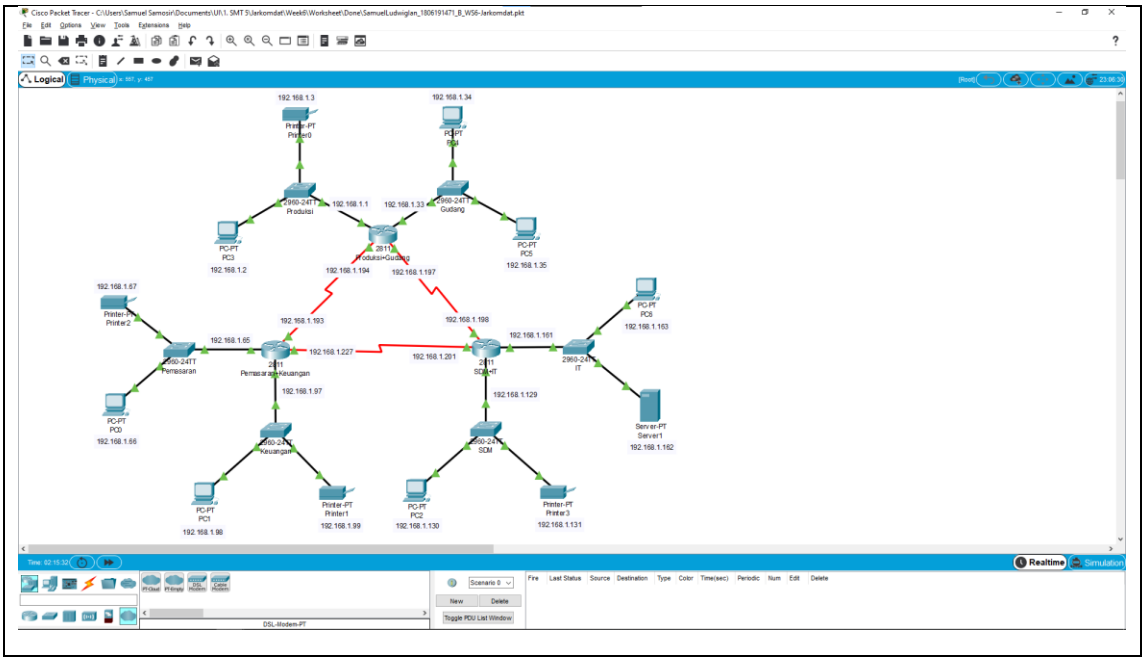
Worksheet Jaringan Komunikasi Data (CSIM603154)– 2020-2021 Gasal	Week : 6 Topic : Network Layer
Lecturer : 1. Ari Wibisono 2. Muhammad Anwar Ma'sum	Name : Samuel Ludwig Ian NPM : 1806191471

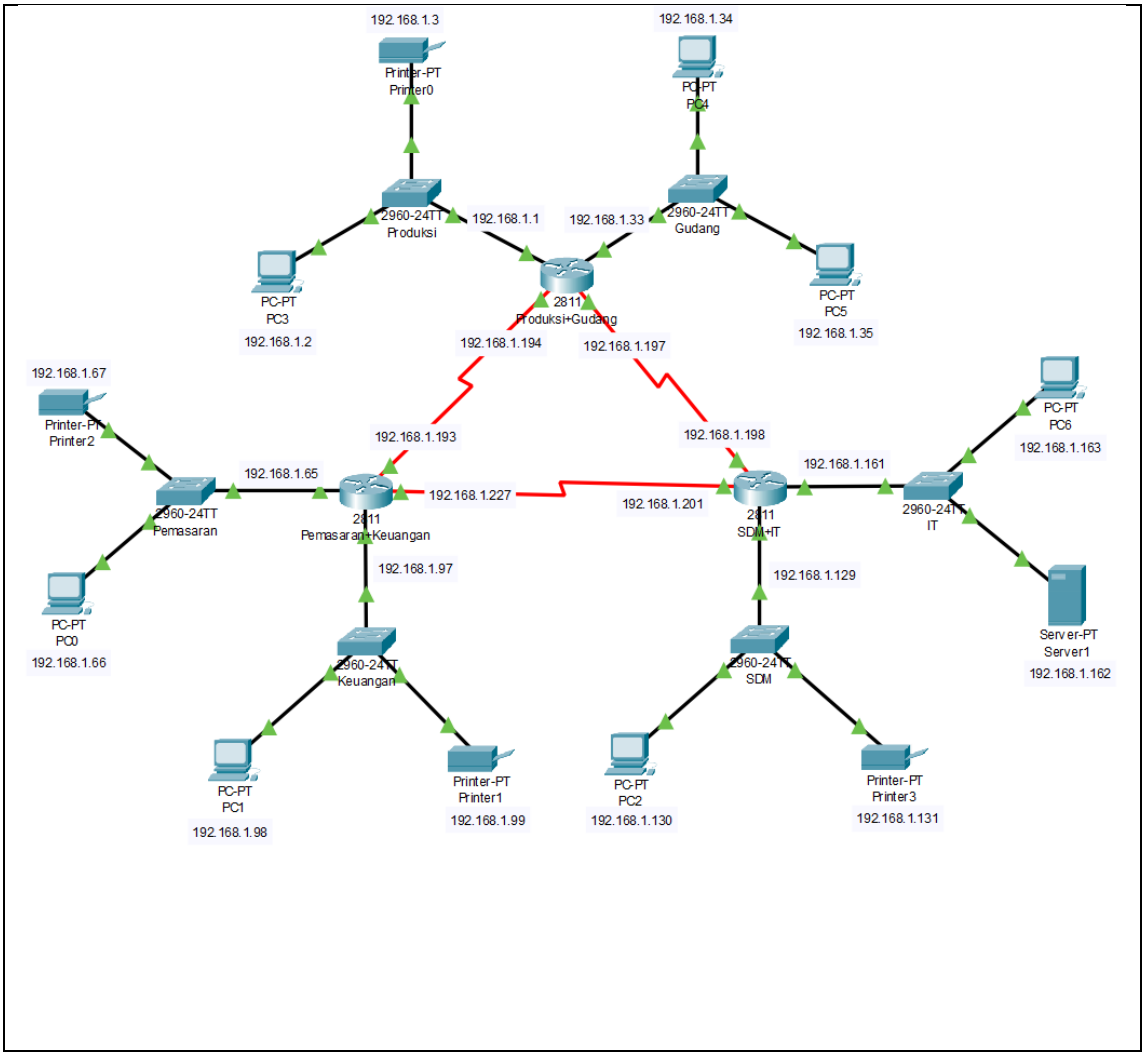
1. [Subnetting]

Subnet	Network Address	Subnet Mask	First Host	Last Host
Produksi	192.168.1.0	255.255.255.224	192.168.1.1	192.168.1.30
Gudang	192.168.1.32	255.255.255.224	192.168.1.33	192.168.1.62
Pemasaran	192.168.1.64	255.255.255.224	192.168.1.65	192.168.1.94
Keuangan	192.168.1.96	255.255.255.224	192.168.1.97	192.168.1.126
SDM	192.168.1.128	255.255.255.224	192.168.1.129	192.168.1.158
IT	192.168.1.160	255.255.255.224	192.168.1.161	192.168.1.190

2. [Implementasi Pada Packet Tracer]

a-c. Screenshot Topologi





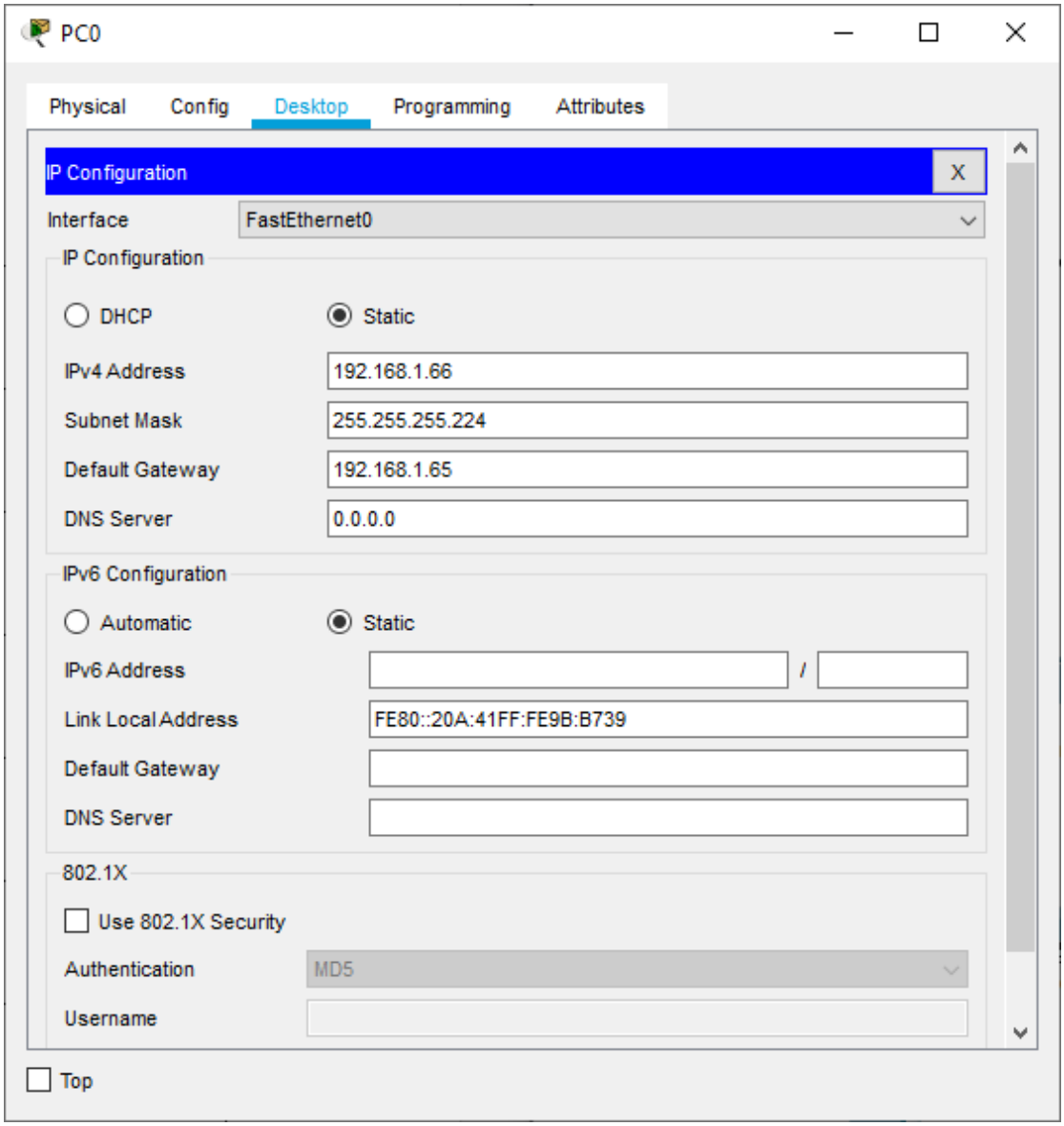
d. Alokasi Alamat Device

Device	IPv4 Address	Subnet Mask	Default Gateway
PC0	192.168.1.66	255.255.255.224	192.168.1.65
PC1	192.168.1.98	255.255.255.224	192.168.1.97
PC2	192.168.1.130	255.255.255.224	192.168.1.129
PC3	192.168.1.2	255.255.255.224	192.168.1.1
PC4	192.168.1.34	255.255.255.224	192.168.1.33
PC5	192.168.1.35	255.255.255.224	192.168.1.33
PC6	192.168.1.163	255.255.255.224	192.168.1.161
Printer0	192.168.1.3	255.255.255.224	192.168.1.1
Printer1	192.168.1.99	255.255.255.224	192.168.1.97
Printer2	192.168.1.67	255.255.255.224	192.168.1.65

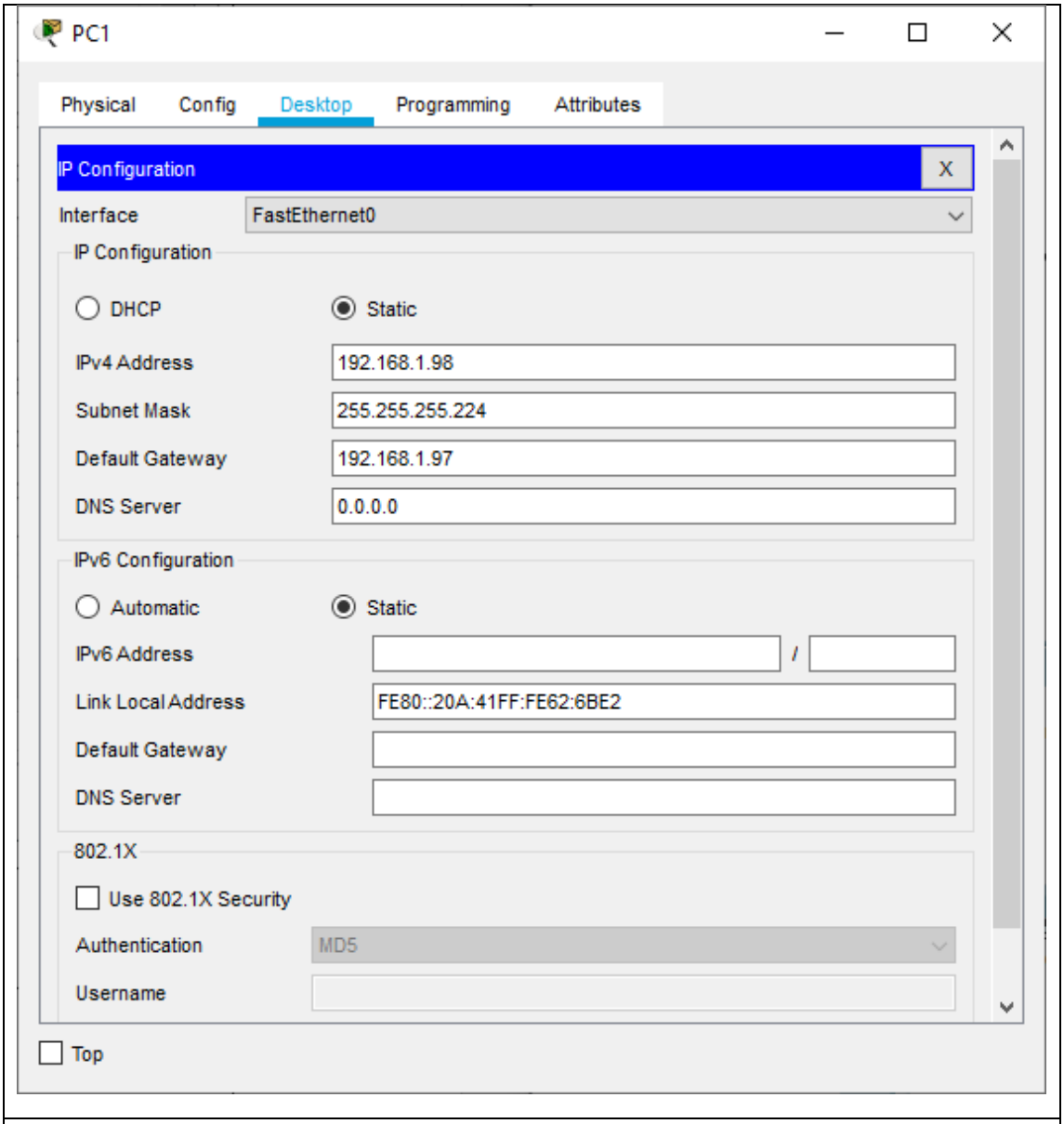
Printer3	192.168.1.131	255.255.255.224	192.168.1.129
Server1	192.168.1.162	255.255.255.224	192.168.1.161

