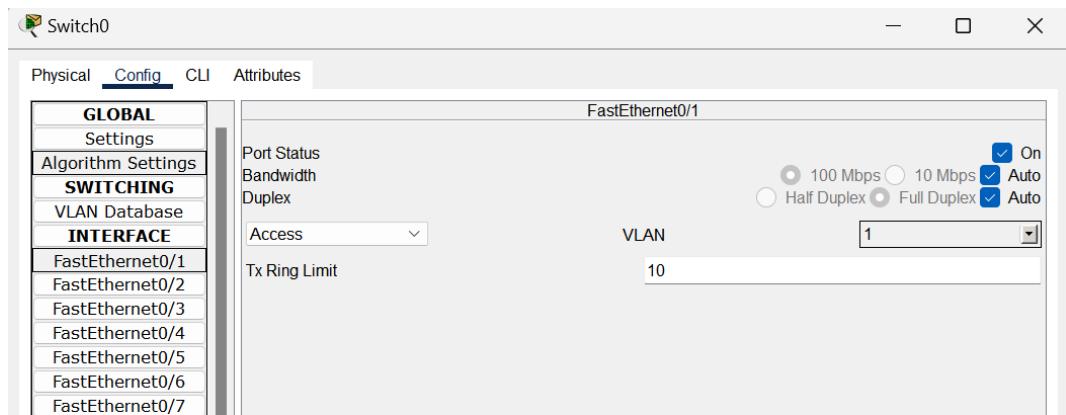
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Successful	PC2 ...	Router0	ICMP	■	0.000	N	0	(edit)	(delete)	
Successful	PC3 ...	Router0	ICMP	■	0.000	N	1	(edit)	(delete)	
Successful	PC1 ...	PC2 1/24	ICMP	■	0.000	N	2	(edit)	(delete)	
Successful	PC0 ...	PC3 2/24	ICMP	■	0.000	N	3	(edit)	(delete)	

Question 3 – VLAN SUB-INTERFACE

An organization has four VLANs, three VLANs capable of running a CISCO dot1Q protocol and one native VLAN as shown in figure below. Do;

- a) Switch vlangs configuration





- b) Router trunking protocol configuration, given that the IP for the vlan subinterface is the gateway for its vlans

```

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#no shutdown
Router(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(config-if)#
Router(config-if)#interface FastEthernet0/0
Router(config-if)#interface FastEthernet0/0.1
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.1, changed state to up

Router(config-subif)#encapsulation dot1Q 1
Router(config-subif)#ip address 192.168.1.2 255.255.255.0
Router(config-subif)#interface FastEthernet0/0.2
Router(config-subif)#
%LINK-5-CHANGED: Interface FastEthernet0/0.2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0.2, changed state to up

Router(config-subif)#encapsulation dot1Q 2\
% Invalid input detected at '^' marker.

Router(config-subif)#encapsulation dot1Q 2
Router(config-subif)#ip address 192.168.2.2 255.255.255.0
Router(config-subif)#

```

- c) Test connection between vlans.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
Failed	PC2 ...	PC1 1/24	ICMP	Blue	0.000	N	0	(edit)	(delete)	
Successful	PC0 ...	Router0	ICMP	Red	0.000	N	1	(edit)	(delete)	
Successful	PC1 ...	Router0	ICMP	Green	0.000	N	2	(edit)	(delete)	
Successful	PC0 ...	PC1 1/24	ICMP	Purple	0.000	N	3	(edit)	(delete)	