



**Laboratorium
Multimedia dan Internet of Things
Departemen Teknik Komputer
*Institut Teknologi Sepuluh Nopember***

Laporan Akhir Praktikum Jaringan Komputer

Jaringan Wireless

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2025

1 Langkah-Langkah Percobaan

1.1 Wireless Point to Point

1. Hubungkan kabel LAN dengan Laptop dan buka WinBox pada Laptop.
2. Pilih menu Neighbours pada WinBox untuk menampilkan Router yang sedang terhubung dan pilih MAC address router serta klik tombol connect.
3. Pada menu utama, buka menu System serta pilih restart configuration. Centang No Default Configuration dan klik Reset Configuration.
4. Tunggu router restart dan kembali hubungkan router dengan WinBox.
5. Buka menu Wireless lalu ke WiFi Interface dan klik dua kali WLAN 1 untuk membuka konfigurasi.
6. Untuk Router A konfigurasi menjadi mode Bridge dan berikan SSID PointToPoint_9 lalu klik apply dan enabled.
7. Untuk Router B konfigurasi menjadi mode Station, lalu tekan tombol Scan untuk mencari SSID dari Router A.
8. Masuk menu IP dan ke Addresses buat IP dengan interface Wlan1 pada router A (10.10.10.1/29) dan Router B (10.10.10.2/29) Serta IP dengan interface yang terhubung ke laptop (ether7) pada router A (192.168.20.1/24) dan Router B (192.168.30.1/24).
9. Masuk menu IP dan Ke Routes, pada router A buat route baru dengan Destination Address 192.168.30.0/24 Gateway 10.10.10.2, pada router B buat route baru dengan Destination Address 192.168.20.0/24 Gateway 10.10.10.1.
10. Lakukan test koneksi pada terminal router, lakukan ping antar router pada Network 10.10.10.0. Pada Router A ping ke 10.10.10.2 (ip router B) dan Router B ping ke 10.10.10.1 (ip router A).
11. Pada laptop matikan Firewall agar package dari network tidak terblokir.
12. Konfigurasi IP Address IPv4 static pada masing-masing laptop.
13. Lakukan Test Ping dari laptop ke router dengan network sama, laptop ke router network lain, dan laptop ke laptop network lain.

1.2 Wireless Point To Multipoint

1. Pada WinBox, buka menu Wireless dan WiFi Interface lalu double klik WLAN1. Ubah mode menjadi mode AP Bridge dan Ubah SSID PointToMultipoint_9. Lakukan konfigurasi diatas pada Router A. Pada Router B ubah mode menjadi mode Station Bridge lalu lakukan scan untuk mencari SSID Router A untuk dihubungkan.
2. Karena IP Address dan Routing sudah diassign dari percobaan sebelumnya, maka tidak perlu di set ulang.
3. Lakukan ping antar router pada terminal router.
4. Lakukan Ping antara laptop network lain, router network sama, dan router network lain

1.3 Wireless Bridge

1. Pada WinBox, buka menu Wireless dan WiFi Interface lalu double klik WLAN1. Ubah mode menjadi mode Bridge dan Ubah SSID WirelessBridge_9. Lakukan konfigurasi diatas pada Router A. Pada router B ubah mode menjadi mode Station Pseudobridge lalu lakukan scan untuk mencari SSID Router A untuk dihubungkan.
2. Karena IP Address interface wlan1 sudah di assign dari percobaan sebelumnya, tinggal mengganti IP yang terhubung dengan interface ether 7, pada router A menjadi 192.168.10.2/24 dan pada router B menjadi 192.168.10.3/24. Lalu menghapus Routing dari percobaan sebelumnya.
3. Masuk menu bridge lalu tambahkan bridge dengan nama bridge1, masuk tab port dan tambahkan interface (ether7 dan wlan1) pada bridge1. Lakukan langkah ini pada kedua Router.
4. Lakukan ping antar router pada terminal router.
5. Lakukan Ping antara laptop network lain, router network sama, dan router network lain