Screenshot

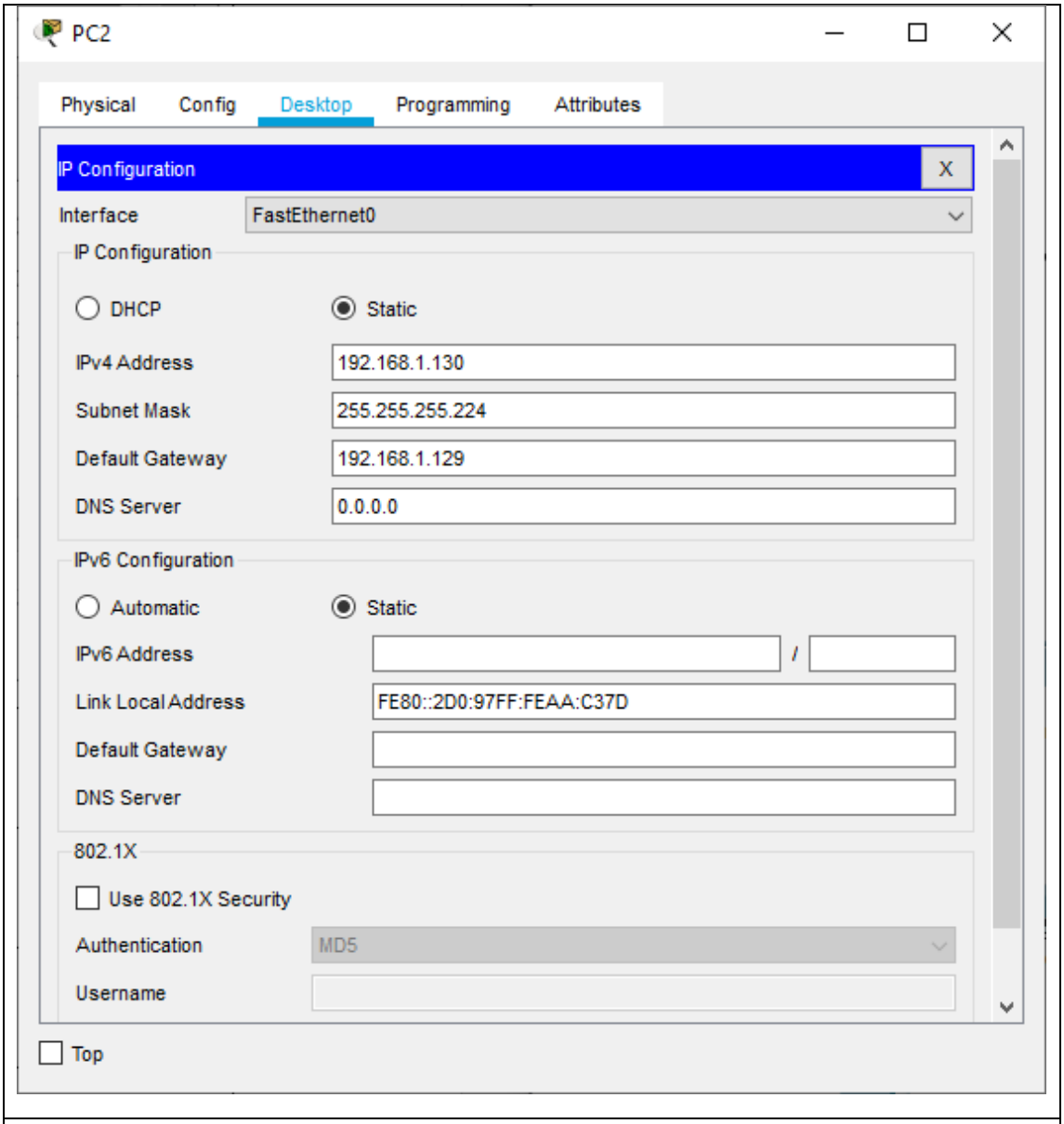
Screenshot PC0



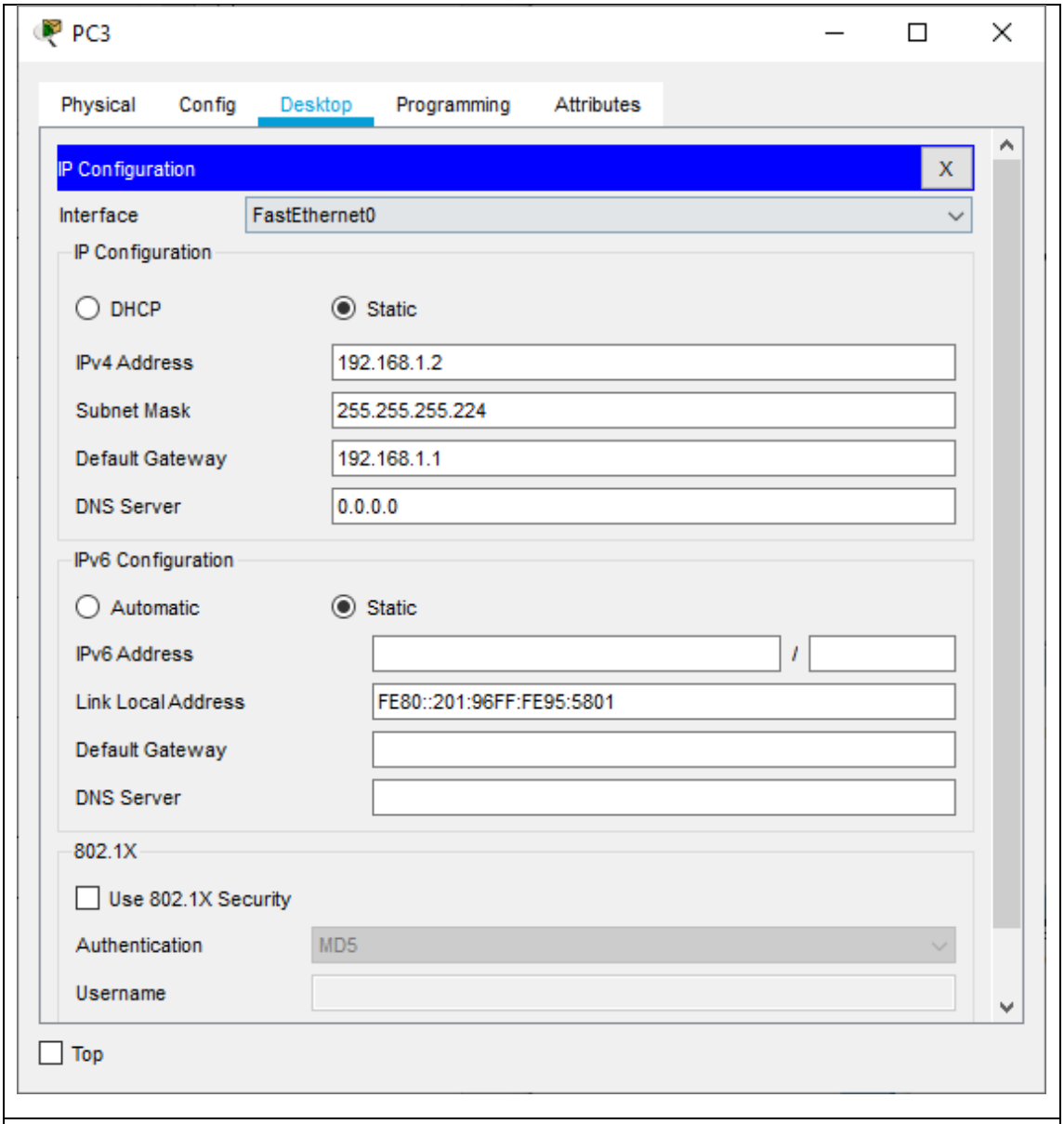
Screenshot PC1



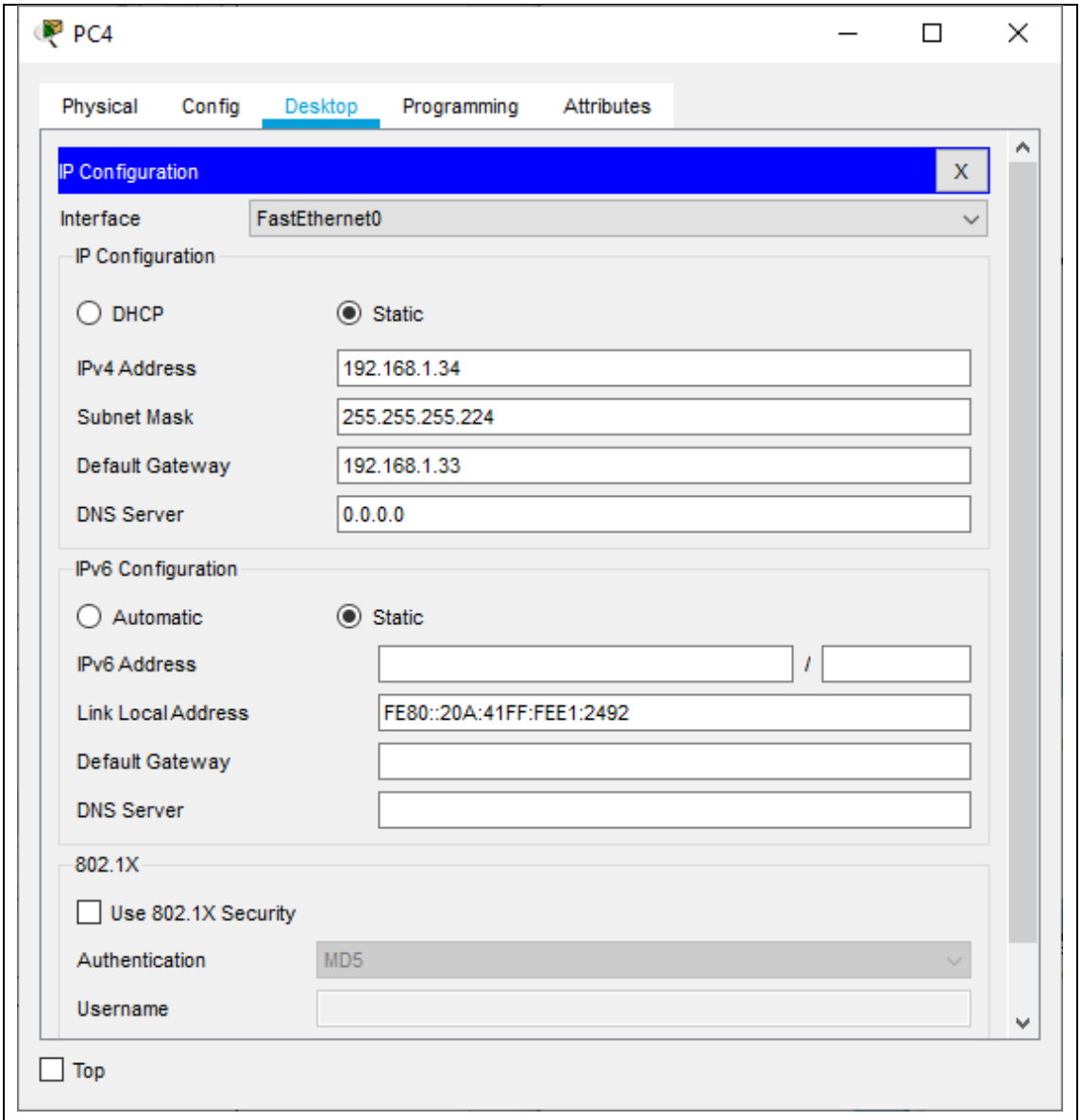
Screenshot PC2



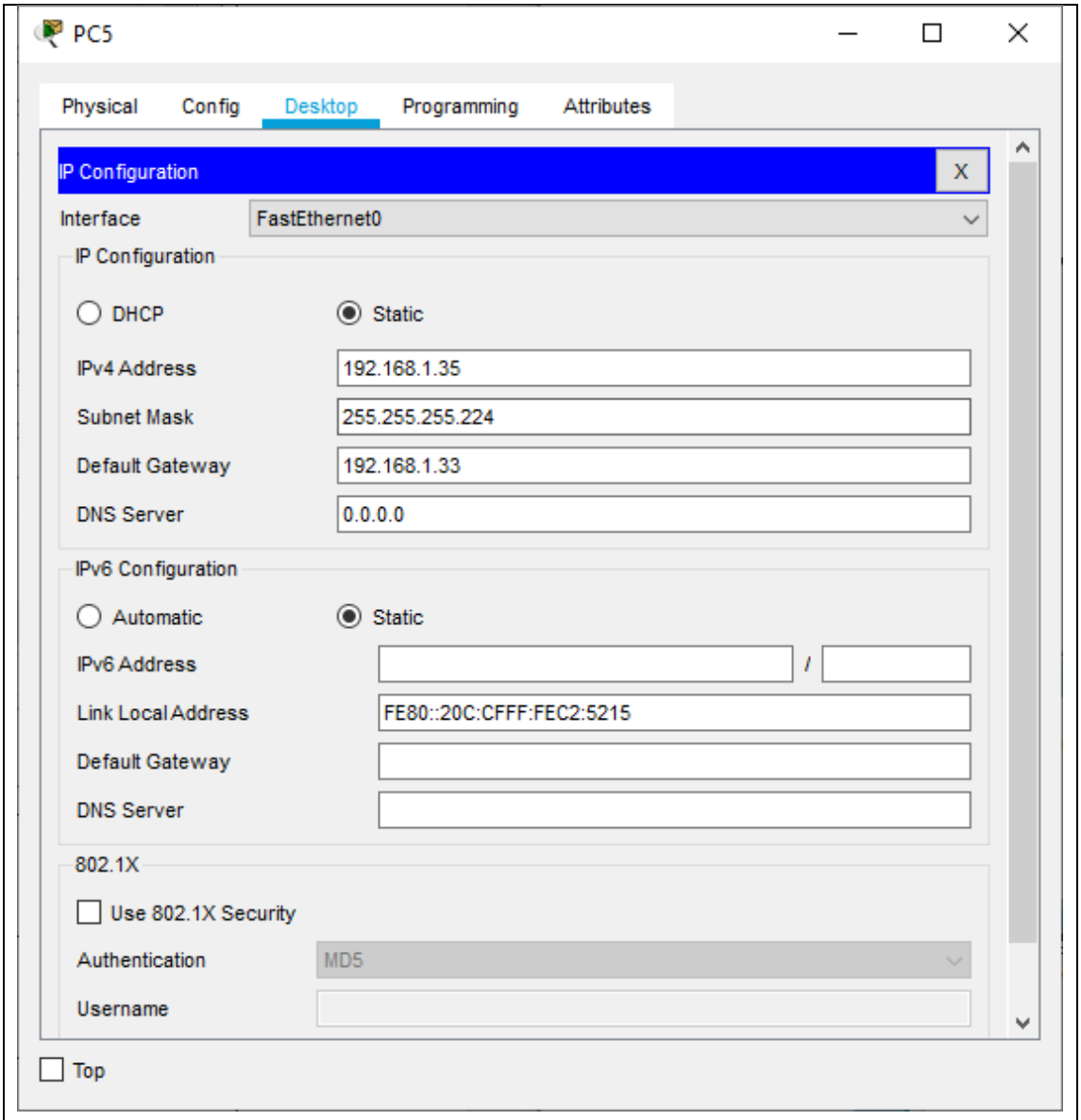
Screenshot PC3



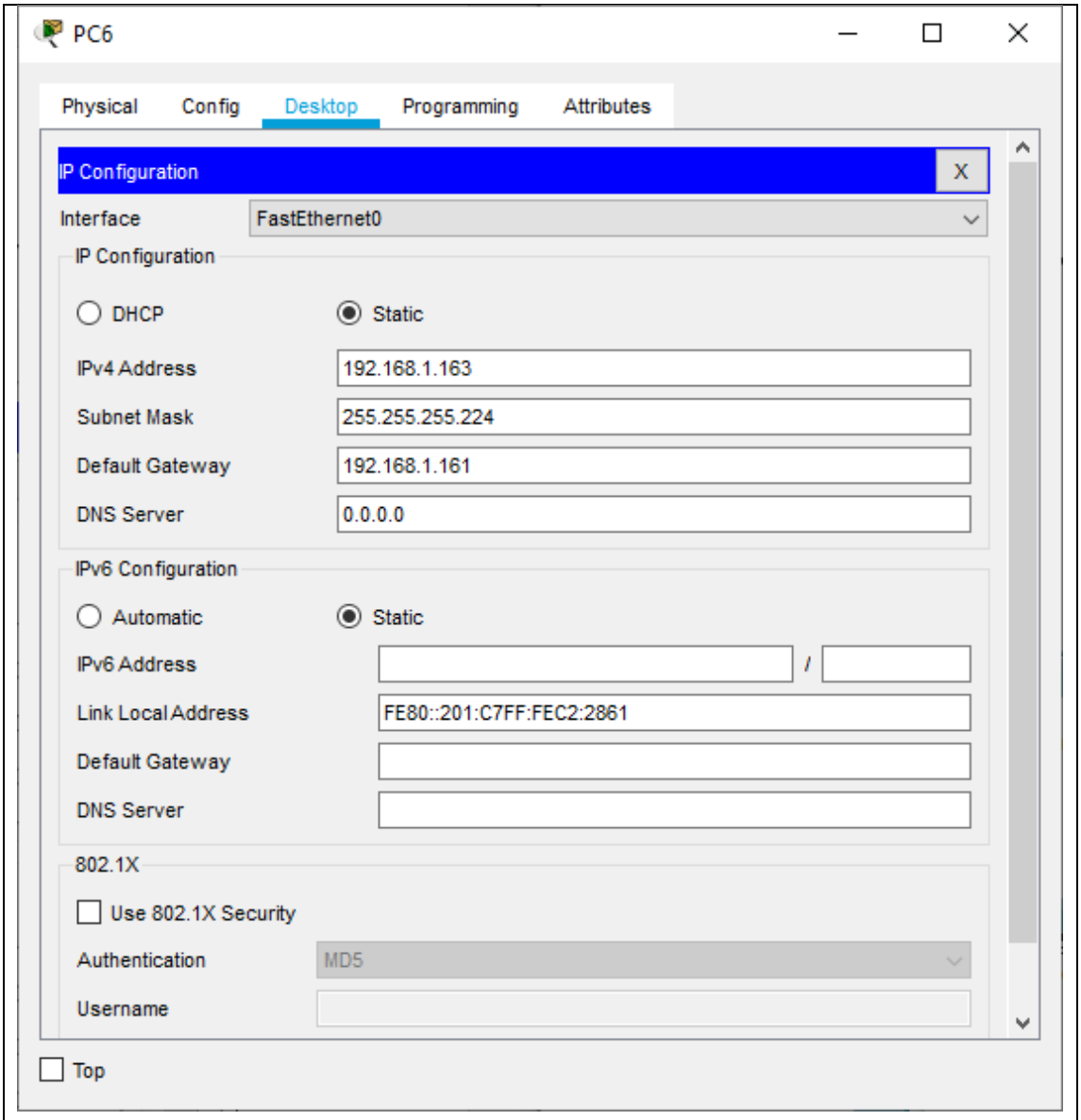
Screenshot PC4



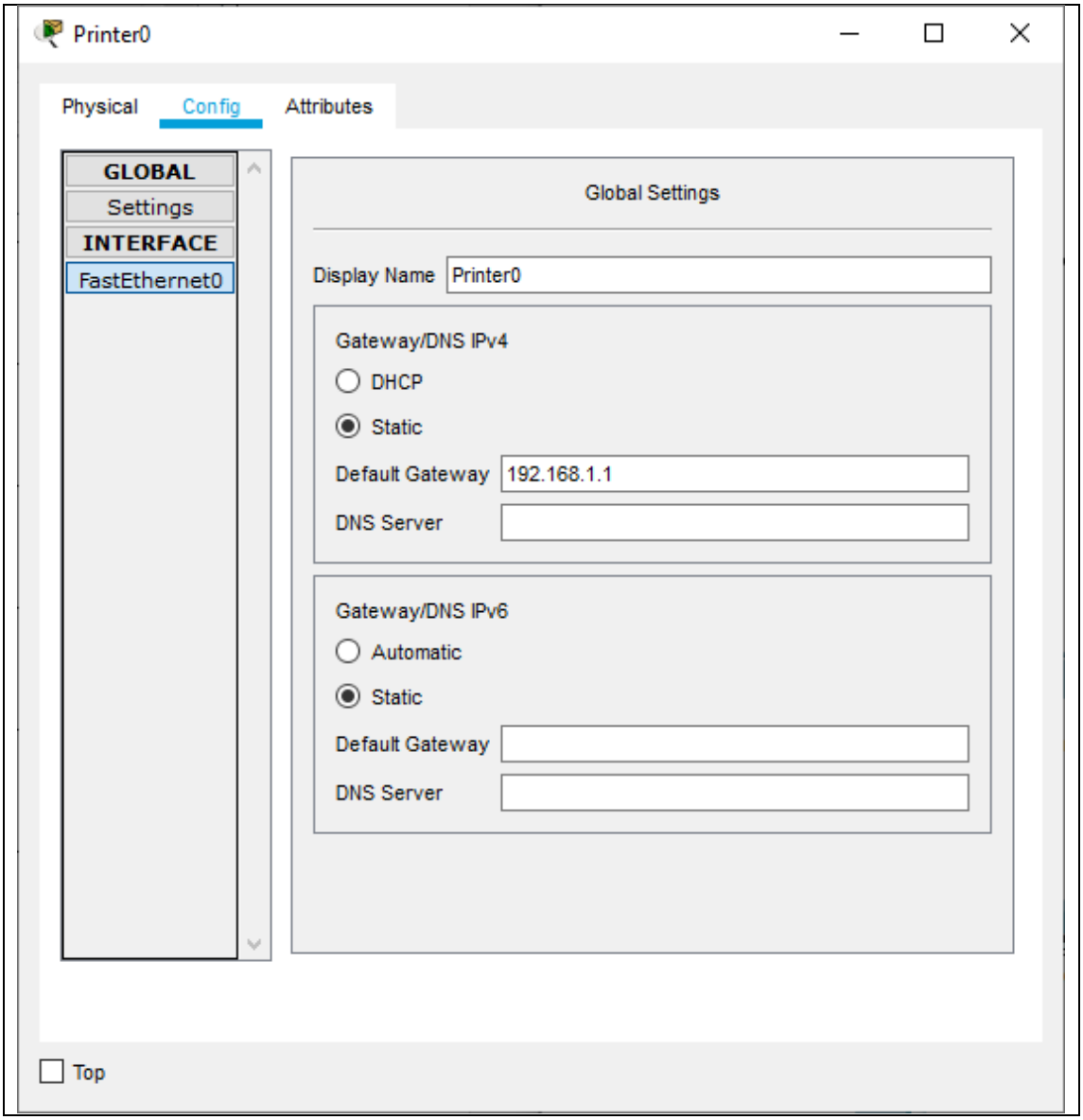
Screenshot PC5

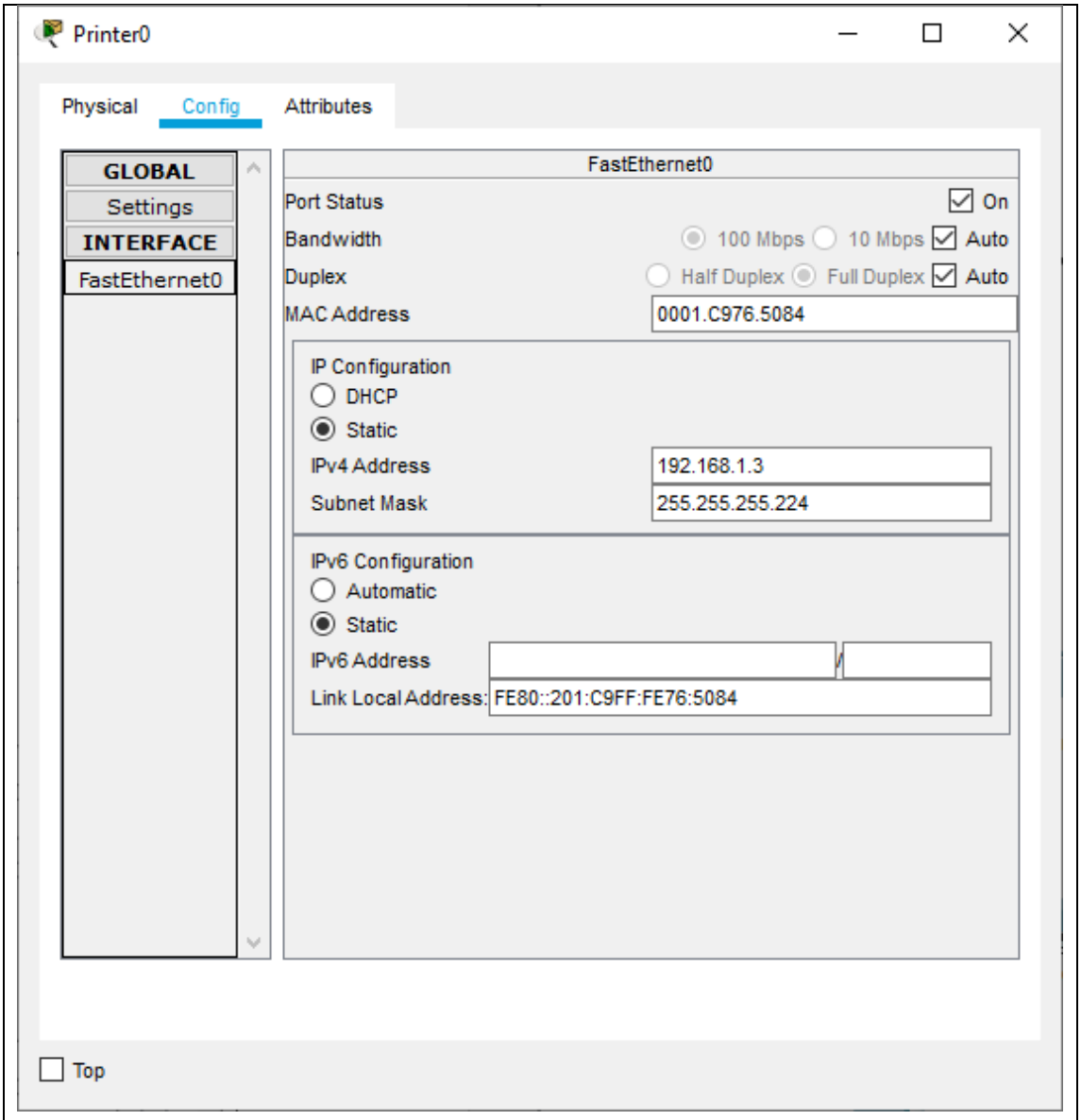


Screenshot PC6

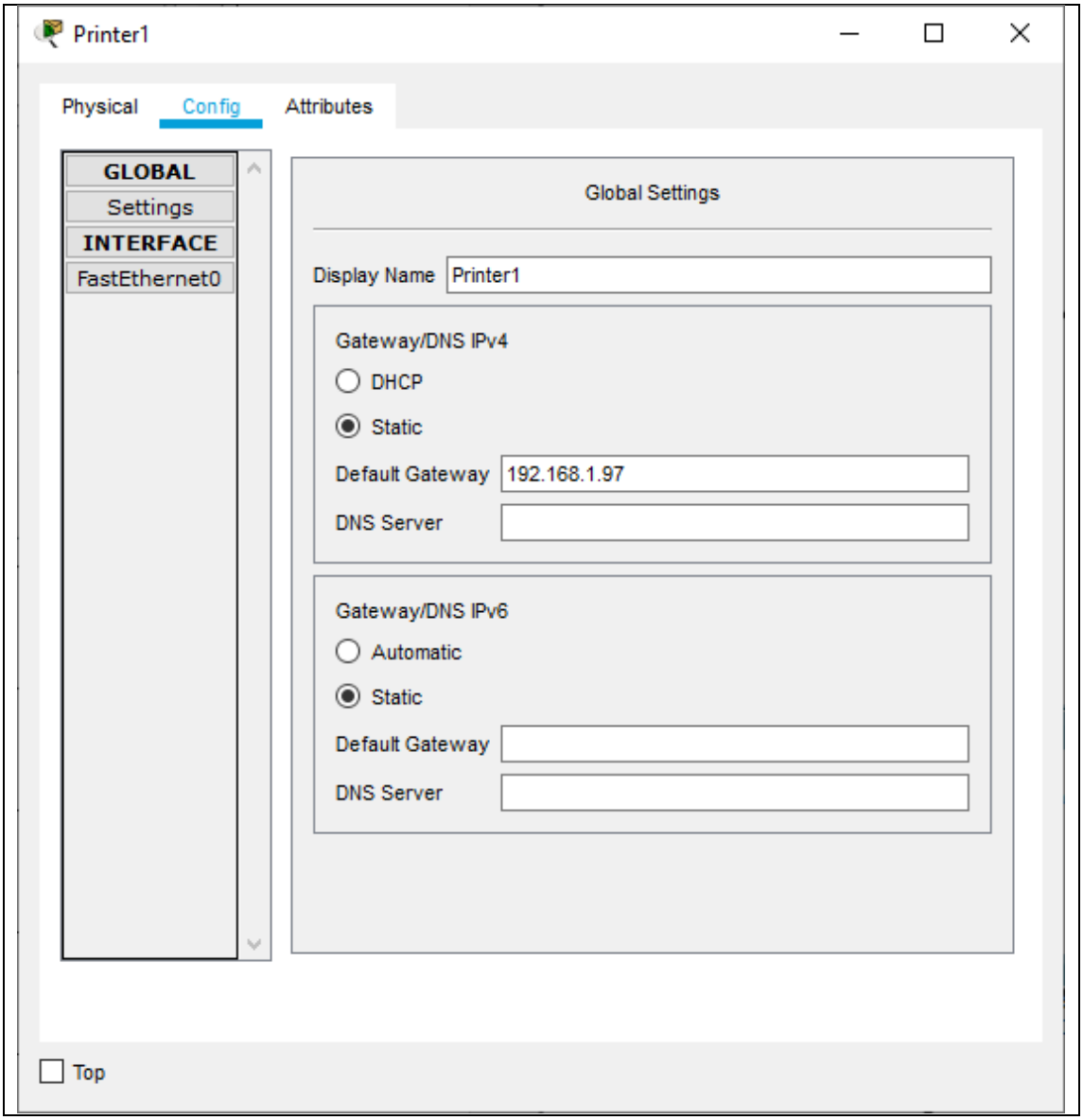


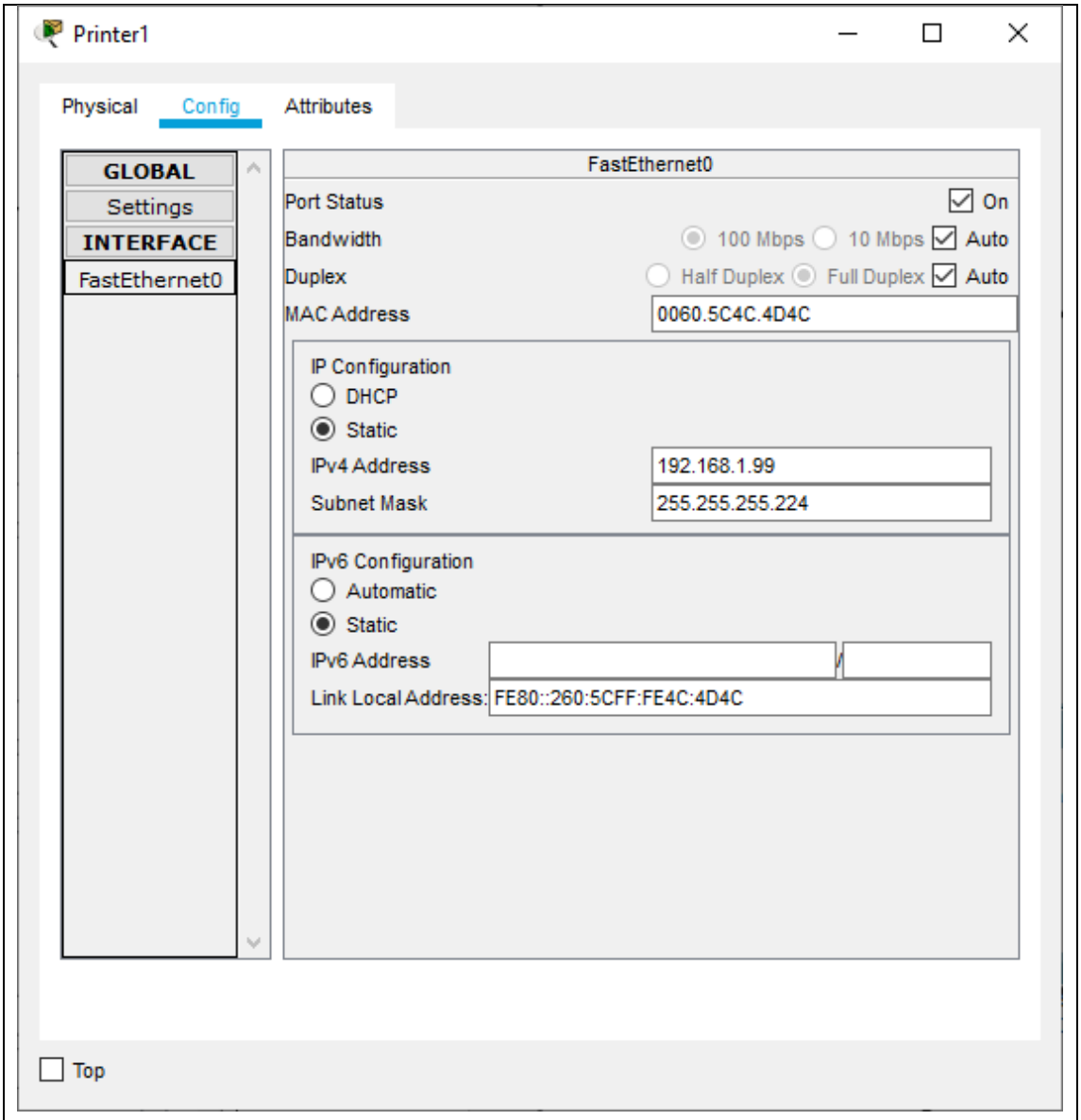
Screenshot Printer0


Printer0
Physical
Config
