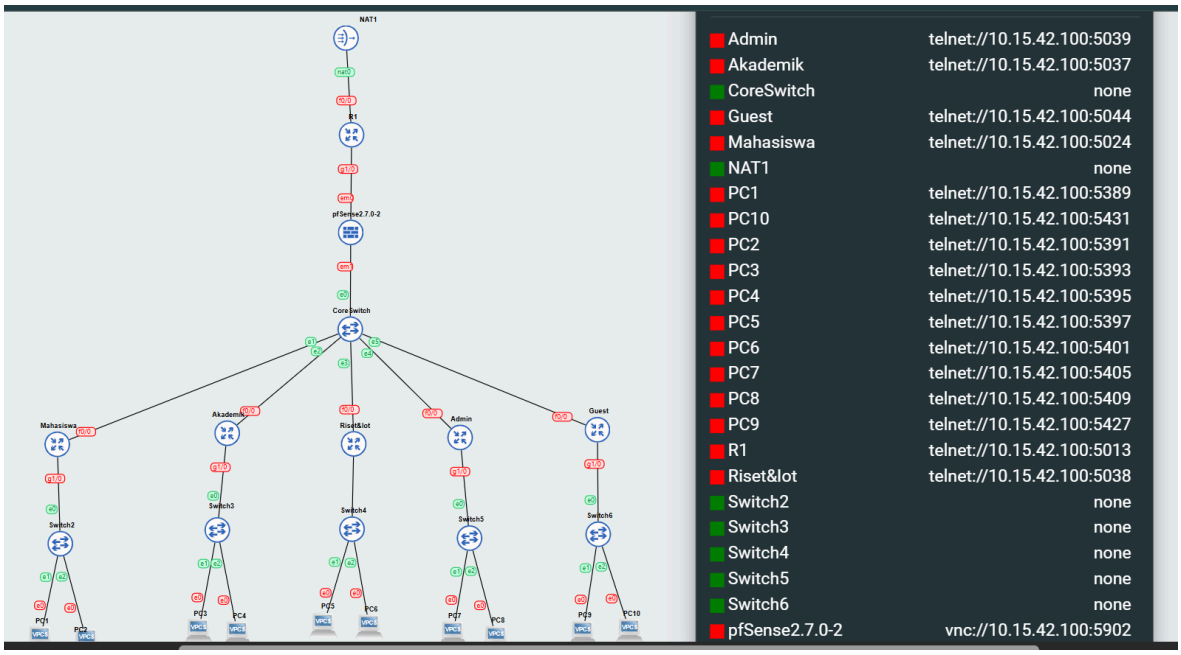
# vKonfigurasi Keamanan Jaringan DTI ITS - Updated Topology

## 1. STRUKTUR TOPOLOGI GNS3




### IP Addressing

| Link | Network /30 | R1 | pfSense-WAN | Broadcast |
|---|---|---|---|---|
| R1 ↔ pfSense | 10.20.251.0/30 | 10.20.251.1 | 10.20.251.2 | 10.20.251.3 |

| Link | Network /30 | pfSense-LAN | CoreSwitch | Broadcast |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **pfSense ↔ Core** | **10.20.254.0/30** | **10.20.254.1** | **10.20.254.2** | **10.20.254.3** |

| Link | Network /30 | Core | Mahasiswa | Broadcast |
|---|---|---|---|---|
| **Core ↔ Mahasiswa** | **10.20.201.0/30** | **10.20.201.1** | **10.20.201.2** | **10.20.201.3** |

| Link | Network /30 | Core | Akademik | Broadcast |
|---|---|---|---|---|
| **Core ↔ Akademik** | **10.20.202.0/30** | **10.20.202.1** | **10.20.202.2** | **10.20.202.3** |

| Link | Network /30 | Core | Riset | Broadcast |
|---|---|---|---|---|
| **Core ↔ Riset** | **10.20.203.0/30** | **10.20.203.1** | **10.20.203.2** | **10.20.203.3** |

| Link | Network /30 | Core | Admin | Broadcast |
|---|---|---|---|---|
| **Core ↔ Admin** | **10.20.204.0/30** | **10.20.204.1** | **10.20.204.2** | **10.20.204.3** |

| Link | Network /30 | Core | Guest | Broadcast |
|---|---|---|---|---|
| **Core ↔ Guest** | **10.20.205.0/30** | **10.20.205.1** | **10.20.205.2** | **10.20.205.3** |

## 2. KONFIGURASI DEVICE

# 1. R1

```
! Interface menuju NAT (Internet)
R1(config)# interface f0/0
R1(config)# ip address dhcp
R1(config)# no shutdown
R1(config)# ip route 0.0.0.0 0.0.0.0 f0/0

! Interface menuju Core Switch (Jaringan Interkoneksi)
R1(config)# interface g1/0
R1(config)# ip address 10.20.60.1 255.255.255.248 ! /29
R1(config)# no shutdown

! Static Route: Arahkan ke semua jaringan lokal melalui Router Subnet
(Next Hop adalah IP Router Subnet di jaringan 10.20.60.0/29)
```

```
R1(config)# ip route 10.20.10.0 255.255.255.128 10.20.60.2 ! Mahasiswa
/25 (10.20.60.2)
R1(config)# ip route 10.20.20.0 255.255.255.224 10.20.60.3 ! Akademik
/27 (10.20.60.3)
R1(config)# ip route 10.20.30.0 255.255.255.224 10.20.60.4 ! Riset /27
(10.20.60.4)
R1(config)# ip route 10.20.40.0 255.255.255.192 10.20.60.5 ! Admin /26
(10.20.60.5)
R1(config)# ip route 10.20.50.0 255.255.255.128 10.20.60.6 ! Guest /25
(10.20.60.6)
```