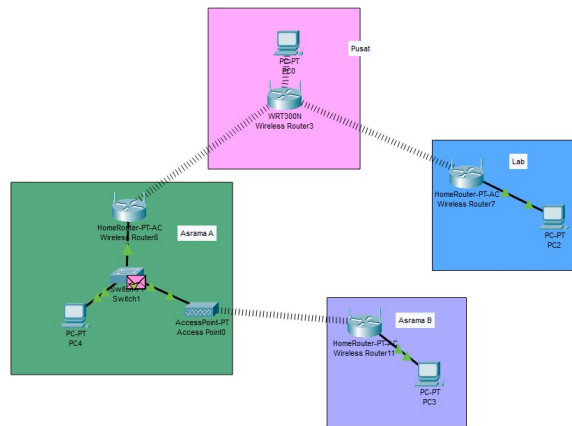
2 Analisis Hasil Percobaan

Pada percobaan 1, dilakukan penghubungan router melalui metode PointToPoint dimana dapat dihubungkan secara Wireless. Untuk menghubungkan satu sama lain dibutuhkan bridge dan station, dimana Bridge sebagai access point dan Station sebagai Client. Protocol PointToPoint sesuai namanya hanya dapat menerima satu Client untuk satu Accesspoint. Untuk mengassign address dan routing sama seperti metode biasanya, hanya menyesuaikan interface WLAN router.

Pada percobaan 2, dilakukan penghubungan antar router melalui metode PointToMultipoint. Prinsipnya sama seperti Protocol PointToPoint, tetapi Access Point dapat menerima banyak Client.

Pada percobaan 3, dilakukan penghubungan antar router melalui metode Wireless Bridge. Wireless Bridge memungkinkan kedua router untuk "memperluas" suatu Network. Misal pada praktikum ini pada interface ether7 router A dan B memiliki Network yang sama, sehingga kedua laptop berada pada satu network yang sama padahal terhubung pada router yang berbeda. Meskipun begitu masing-masing router tetap memiliki Gateway masing-masing.

3 Hasil Tugas Modul



Gambar 1: TuMod

Hasil Conectivitas antar Router dengan Client gagal, karena tidak dapat mengakses dan mengconfigur Port Ethernet Pada Home Router dan Router ETW300RT.

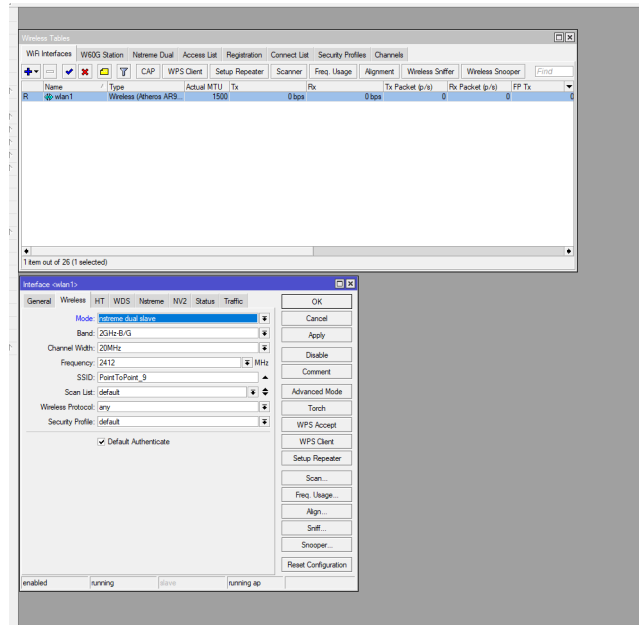
4 Kesimpulan

PointToPoint digunakan untuk menghubungkan secara satu dengan satu antar perangkat. PointTo-Multipoint digunakan untuk menghubungkan secara satu dengan banyak antar perangkat. Wireless Bridge digunakan untuk memperluas suatu Network diluar interface yang sama.