Attributes
GLOBAL
Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
Printer0
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.1.1
DNS Server
Gateway/DNS IPv6
Automatic
Static
Default Gateway
DNS Server
Top

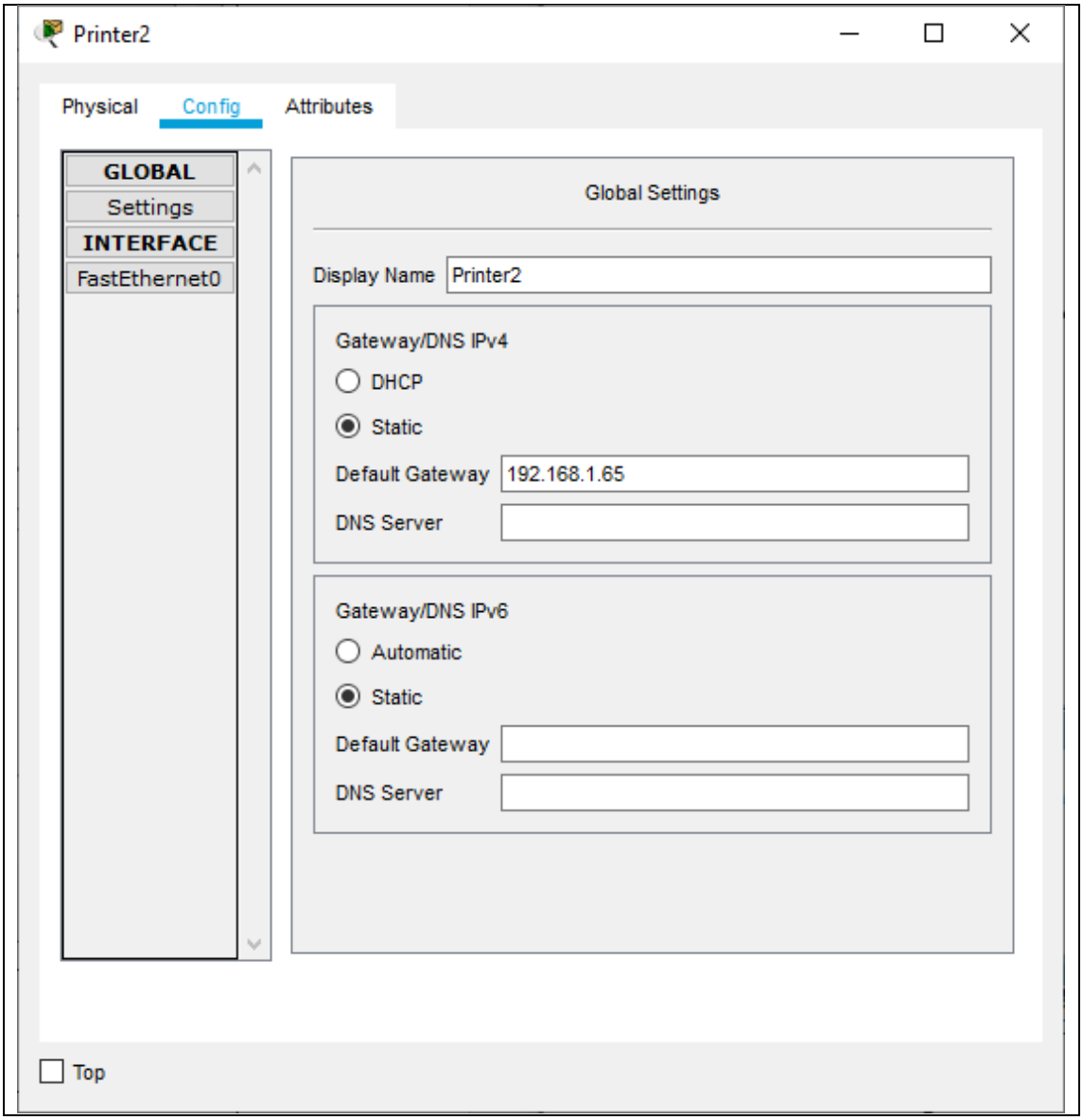


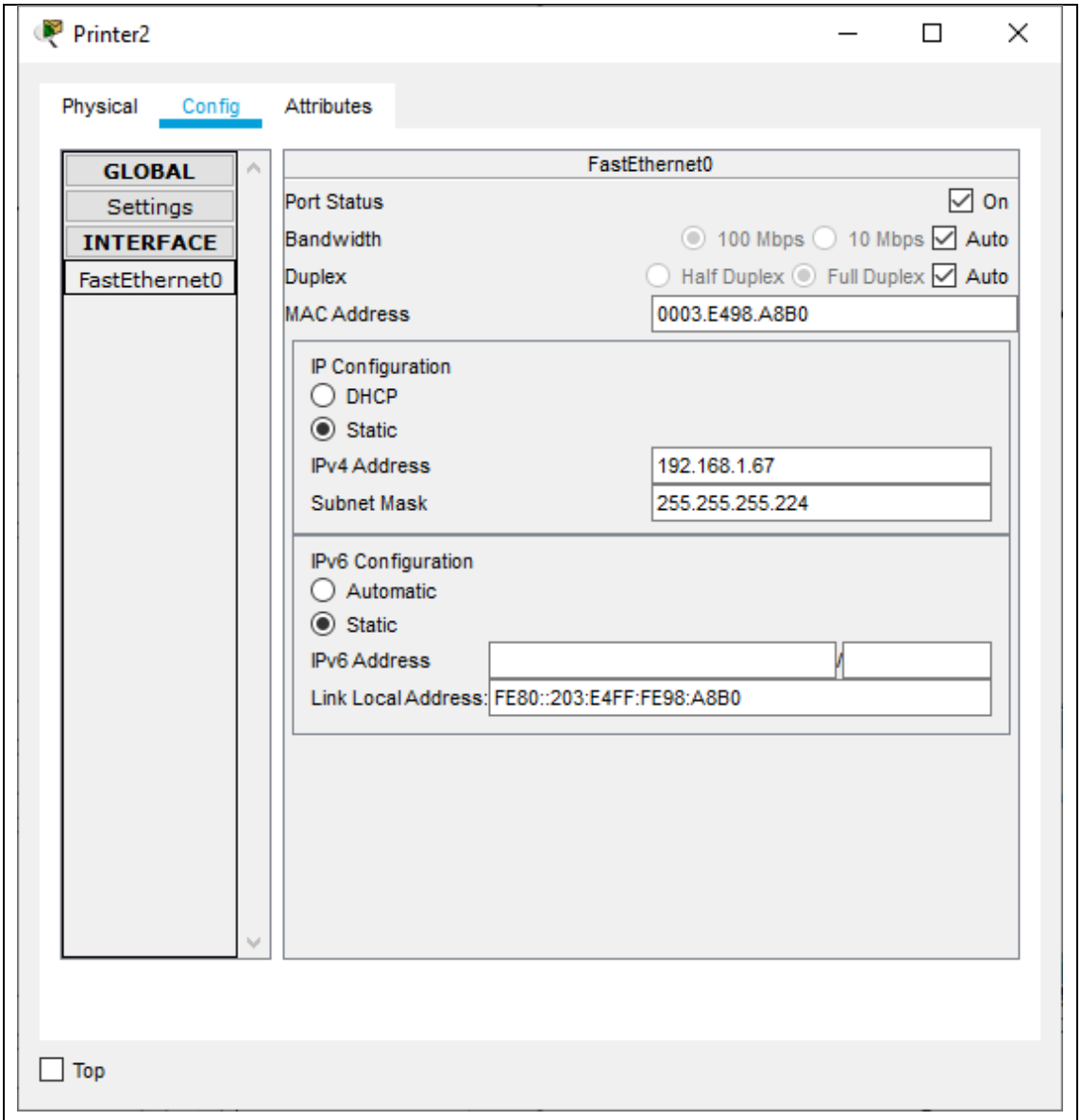
Screenshot Printer1


Printer1
Physical
Config
Attributes
GLOBAL
Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
Printer1
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.1.97
DNS Server
Gateway/DNS IPv6
Automatic
Static
Default Gateway
DNS Server
Top