# 3. CoreSwitch (L3 Switch Utama)

```
CoreSwitch(config)# interface range e0-e5
CoreSwitch(config-if-range)# no shutdown
CoreSwitch(config-if-range)# exit
```

# 4. Router Mahasiswa

```
Mahasiswa# configure terminal

! Interface menuju Core Switch (Interkoneksi R1)
Mahasiswa(config)# interface f0/0
Mahasiswa(config-if)# ip address 10.20.60.2 255.255.255.248
Mahasiswa(config-if)# no shutdown
Mahasiswa(config-if)# exit

! Interface menuju Switch 2 (Gateway Jaringan Mahasiswa)
Mahasiswa(config)# interface g1/0
Mahasiswa(config-if)# ip address 10.20.10.1 255.255.255.128
Mahasiswa(config-if)# no shutdown
Mahasiswa(config-if)# exit

! Default Route ke R1 (Next Hop 10.20.60.1)
Mahasiswa(config)# ip route 0.0.0.0 0.0.0.0 10.20.60.1
```

```
Mahasiswa(config)# end
Mahasiswa# write memory
```

# 5. Router Akademik

```
Router# configure terminal

! Interface menuju Core Switch (Interkoneksi R1)
Router_Akademik(config)# interface f0/0
Router_Akademik(config-if)# ip address 10.20.60.3 255.255.255.248
Router_Akademik(config-if)# no shutdown
Router_Akademik(config-if)# exit

! Interface menuju Switch 3 (Gateway Jaringan Akademik)
Router_Akademik(config)# interface g1/0
Router_Akademik(config-if)# ip address 10.20.20.1 255.255.255.224
Router_Akademik(config-if)# no shutdown
Router_Akademik(config-if)# exit

! Default Route ke R1 (Next Hop 10.20.60.1)
Router_Akademik(config)# ip route 0.0.0.0 0.0.0.0 10.20.60.1
Router_Akademik(config)# end
Router_Akademik# write memory
```

# 6. Router Riset&IoT

```
Router# configure terminal

! Interface menuju Core Switch (Interkoneksi R1)
Router_Riset_IoT(config)# interface f0/0
Router_Riset_IoT(config-if)# ip address 10.20.60.4 255.255.255.248
Router_Riset_IoT(config-if)# no shutdown
Router_Riset_IoT(config-if)# exit

! Interface menuju Switch 4 (Gateway Jaringan Riset & IoT)
Router_Riset_IoT(config)# interface g1/0
Router_Riset_IoT(config-if)# ip address 10.20.30.1 255.255.255.224
```

```
Router_Riset_IoT(config-if)# no shutdown
Router_Riset_IoT(config-if)# exit

! Default Route ke R1 (Next Hop 10.20.60.1)
Router_Riset_IoT(config)# ip route 0.0.0.0 0.0.0.0 10.20.60.1
Router_Riset_IoT(config)# end
Router_Riset_IoT# write memory
```

# 7. Router Admin

```
Router# configure terminal

! Interface menuju Core Switch (Interkoneksi R1)
Router_Admin(config)# interface f0/0
Router_Admin(config-if)# ip address 10.20.60.5 255.255.255.248
Router_Admin(config-if)# no shutdown
Router_Admin(config-if)# exit

! Interface menuju Switch 5 (Gateway Jaringan Admin)
Router_Admin(config)# interface g1/0
Router_Admin(config-if)# ip address 10.20.40.1 255.255.255.192
Router_Admin(config-if)# no shutdown
Router_Admin(config-if)# exit

! Default Route ke R1 (Next Hop 10.20.60.1)
Router_Admin(config)# ip route 0.0.0.0 0.0.0.0 10.20.60.1
Router_Admin(config)# end
Router_Admin# write memory
```

# 8. Router Guest

```
Router# configure terminal
```

```
! Interface menuju Core Switch (Interkoneksi R1)
Router_Guest(config)# interface f0/0
Router_Guest(config-if)# ip address 10.20.60.6 255.255.255.248
Router_Guest(config-if)# no shutdown
Router_Guest(config-if)# exit

! Interface menuju Switch 6 (Gateway Jaringan Guest)
Router_Guest(config)# interface g1/0
Router_Guest(config-if)# description Gateway_Guest_LAN
Router_Guest(config-if)# ip address 10.20.50.1 255.255.255.128
Router_Guest(config-if)# no shutdown
Router_Guest(config-if)# exit

! Default Route ke R1 (Next Hop 10.20.60.1)
Router_Guest(config)# ip route 0.0.0.0 0.0.0.0 10.20.60.1
Router_Guest(config)# end
Router_Guest# write memory
```

# 3. KONFIGURASI PC CLIENT

### PC Mahasiswa (PC1 & PC2)

PC`> ip 10.20.10.11 10.20.10.1
PC1> save

PC2> ip 10.20.10.12 10.20.10.1
PC2> save

### PC Akademik (PC3 & PC4)

PC3> ip 10.20.20.11 10.20.20.1
PC3> save

PC4> ip 10.20.20.12 10.20.20.1
PC4> save

### PC Riset (PC5 & PC6)

PC5> ip 10.20.30.11 10.20.30.1
PC5> save

PC6> ip 10.20.30.12 10.20.30.1
PC6> save

## PC Admin (PC7 & PC8)

PC7> ip 10.20.40.11 10.20.40.1
PC7> save

PC8> ip 10.20.40.12 10.20.40.1
PC8> save

## PC Guest(PC9 & PC10)

PC9> ip 10.20.50.11 10.20.50.1
PC9> save

PC10> ip 10.20.50.12 10.20.50.1
PC10> save