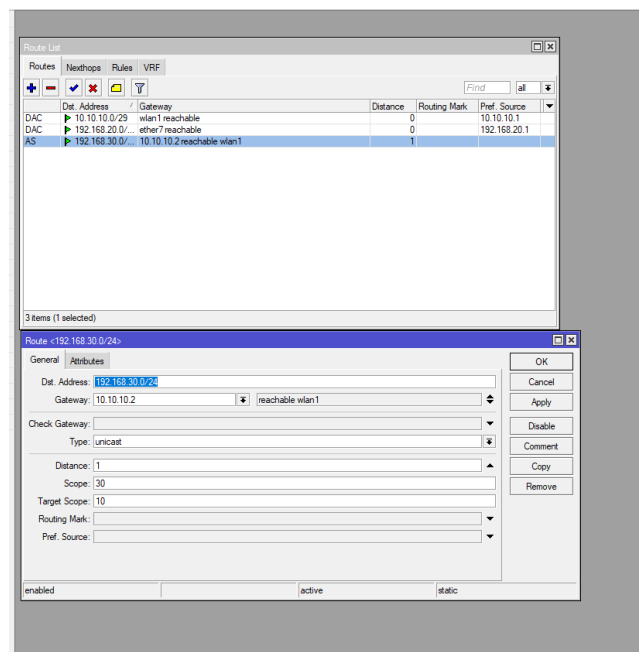
5 Lampiran

5.1 Dokumentasi saat praktikum

5.1.1 Laptop 1 P2P



Gambar 2: Interface Wireless Router A



Gambar 3: Routes router A

```
Command Prompt
Windows PowerShell
Windows PowerShell

Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
PS C:\Users\Sebas> ping 10.10.10.2

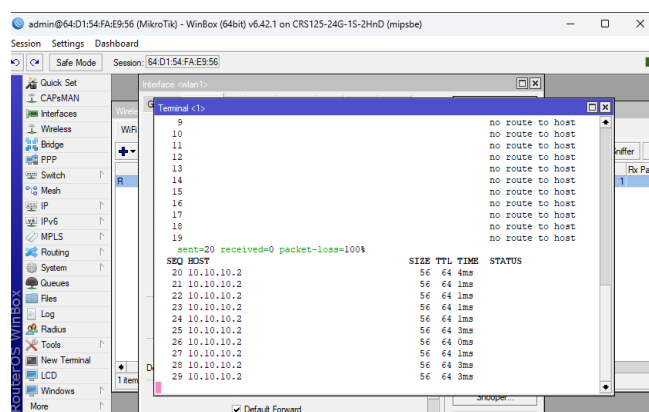
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time=45ms TTL=63
Reply from 10.10.10.2: bytes=32 time=5ms TTL=63
Reply from 10.10.10.2: bytes=32 time=17ms TTL=63
Reply from 10.10.10.2: bytes=32 time=2ms TTL=63

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 45ms, Average = 17ms
PS C:\Users\Sebas> ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:
Reply from 192.168.30.2: bytes=32 time=14ms TTL=126
Reply from 192.168.30.2: bytes=32 time=2ms TTL=126
Reply from 192.168.30.2: bytes=32 time=1ms TTL=126
Reply from 192.168.30.2: bytes=32 time=12ms TTL=126

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 14ms, Average = 7ms
PS C:\Users\Sebas> |
```

Gambar 4: Ping Wireless



Gambar 5: Ping Antar Router

5.1.2 Laptop 1 Wireless Bridge

```
Microsoft Windows [Version 10.0.22631.5335]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Sebas>ping 10.10.10.1

Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64
Reply from 10.10.10.1: bytes=32 time<1ms TTL=64

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\Sebas>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time=1ms TTL=63
Reply from 10.10.10.2: bytes=32 time=2ms TTL=63
Reply from 10.10.10.2: bytes=32 time=1ms TTL=63
Reply from 10.10.10.2: bytes=32 time=7ms TTL=63

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 7ms, Average = 2ms

C:\Users\Sebas>ping 192.168.30.1

Pinging 192.168.30.1 with 32 bytes of data:
Reply from 192.168.30.1: bytes=32 time<1ms TTL=63
Reply from 192.168.30.1: bytes=32 time=2ms TTL=63
Reply from 192.168.30.1: bytes=32 time=1ms TTL=63
Reply from 192.168.30.1: bytes=32 time=1ms TTL=63

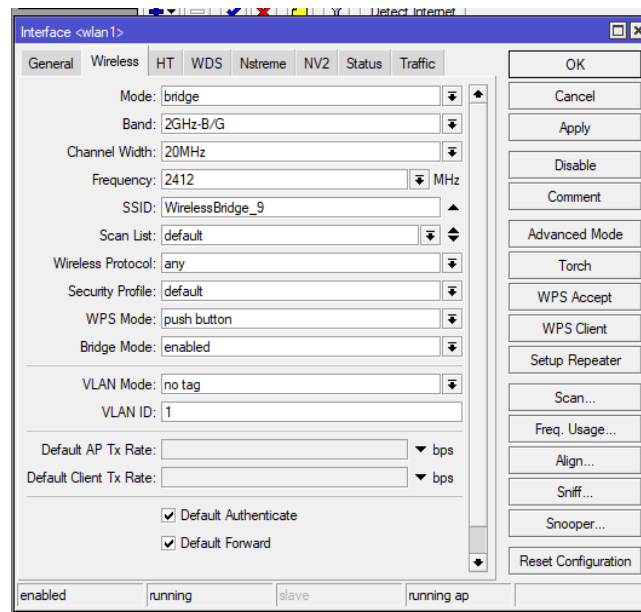
Ping statistics for 192.168.30.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\Users\Sebas>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:
Reply from 192.168.30.2: bytes=32 time=2ms TTL=126
Reply from 192.168.30.2: bytes=32 time=5ms TTL=126
Reply from 192.168.30.2: bytes=32 time=2ms TTL=126
Reply from 192.168.30.2: bytes=32 time=7ms TTL=126

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 7ms, Average = 4ms
```