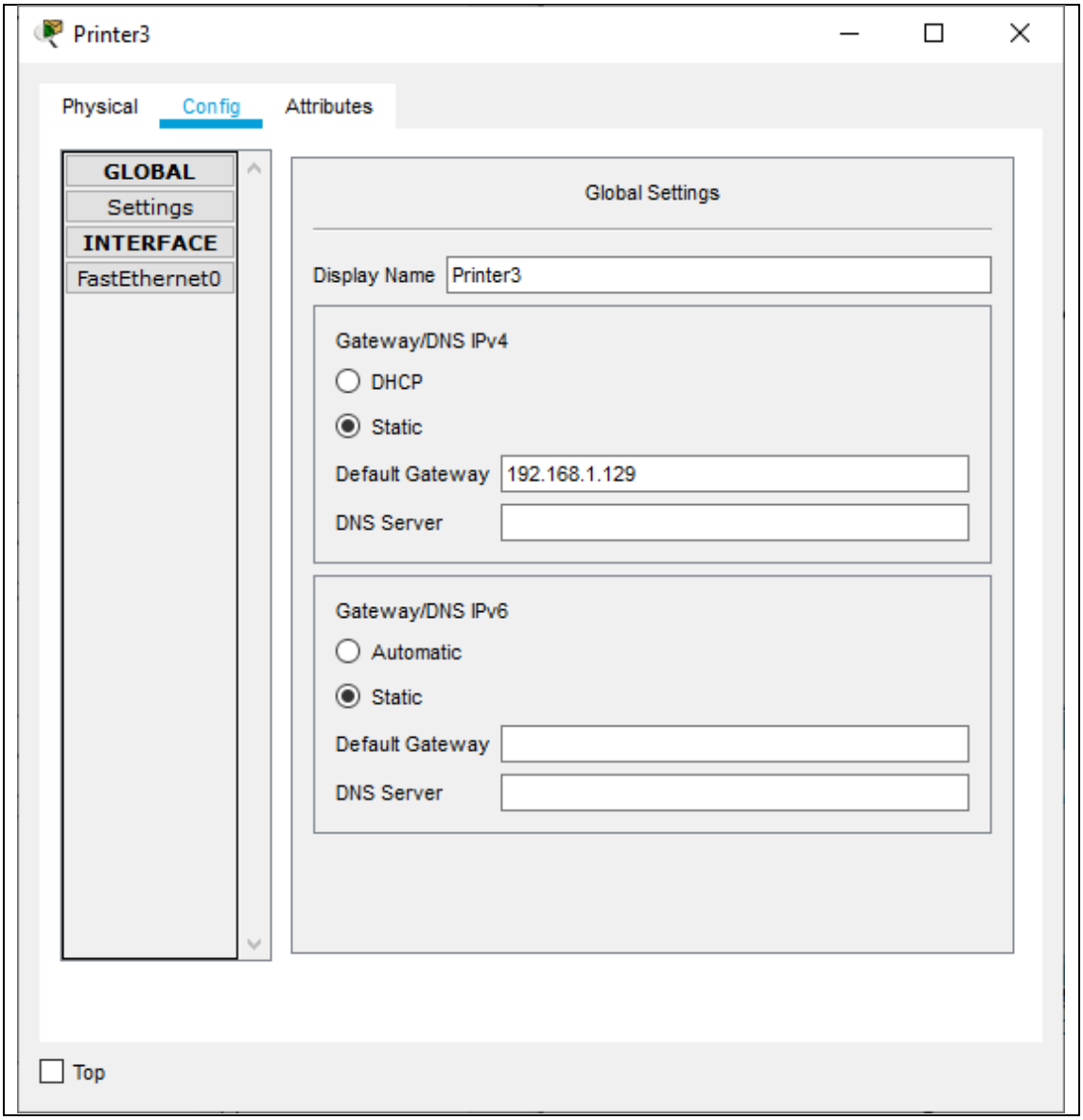


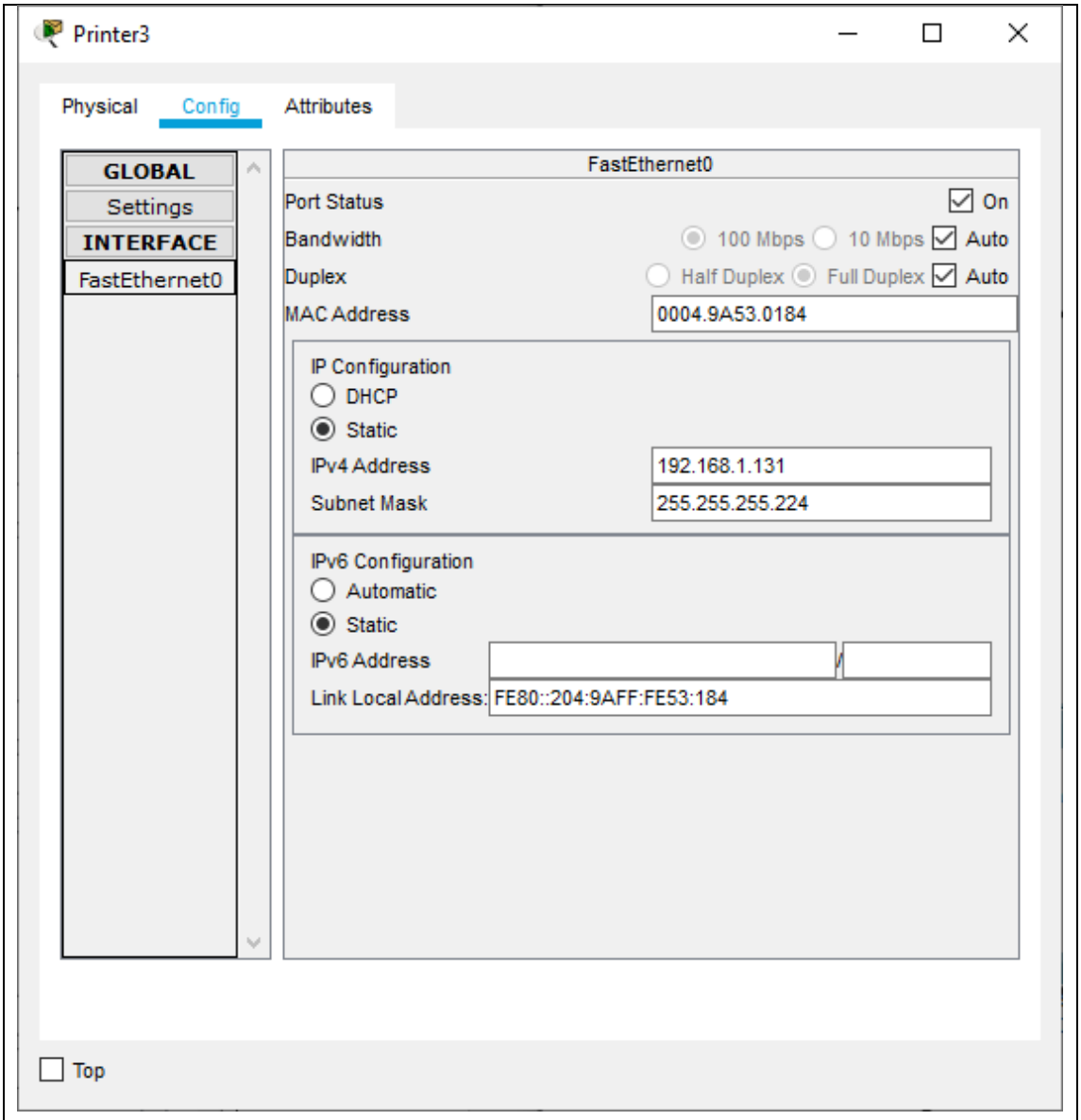
Screenshot Printer2


Printer2
Physical
Config
Attributes
GLOBAL
Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
Printer2
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.1.65
DNS Server
Gateway/DNS IPv6
Automatic
Static
Default Gateway
DNS Server
Top

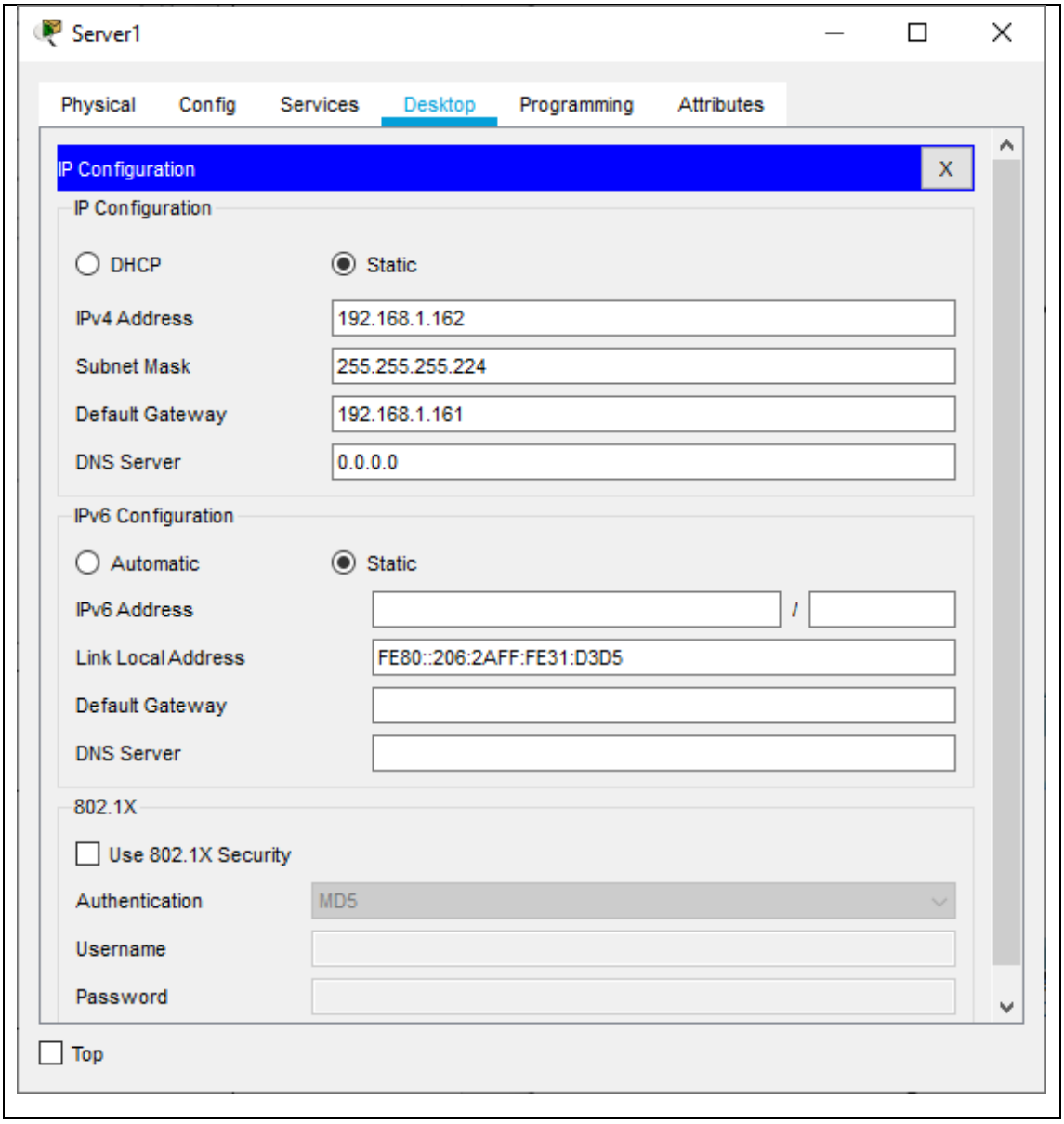


Screenshot Printer3


Printer3
Physical
Config
Attributes
GLOBAL
Settings
INTERFACE
FastEthernet0
Global Settings
Display Name
Printer3
Gateway/DNS IPv4
DHCP
Static
Default Gateway
192.168.1.129
DNS Server
Gateway/DNS IPv6
Automatic
Static
Default Gateway
DNS Server
Top



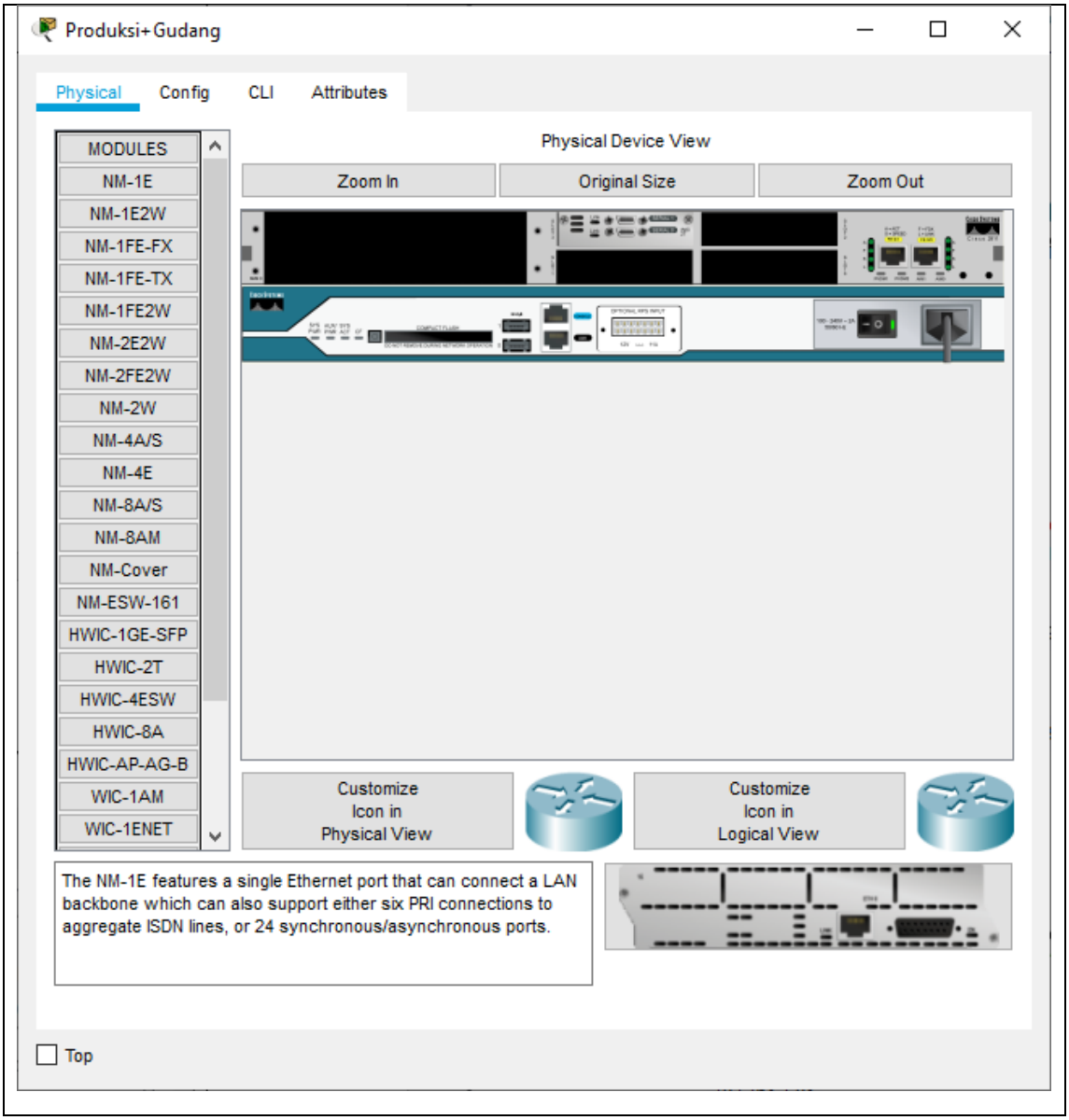
Screenshot Server1

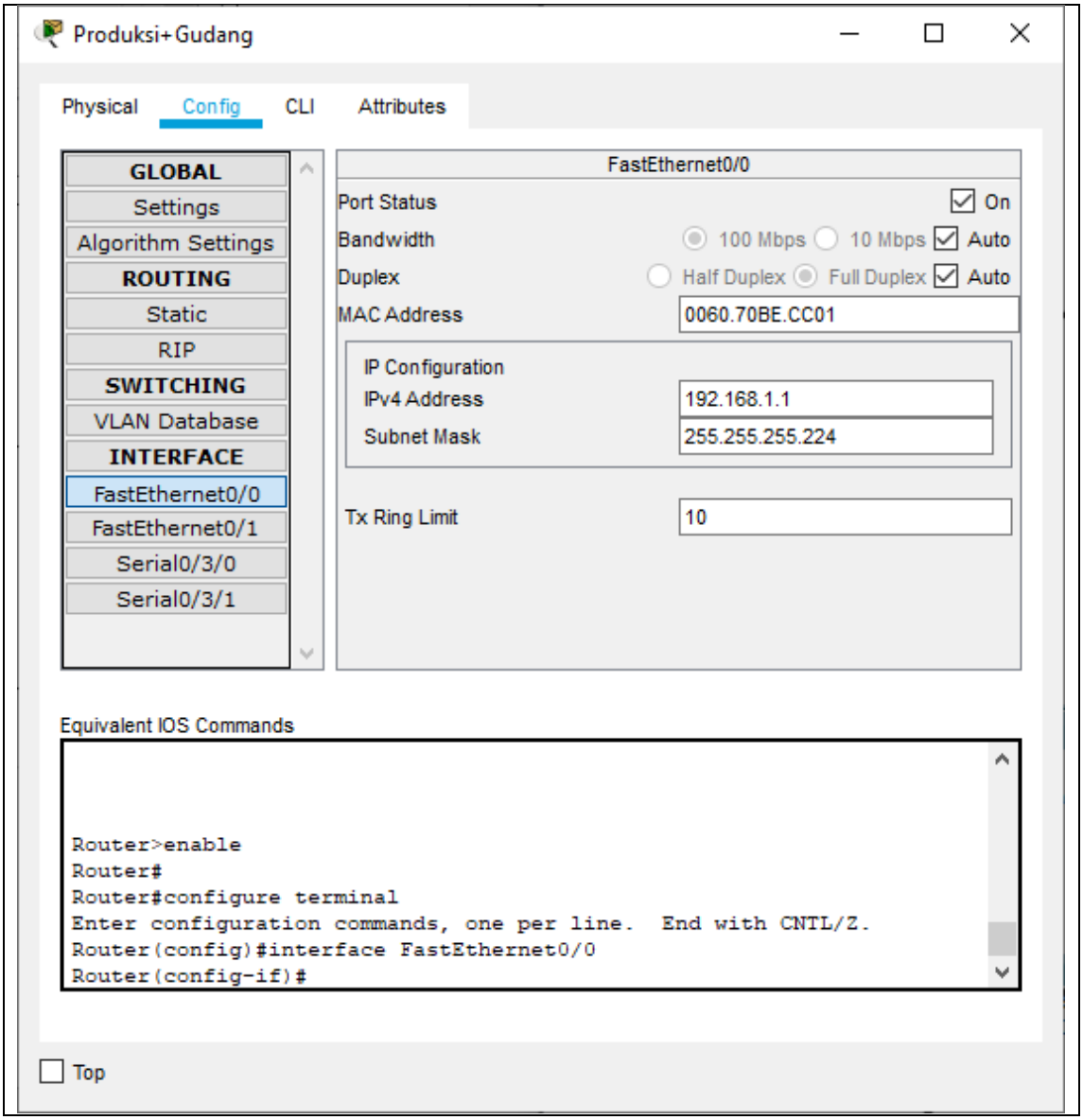


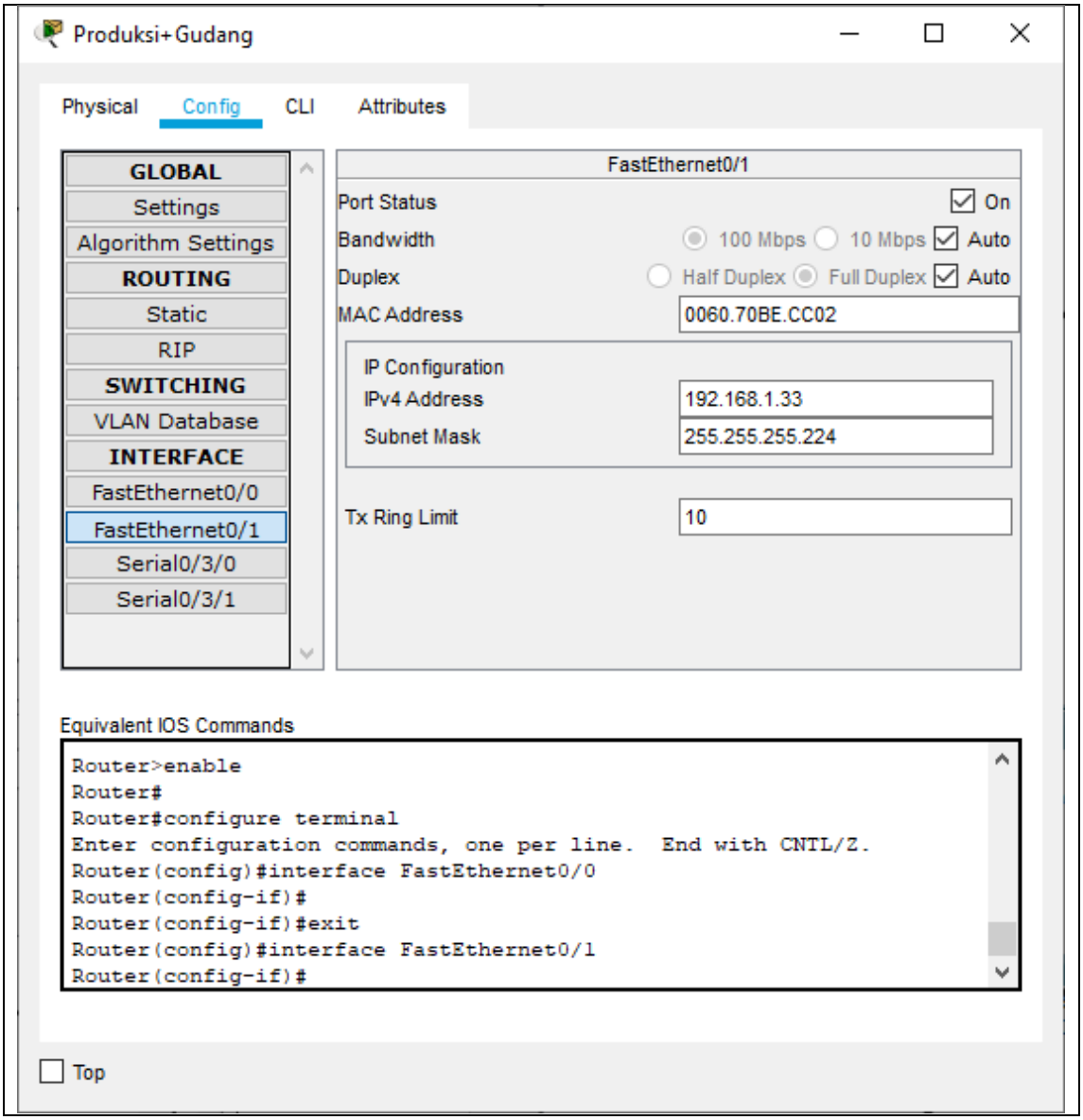
3. [Konfigurasi Router]

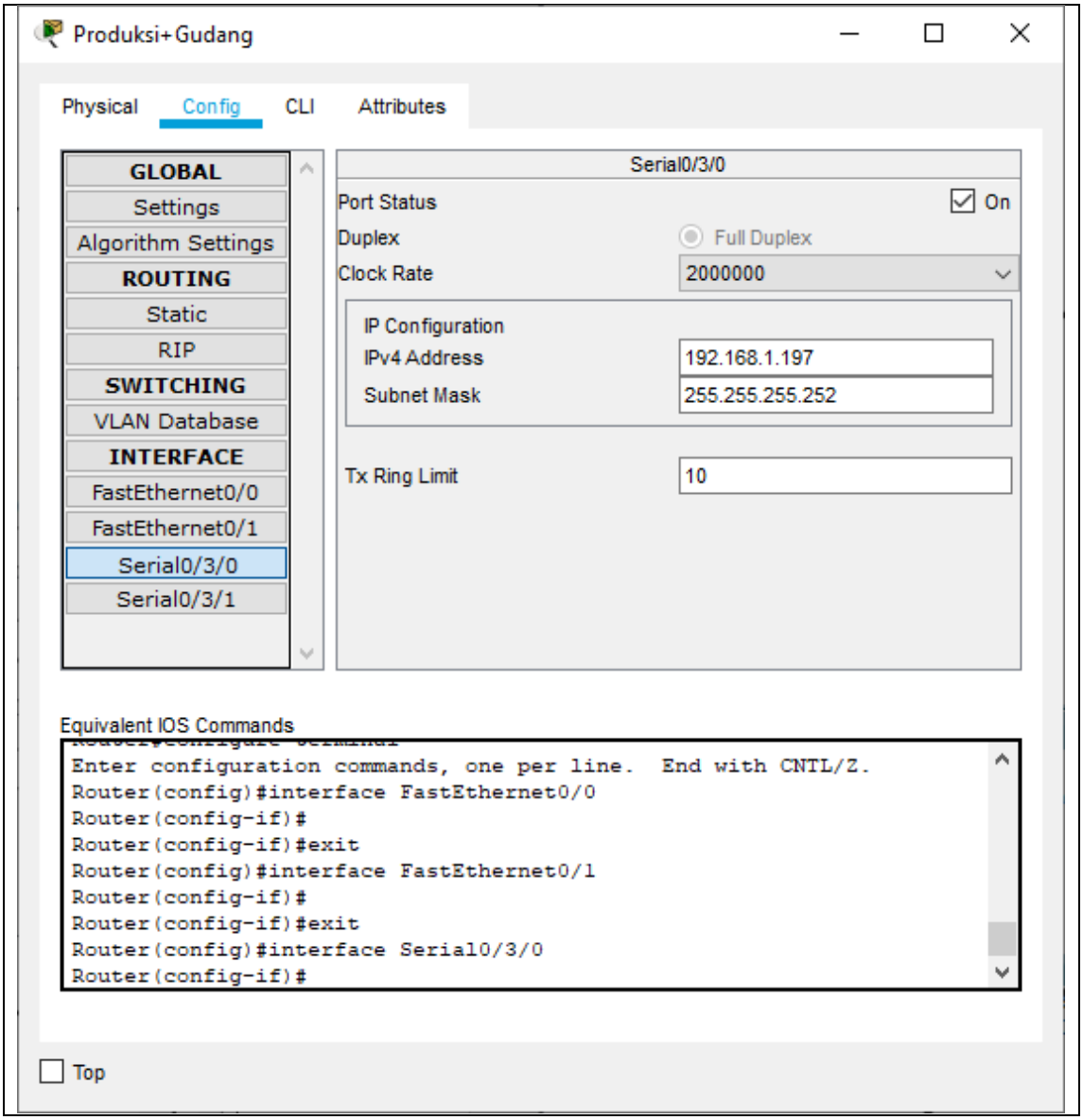
a. Screenshot konfigurasi router

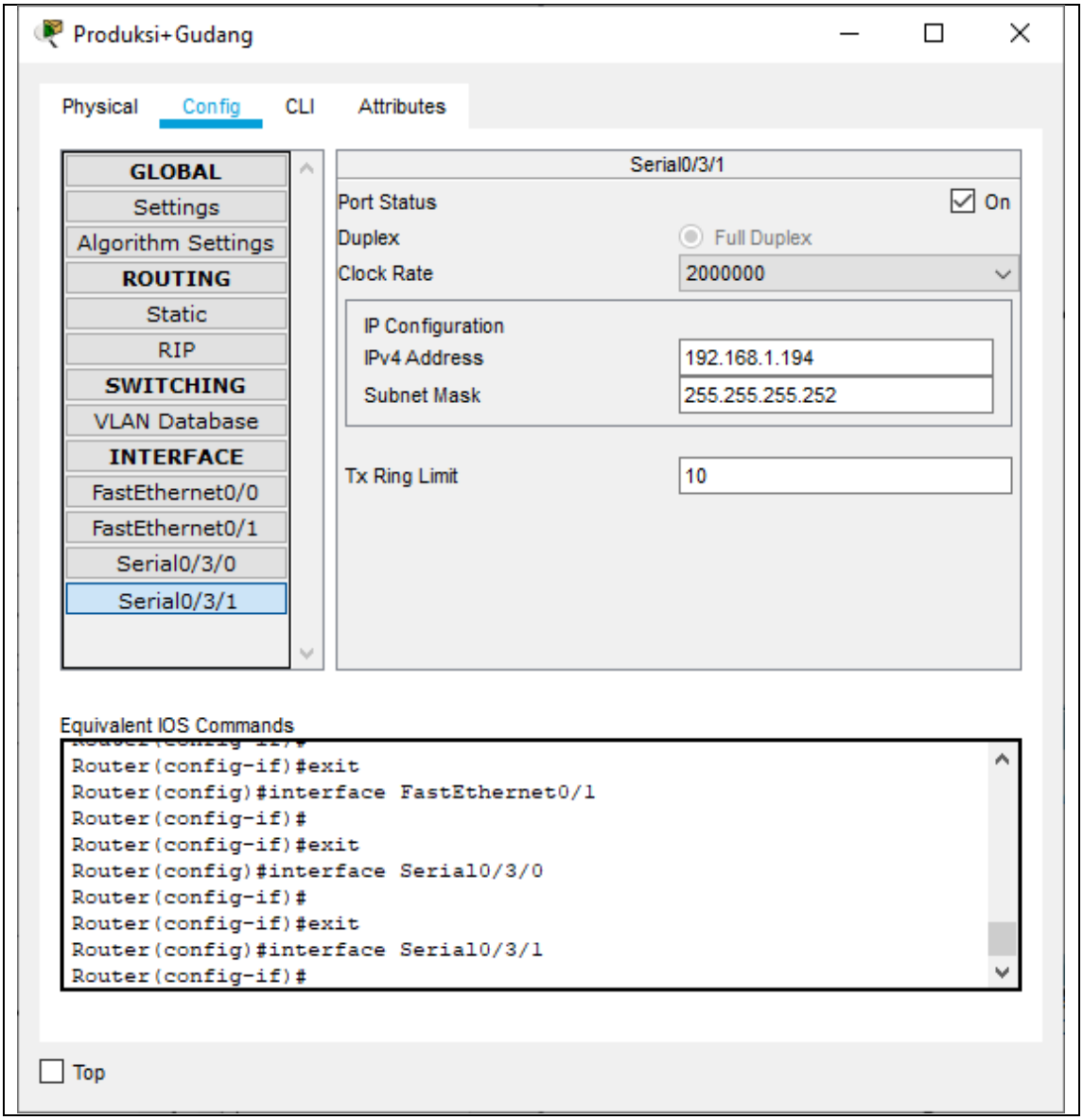
Router Produksi + Gudang

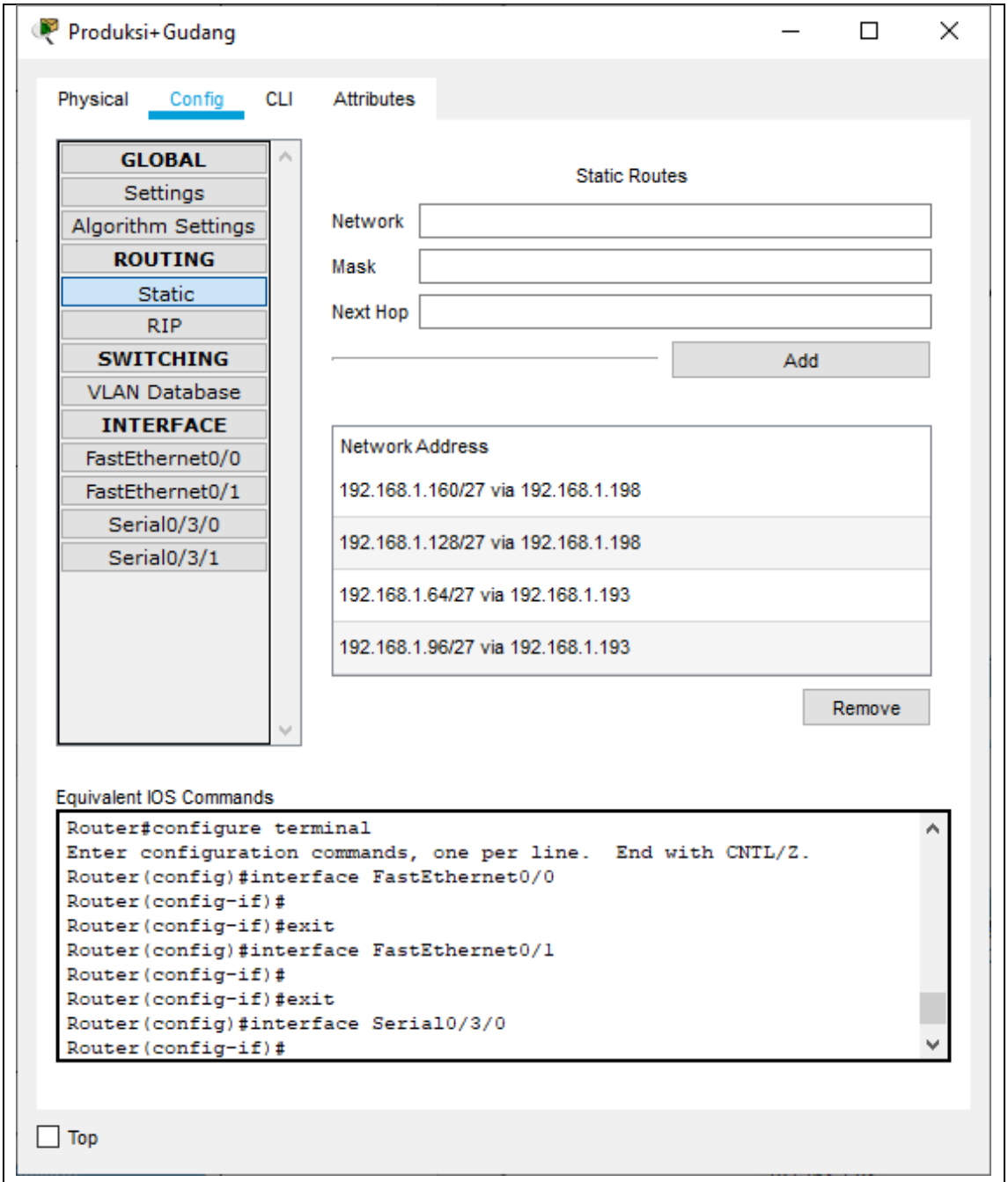

Produksi+Gudang
Physical
Config
CLI
Attributes
MODULES
NM-1E
NM-1E2W
NM-1FE-FX
NM-1FE-TX
NM-1FE2W
NM-2E2W
NM-2FE2W
NM-2W
NM-4A/S
NM-4E
NM-8A/S
NM-8AM
NM-Cover
NM-ESW-161
HWIC-1GE-SFP
HWIC-2T
HWIC-4ESW
HWIC-8A
HWIC-AP-AG-B
WIC-1AM
WIC-1ENET
Physical Device View
Zoom In
Original Size
Zoom Out
Customize Icon in Physical View
Customize Icon in Logical View
The NM-1E features a single Ethernet port that can connect a LAN backbone which can also support either six PRI connections to aggregate ISDN lines, or 24 synchronous/asynchronous ports.
Top


Produksi+Gudang
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0060.70BE.CC01
IP Configuration
IPv4 Address
192.168.1.1
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Top

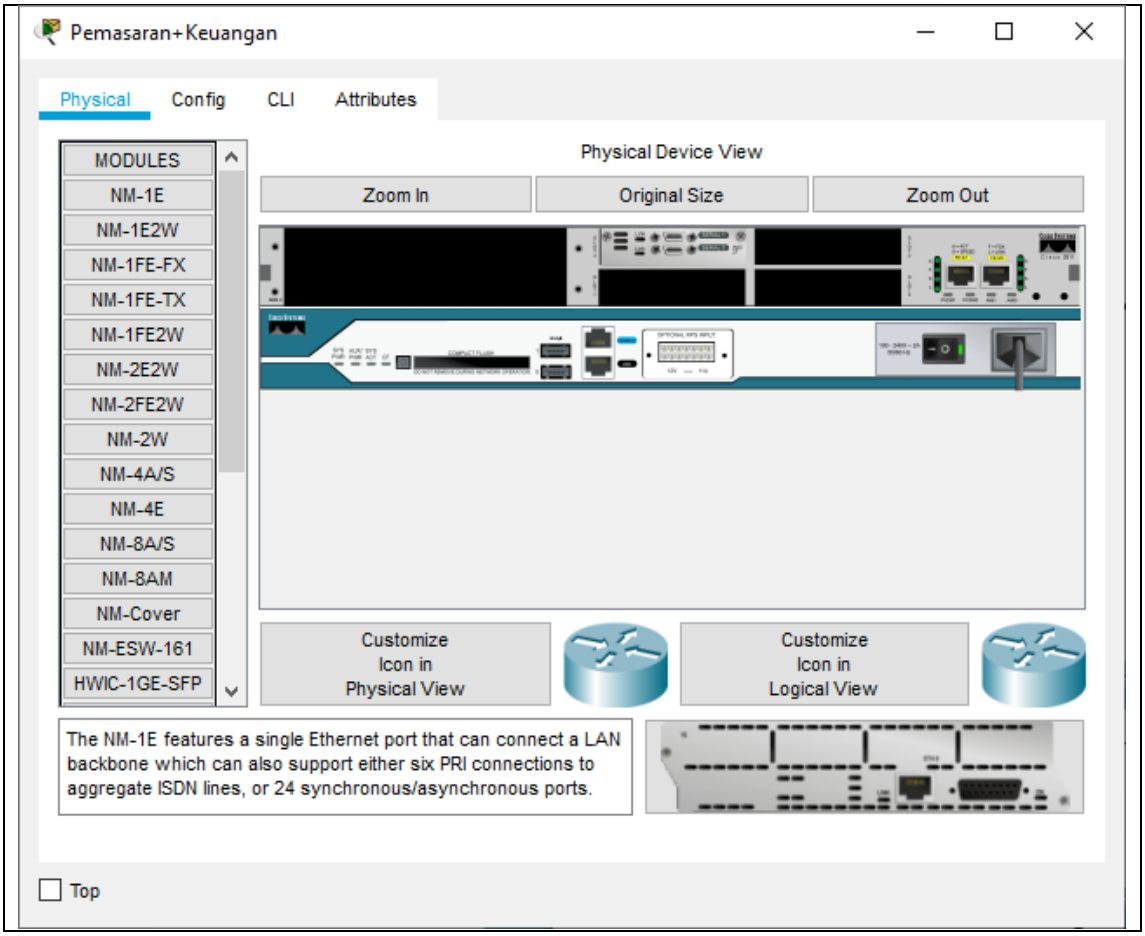

Produksi+Gudang
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0060.70BE.CC02
IP Configuration
IPv4 Address
192.168.1.33
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Top

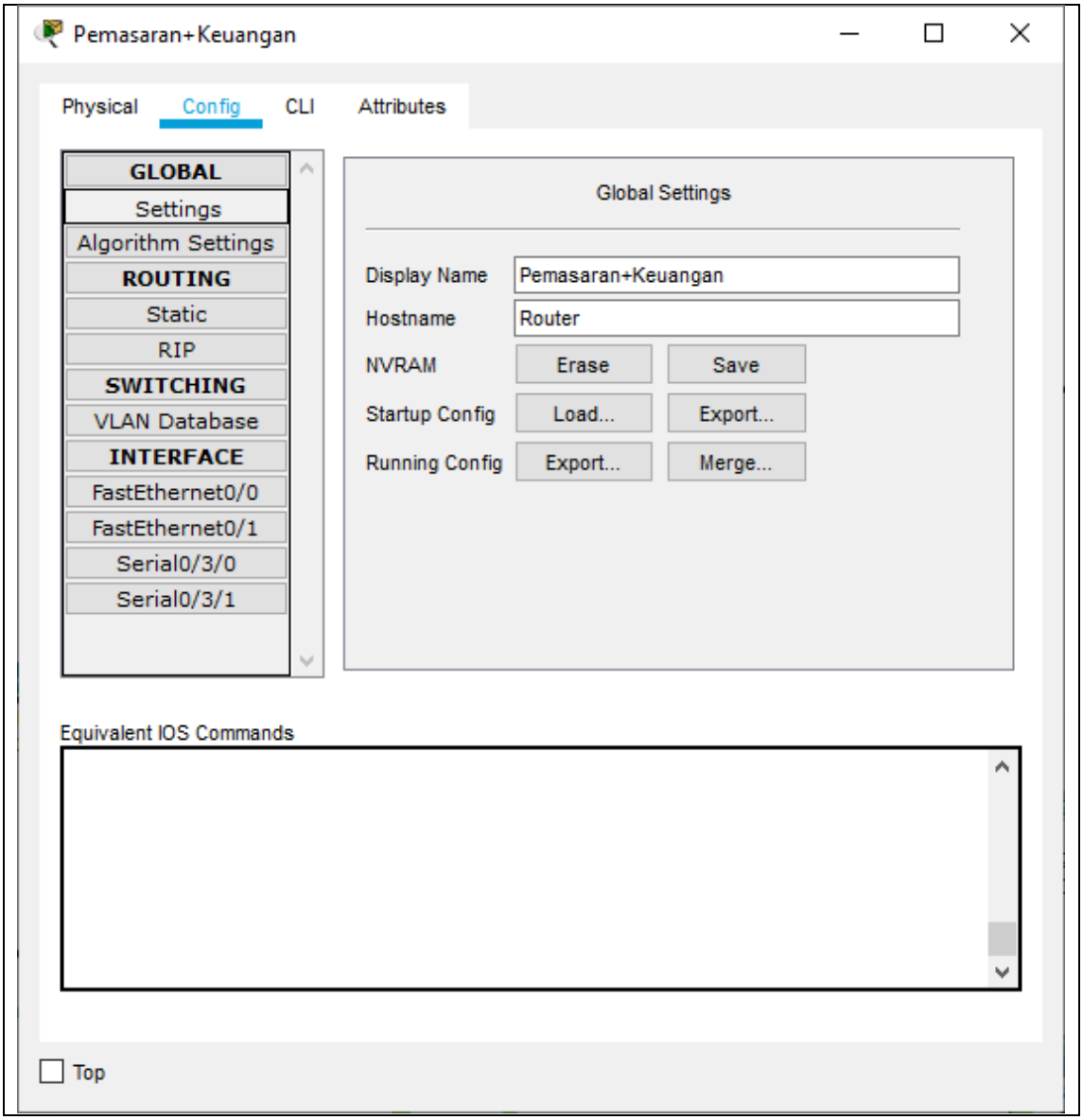

Produksi+Gudang
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Serial0/3/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.1.197
Subnet Mask
255.255.255.252
Tx Ring Limit
10
Equivalent IOS Commands
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#
Top

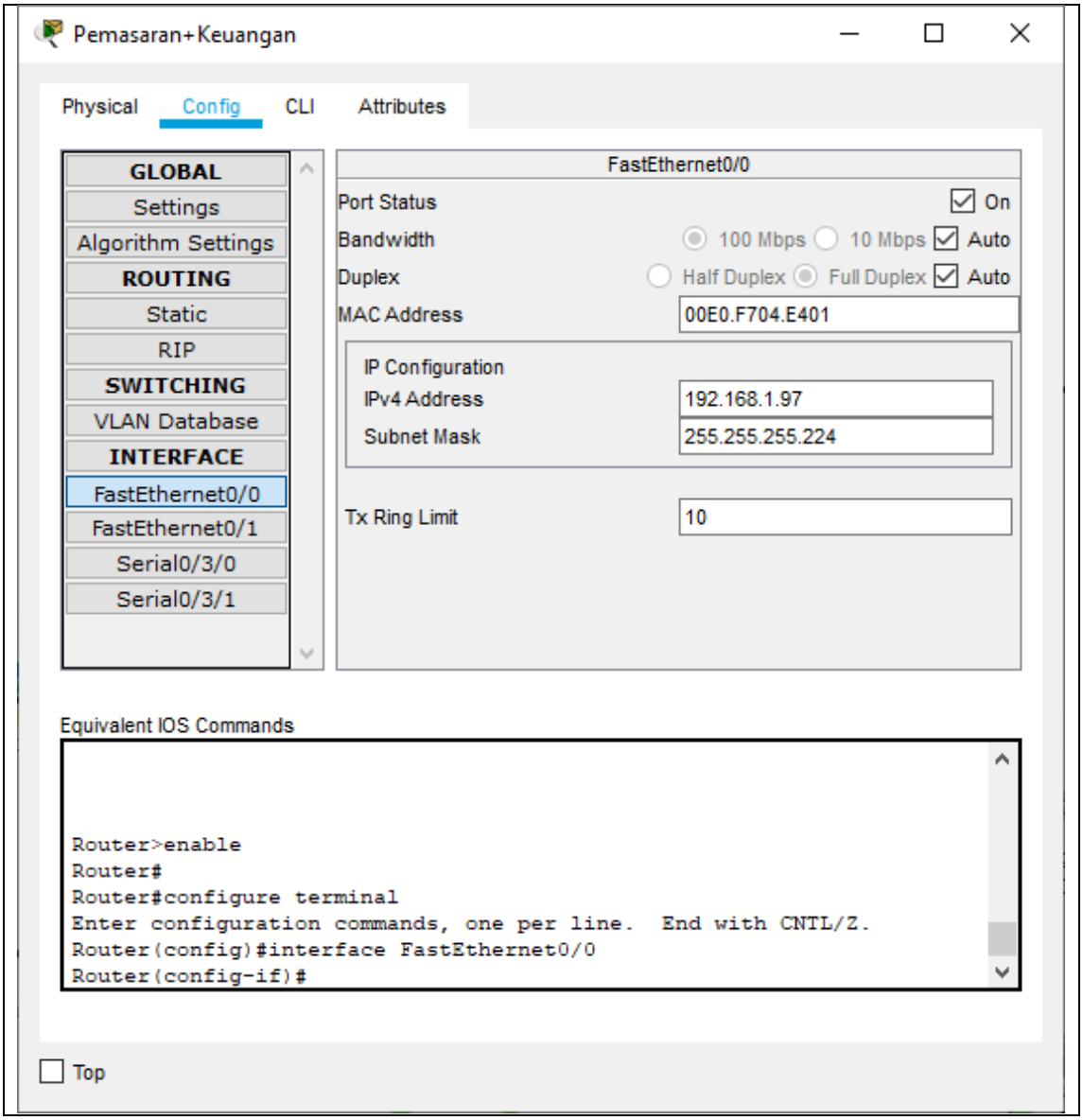

Produksi+Gudang
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Serial0/3/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.1.194
Subnet Mask
255.255.255.252
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/1
Router(config-if)#
Top

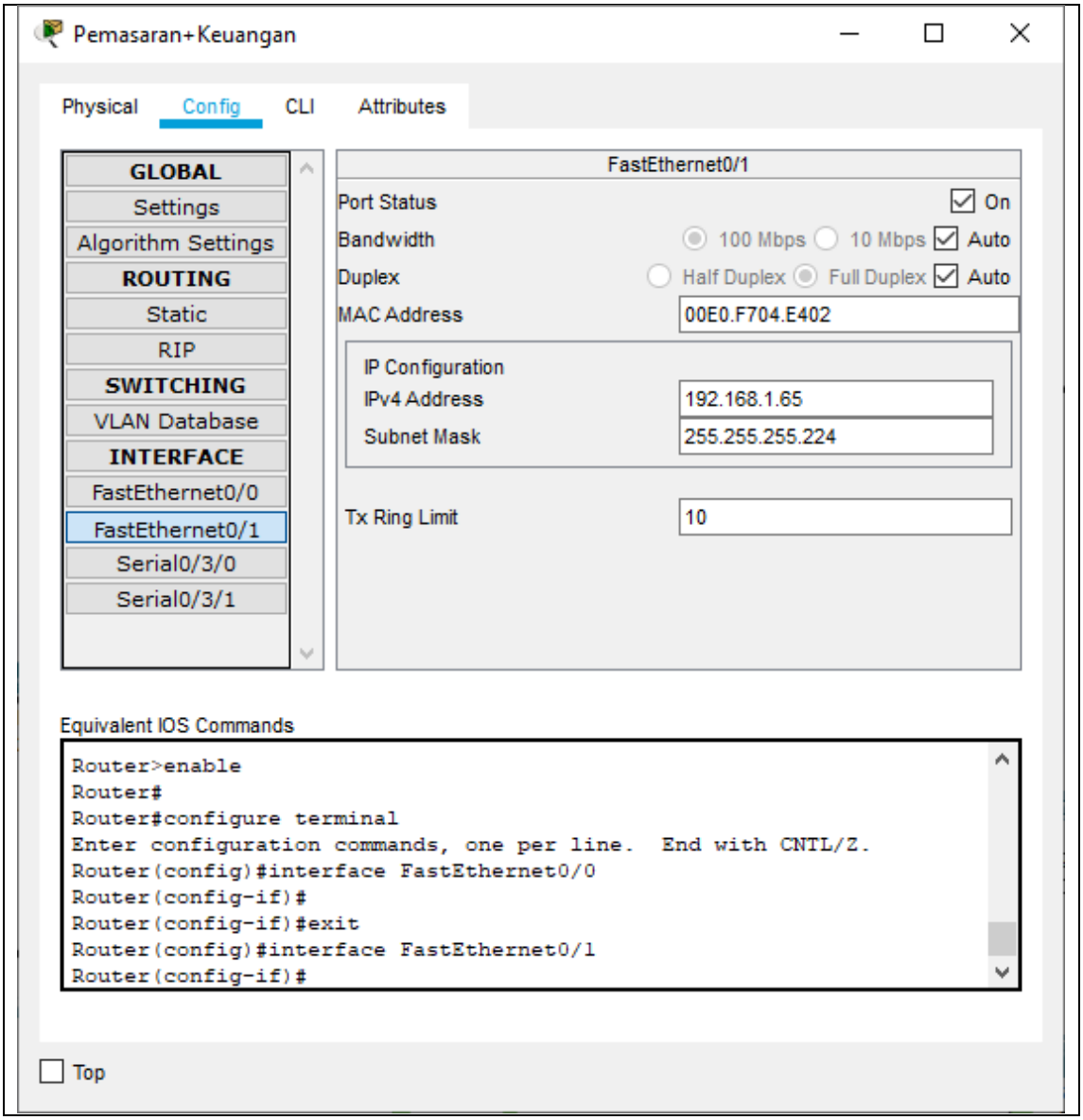


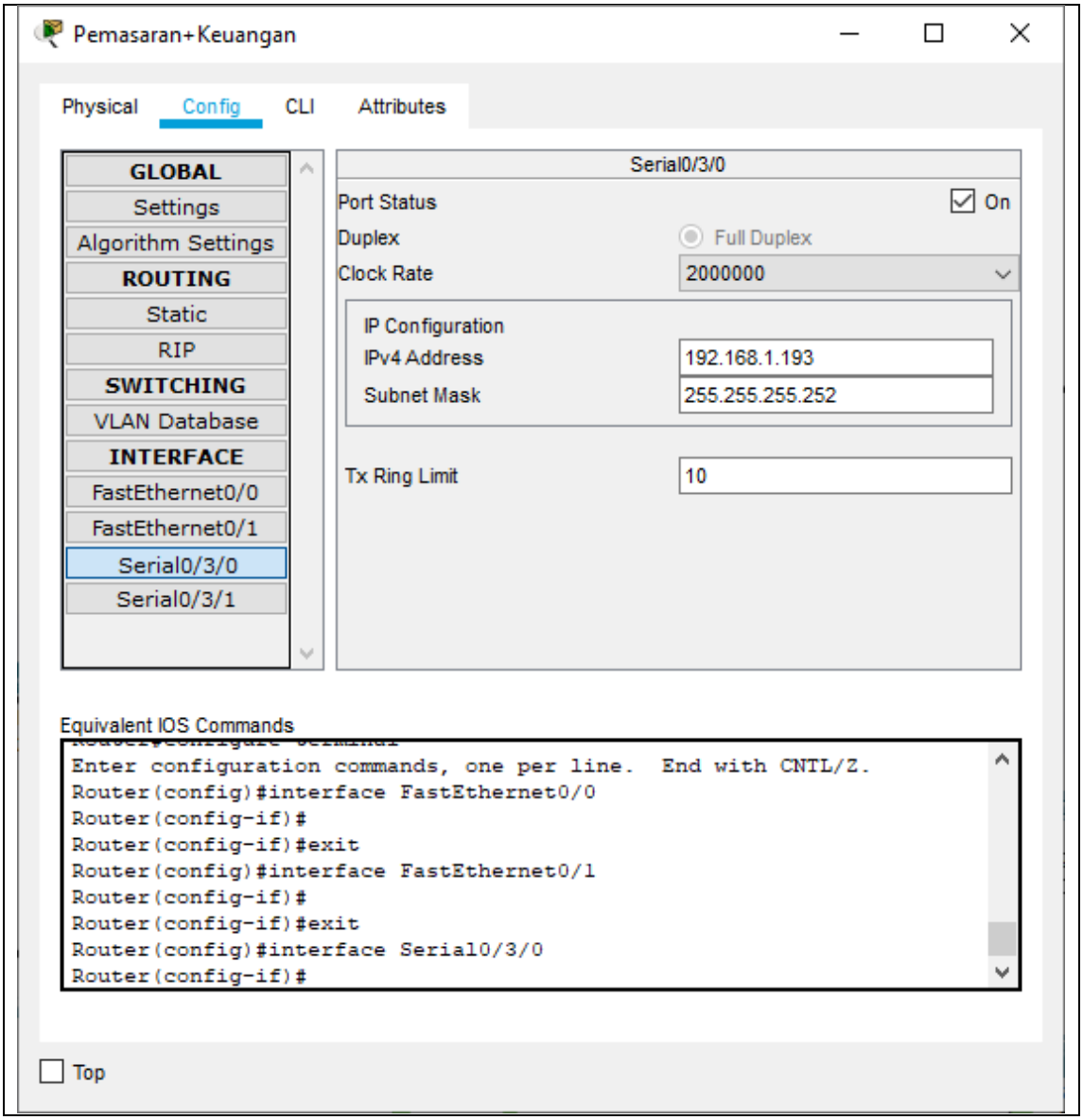
Router Pemasaran & Keuangan

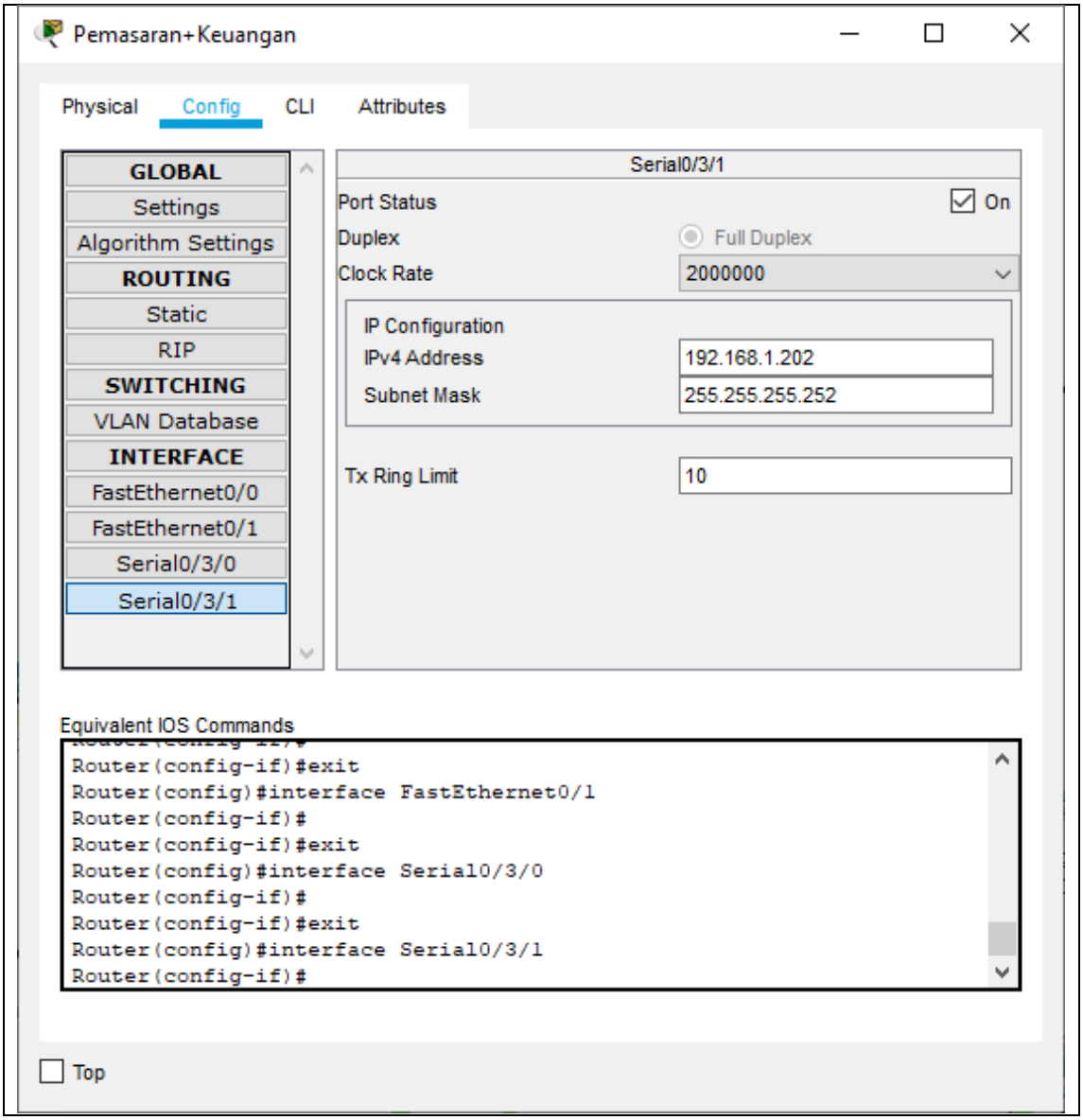

Pemasaran+Keuangan
Physical
Config
CLI
Attributes
MODULES
NM-1E
NM-1E2W
NM-1FE-FX
NM-1FE-TX
NM-1FE2W
NM-2E2W
NM-2FE2W
NM-2W
NM-4A/S
NM-4E
NM-8A/S
NM-8AM
NM-Cover
NM-ESW-161
HWIC-1GE-SFP
Physical Device View
Zoom In
Original Size
Zoom Out
Customize Icon in Physical View
Customize Icon in Logical View
The NM-1E features a single Ethernet port that can connect a LAN backbone which can also support either six PRI connections to aggregate ISDN lines, or 24 synchronous/asynchronous ports.
Top

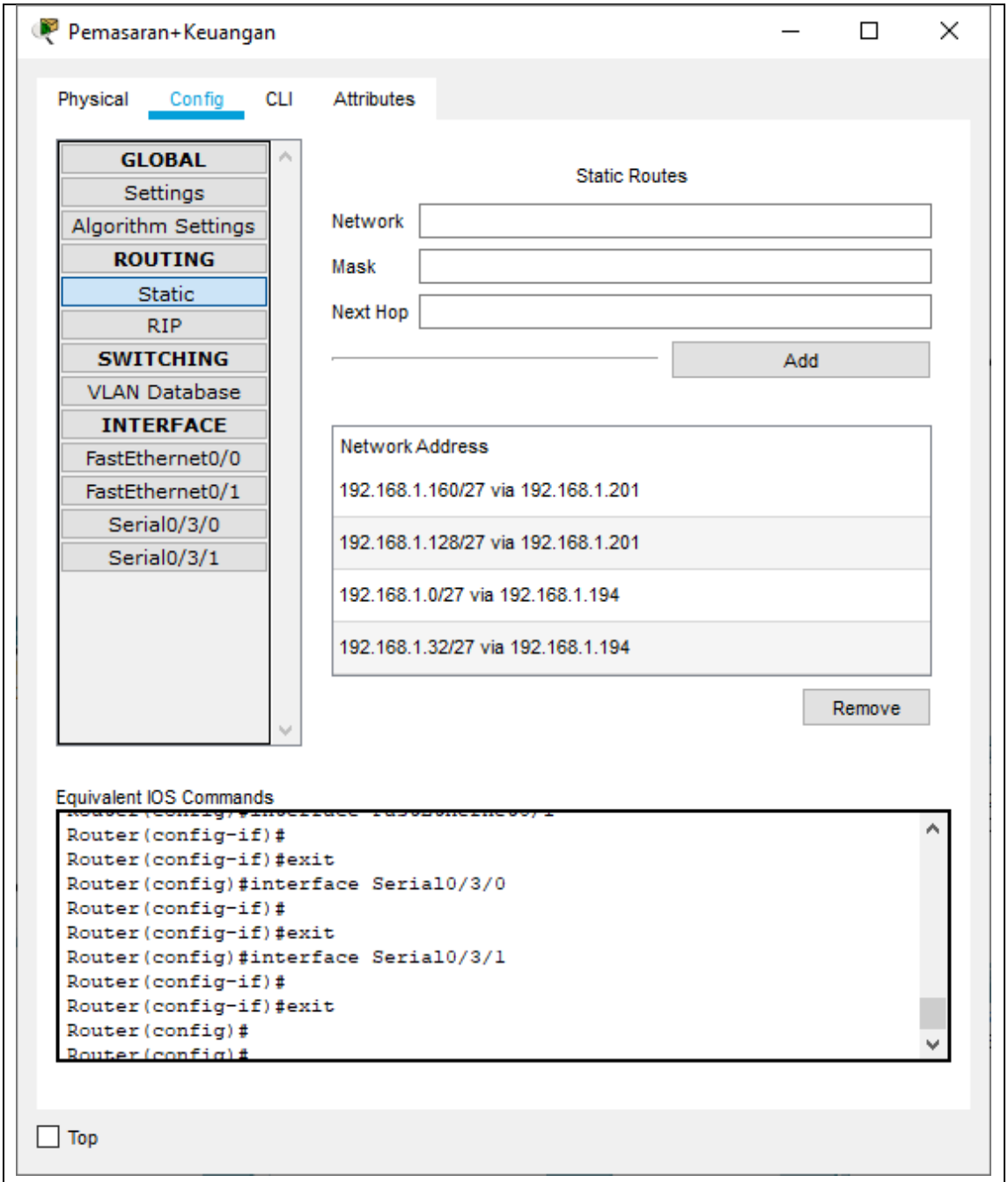

Pemasaran+Keuangan
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Global Settings
Display Name
Pemasaran+Keuangan
Hostname
Router
NVRAM
Erase
Save
Startup Config
Load...
Export...
Running Config
Export...
Merge...
Equivalent IOS Commands
Top


Pemasaran+Keuangan
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00E0.F704.E401
IP Configuration
IPv4 Address
192.168.1.97
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Top

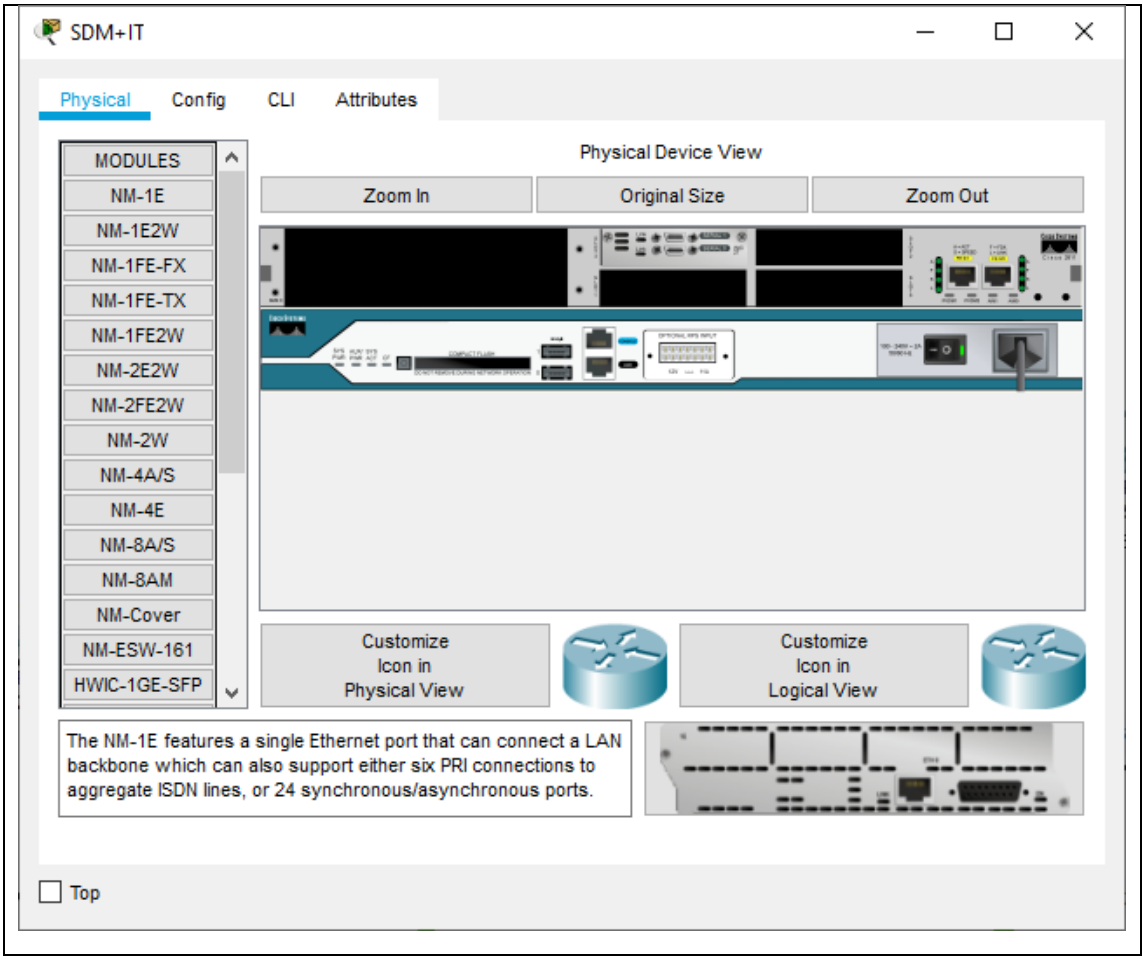

Pemasaran+Keuangan
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
00E0.F704.E402
IP Configuration
IPv4 Address
192.168.1.65
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Top

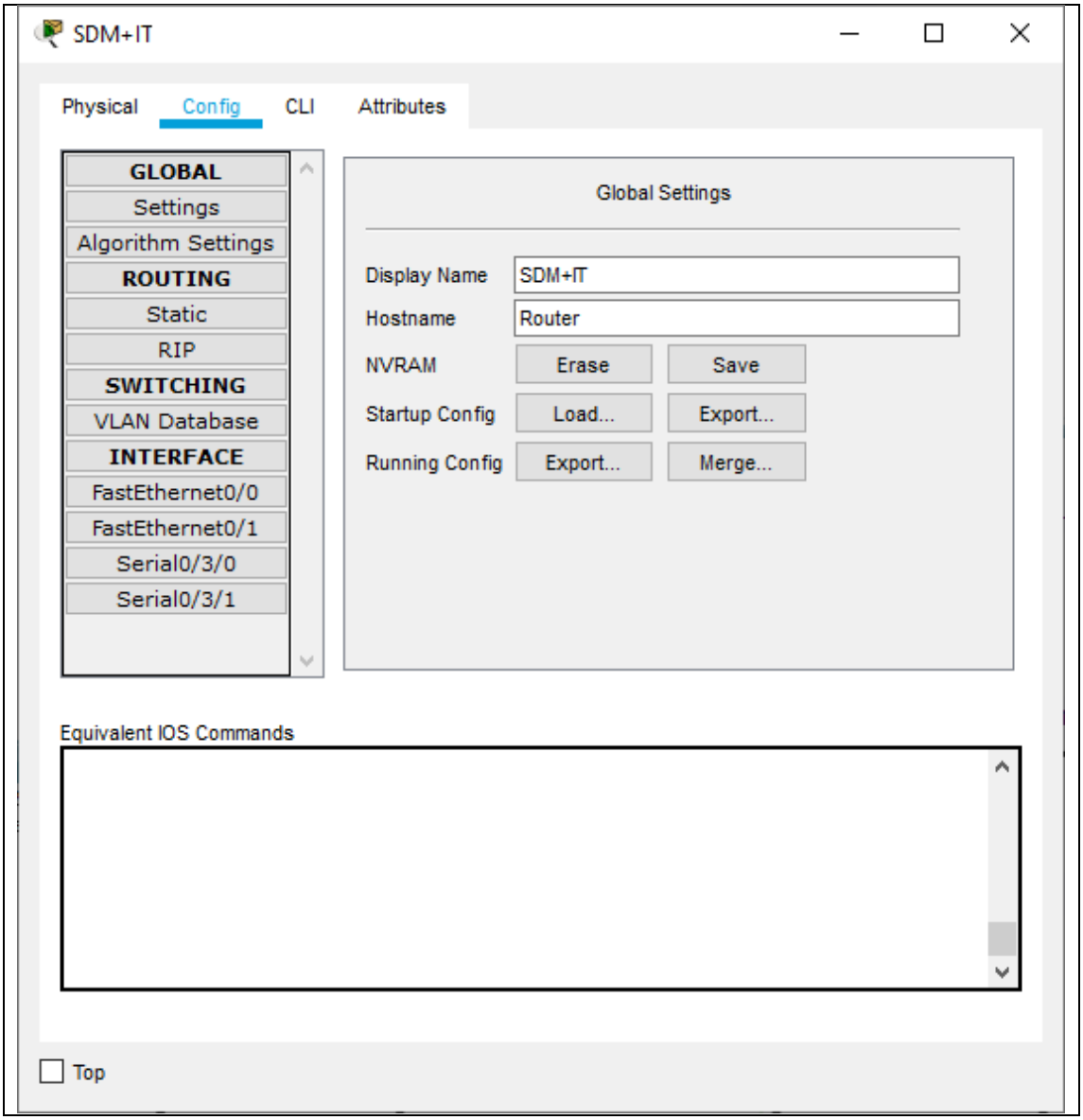

Pemasaran+Keuangan
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Serial0/3/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.1.193
Subnet Mask
255.255.255.252
Tx Ring Limit
10
Equivalent IOS Commands
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#
Top

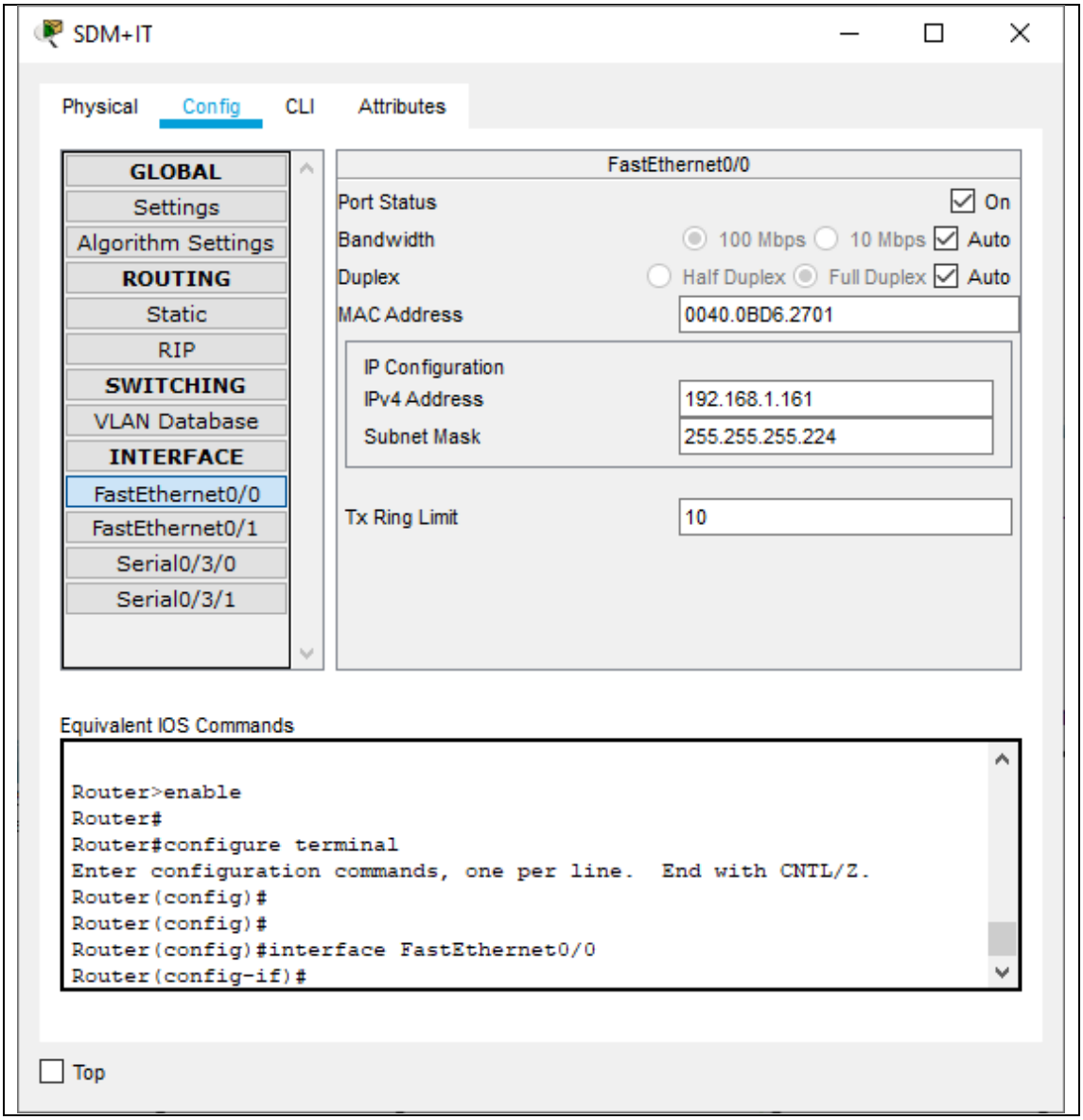

Pemasaran+Keuangan
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Serial0/3/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.1.202
Subnet Mask
255.255.255.252
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/1
Router(config-if)#
Top

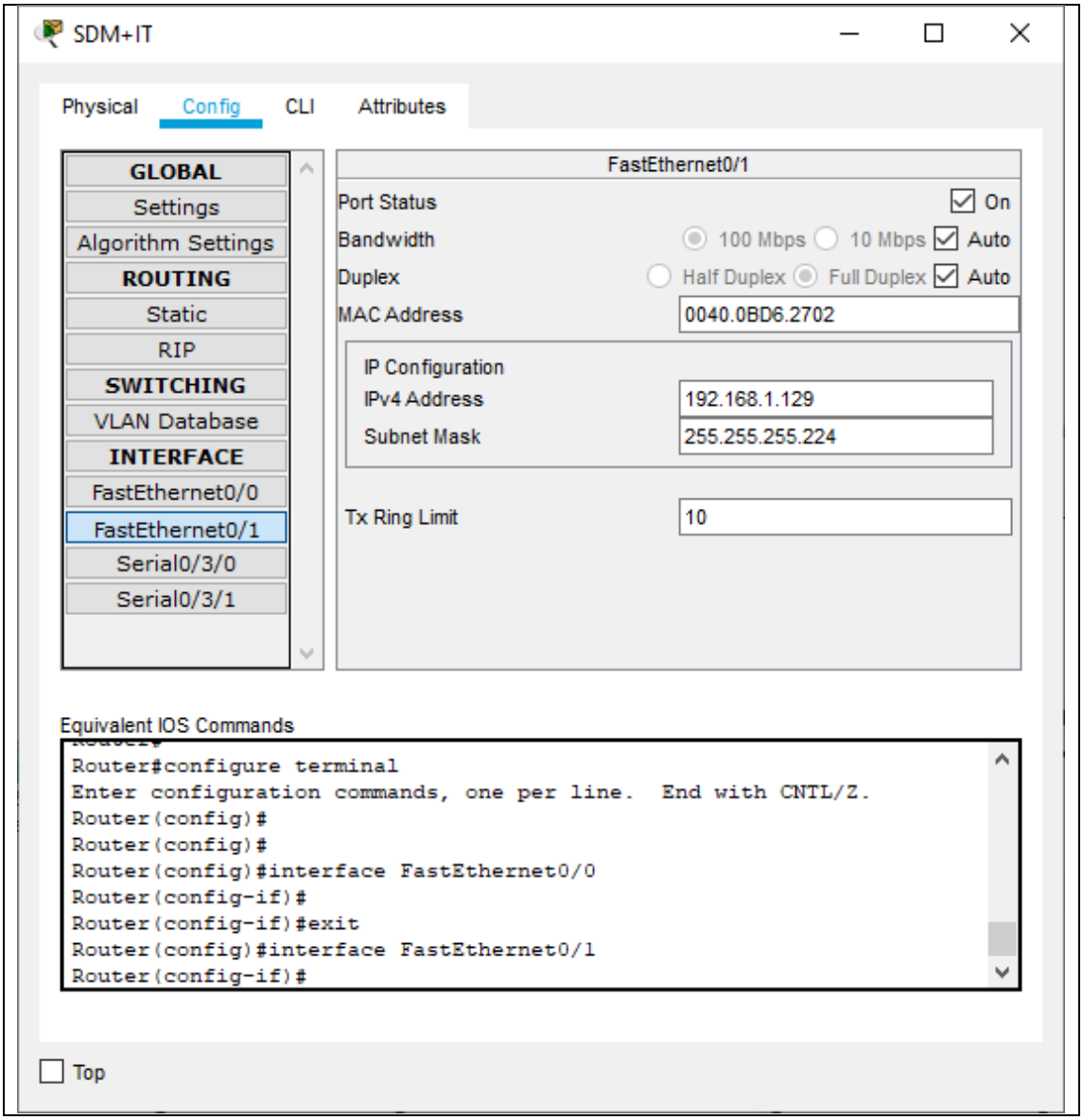


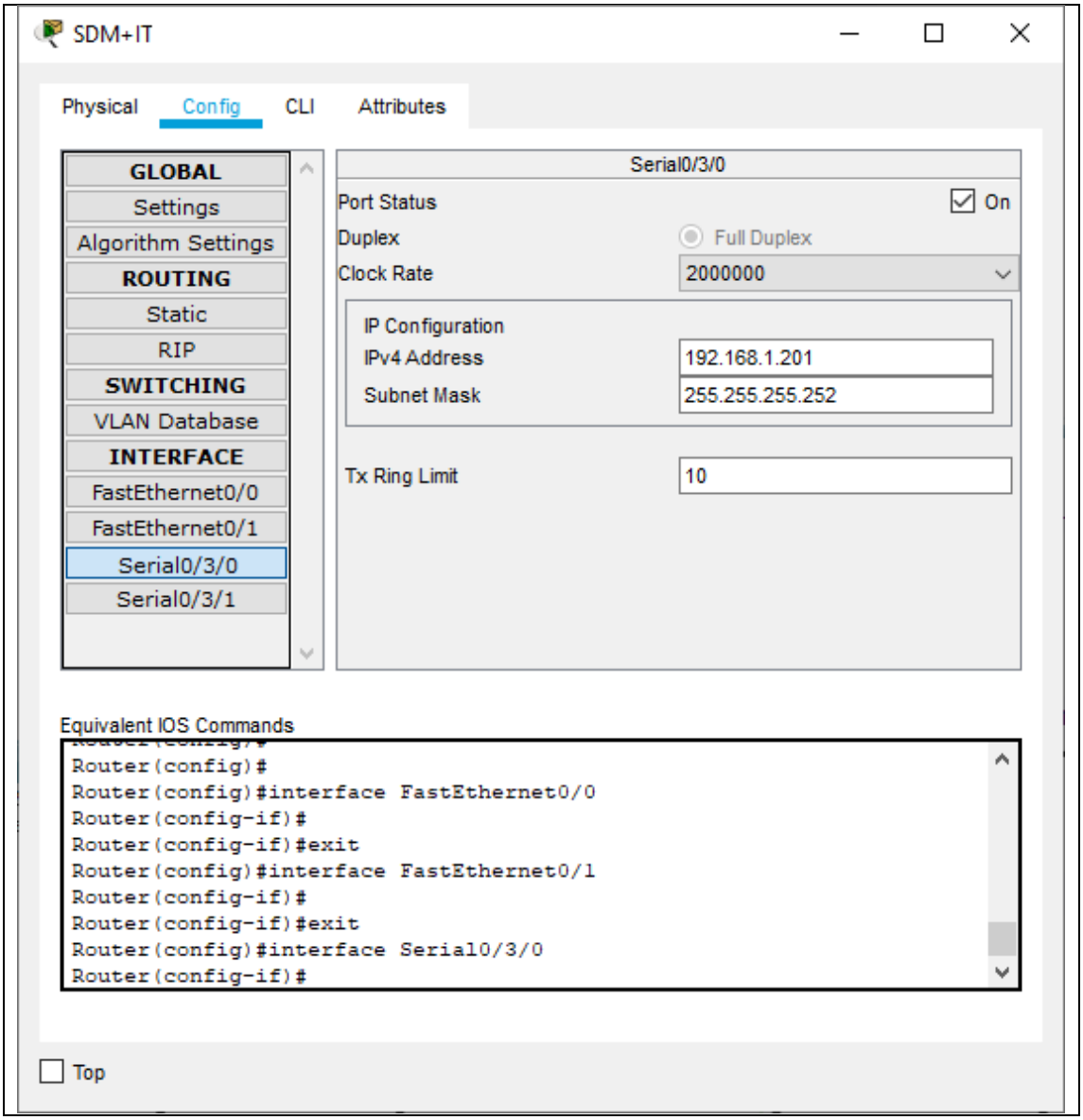
Router SDM & IT

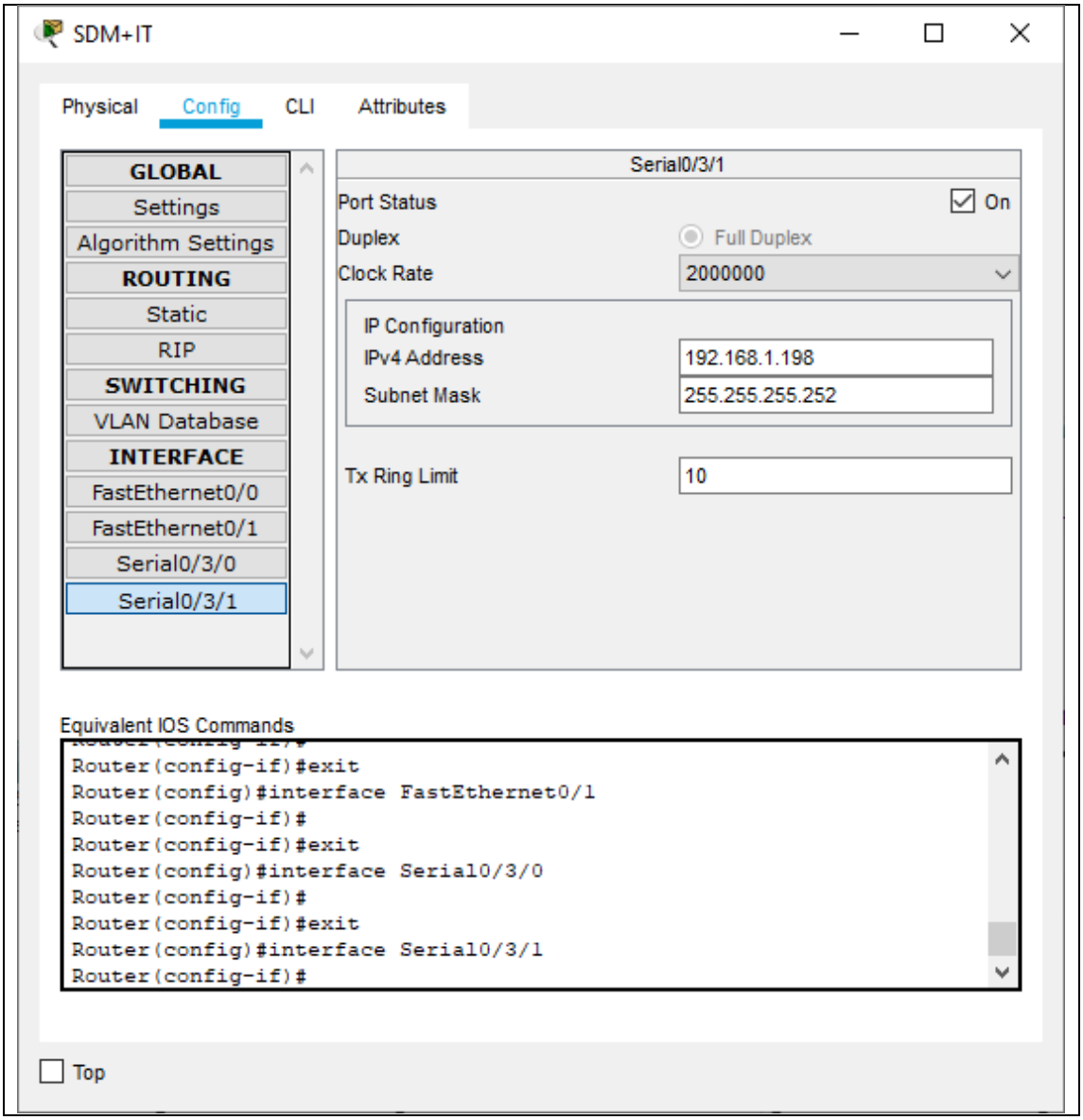

SDM+IT
Physical
Config
CLI
Attributes
MODULES
NM-1E
NM-1E2W
NM-1FE-FX
NM-1FE-TX
NM-1FE2W
NM-2E2W
NM-2FE2W
NM-2W
NM-4A/S
NM-4E
NM-8A/S
NM-8AM
NM-Cover
NM-ESW-161
HWIC-1GE-SFP
Physical Device View
Zoom In
Original Size
Zoom Out
Customize Icon in Physical View
Customize Icon in Logical View
The NM-1E features a single Ethernet port that can connect a LAN backbone which can also support either six PRI connections to aggregate ISDN lines, or 24 synchronous/asynchronous ports.
Top

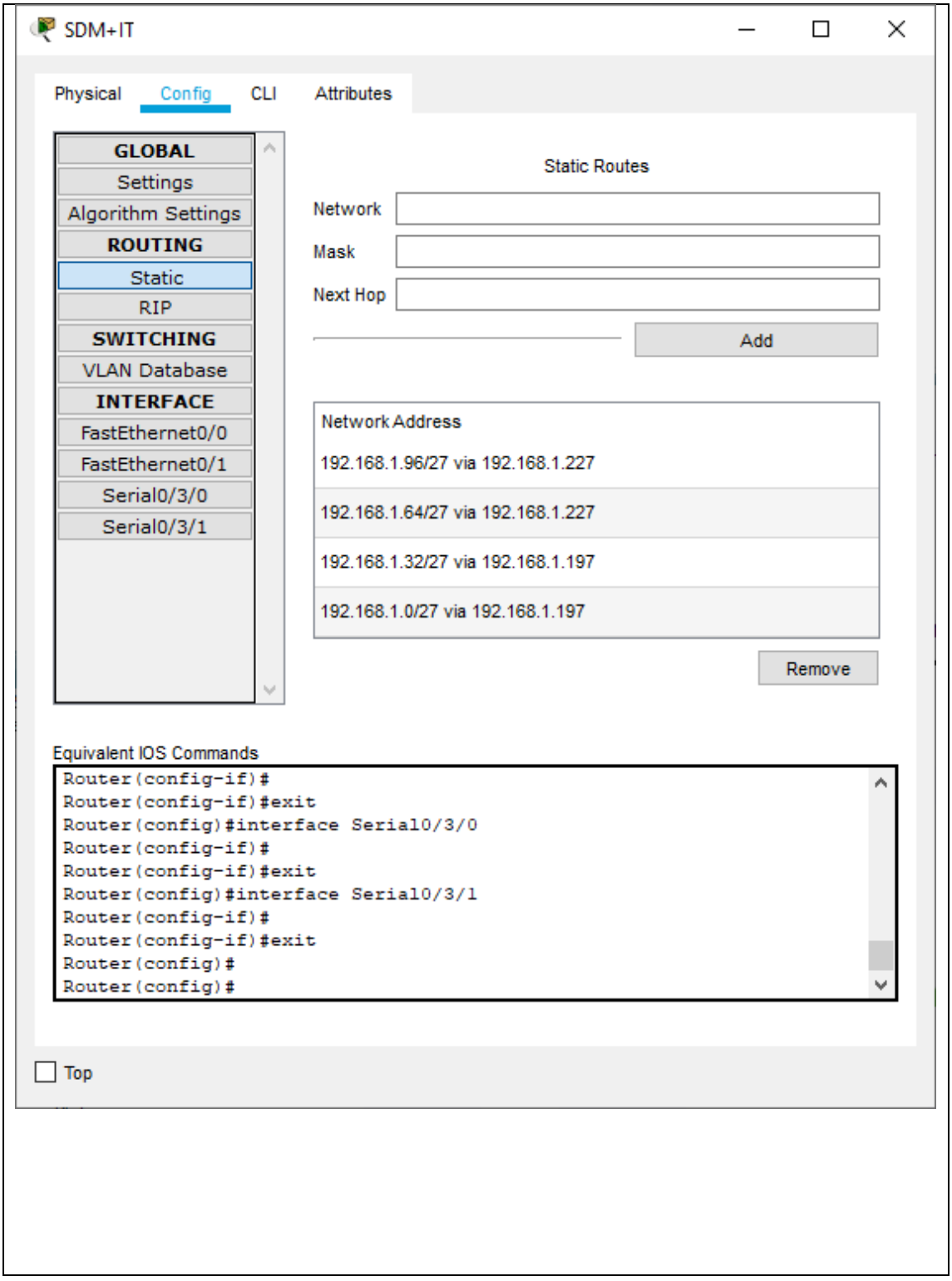

SDM+IT
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Global Settings
Display Name
SDM+IT
Hostname
Router
NVRAM
Erase
Save
Startup Config
Load...
Export...
Running Config
Export...
Merge...
Equivalent IOS Commands
Top


SDM+IT
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0040.0BD6.2701
IP Configuration
IPv4 Address
192.168.1.161
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#
Top


SDM+IT
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
FastEthernet0/1
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0040.0BD6.2702
IP Configuration
IPv4 Address
192.168.1.129
Subnet Mask
255.255.255.224
Tx Ring Limit
10
Equivalent IOS Commands
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Top


SDM+IT
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Serial0/3/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.1.201
Subnet Mask
255.255.255.252
Tx Ring Limit
10
Equivalent IOS Commands
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#
Top

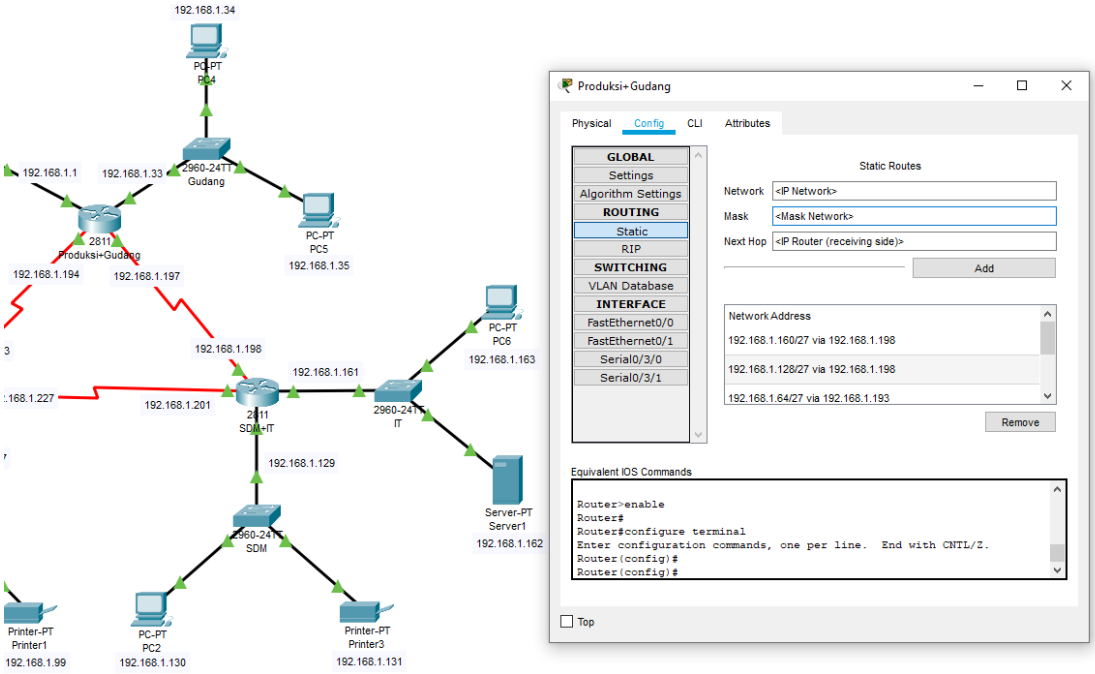

SDM+IT
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Serial0/3/0
Serial0/3/1
Serial0/3/1
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
192.168.1.198
Subnet Mask
255.255.255.252
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial0/3/1
Router(config-if)#
Top



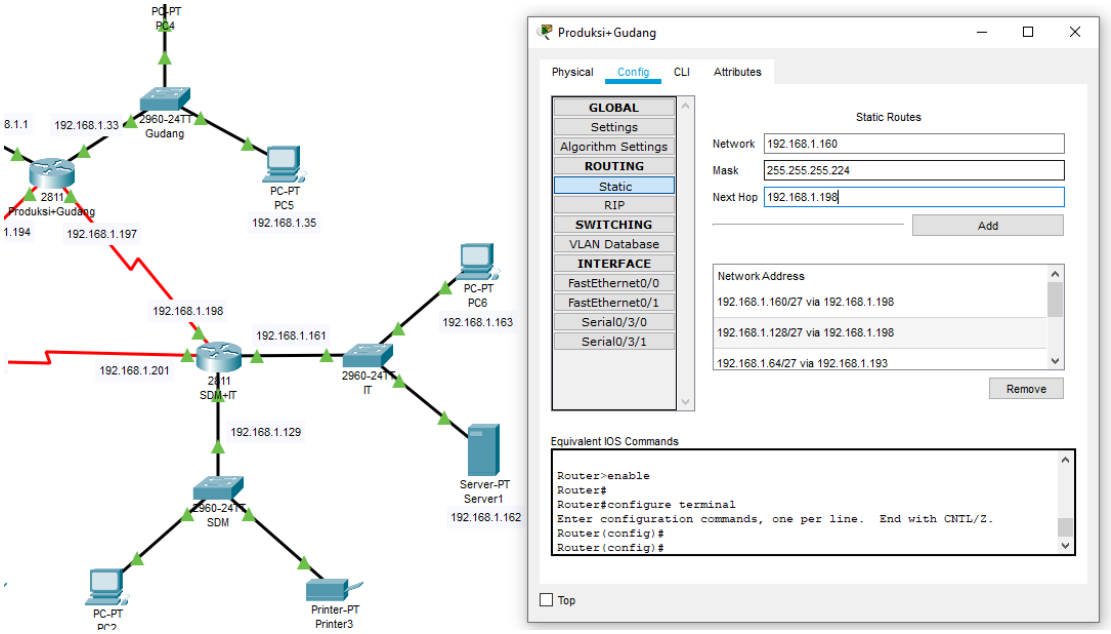
b. Apakah anda menggunakan konfigurasi routing protocol pada router-router tersebut? Jika Ya, jelaskan disertai dengan screenshot!

Ya, pada ketiga router, saya menggunakan konfigurasi untuk routing switch sehingga dapat diakses antar subnet. Hal ini saya lakukan agar setiap switch dapat diakses melalui semua router. Untuk melakukan hal tersebut, saya membuat subnet pada network antar router dengan mask 255.255.255.252 karena jaringan antar router membutuhkan 3 subnet sedangkan yang tersisa

pada subnet dengan mask 255.255.255.224 hanyalah 2 subnet. Kemudian, saya melakukan routing melalui server tersebut dengan cara mengakses menu static routing dan mengisi form tersebut



Misal, ingin dilakukan routing dari router Produksi+Gudang ke IT network, maka pengisian seperti berikut:



Kemudian klik add maka network akan masuk ke dalam tabel “Network Address” yang terdapat di bawah form yang menandakan network sudah terhubung.

4. [**Uji Coba Konektivitas]**

a-c. Uji Coba Konektivitas

Source=PC3, Destination=Printer0: **Successful**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC3	Printer0	ICMP		0.000	N	0	(edit)	(delete)

Source=PC3, Destination=PC4: **Successful**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC3	PC4	ICMP		0.000	N	0	(edit)	(delete)

Source=PC3, Destination=PC0: **Successful**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC3	PC0	ICMP		0.000	N	0	(edit)	(delete)

Source=PC3, Destination=PC1: **Successful**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC3	PC1	ICMP		0.000	N	0	(edit)	(delete)

Source=PC3, Destination=Printer3: **Successful**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC3	Printer3	ICMP		0.000	N	0	(edit)	(delete)

Source=PC3, Destination=Server1: **Successful**

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC3	Server1	ICMP		0.000	N	0	(edit)	(delete)

d. Kesimpulan anda berdasarkan hasil uji coba konektivitas

Uji coba konektivitas dilakukan dari PC3 kepada setiap network termasuk network dimana PC3 berada. Hal ini dilakukan untuk menguji apakah PC3 memiliki koneksi terhadap setiap network; yaitu network Produksi, Gudang, Pemasaran, Keuangan, IT, dan SDM. Dengan adanya koneksi yang sukses, hal tersebut menandakan bahwa terdapat koneksi antara network produksi dan setiap network lainnya