Gambar 6: Laptop 1 Ping



Gambar 7: Laptop 1 Interface WLAN

5.1.3 Laptop 1 P2Multi

```
Ping statistics for 10.10.10.1:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 1ms, Average = 0ms
PS C:\Users\Sebas> ping 10.10.10.2

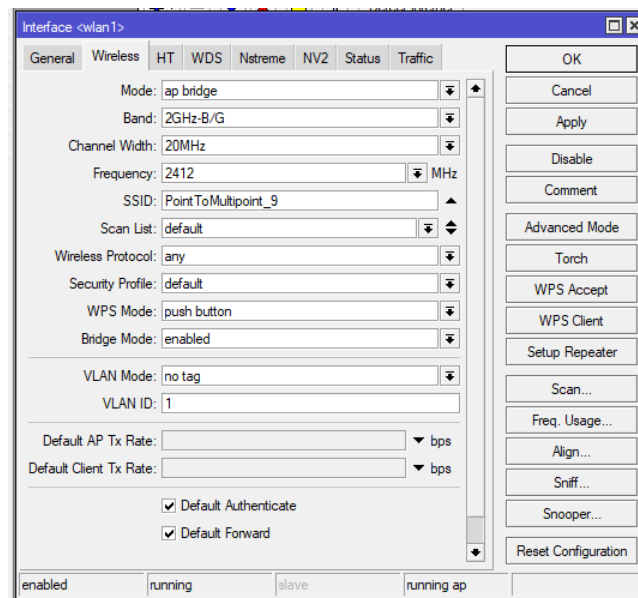
Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time<1ms TTL=63
Reply from 10.10.10.2: bytes=32 time=5ms TTL=63
Reply from 10.10.10.2: bytes=32 time=1ms TTL=63
Reply from 10.10.10.2: bytes=32 time=1ms TTL=63

Ping statistics for 10.10.10.2:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 5ms, Average = 1ms
PS C:\Users\Sebas> 192.168.30.1
PS C:\Users\Sebas> ping 192.168.30.1

Pinging 192.168.30.1 with 32 bytes of data:
Reply from 192.168.30.1: bytes=32 time=1ms TTL=63
Reply from 192.168.30.1: bytes=32 time=1ms TTL=63
Reply from 192.168.30.1: bytes=32 time=1ms TTL=63
Reply from 192.168.30.1: bytes=32 time=1ms TTL=63

Ping statistics for 192.168.30.1:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 1ms, Maximum = 1ms, Average = 1ms
PS C:\Users\Sebas> |
```

Gambar 8: Ping Multi Laptop 1



Gambar 9: Laptop 1 Interface WLAN

5.1.4 Laptop 2 P2P

Name	Type	Actual Rx/Tx	Rx	Tx	Rx Packet (pps)	Tx Packet (pps)	FFP Rx	FFP Tx	FFP Rx Packet (pps)	FFP Tx Packet (pps)
wlan1	Wireless (ethernet) AP/...	1900	560 bps	560 bps	1	0 bps	560 bps	0		

Gambar 10: Wireless Table P2P

Address	Network	Interface
10.10.10.2/29	10.10.10.0	wlan1
192.168.30.1/24	192.168.30.0	ether7

Gambar 11: Address List P2P

	Dest. Address	Gateway	Distance	Routing Mark	Pref. Source
DAC	10.10.10.0/29	wlan1 reachable	0		10.10.10.2
AS	192.168.20.0/24	10.10.10.1 reachable wlan1	1		
DAC	192.168.30.0/24	ether7 reachable	0		192.168.30.1

3 Items

Gambar 12: Route List P2P

```

Microsoft Windows [Version 10.0.26100.4061]
(c) Microsoft Corporation. All rights reserved.

C:\Users\fahri>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\fahri>ping 10.10.10.1

Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63
Reply from 10.10.10.1: bytes=32 time=3ms TTL=63
Reply from 10.10.10.1: bytes=32 time=15ms TTL=63
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 15ms, Average = 4ms

C:\Users\fahri>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time=1ms TTL=126
Reply from 192.168.20.2: bytes=32 time=2ms TTL=126
Reply from 192.168.20.2: bytes=32 time=2ms TTL=126
Reply from 192.168.20.2: bytes=32 time=24ms TTL=126

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 24ms, Average = 7ms

C:\Users\fahri>

```

Gambar 13: Ping P2P

5.1.5 Laptop 2 Multi

```
C:\Users\fahri>ping 10.10.10.1

Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users\fahri>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\fahri>ping 192.168.20.1
'192.168.20.1' is not recognized as an internal or external command,
operable program or batch file.

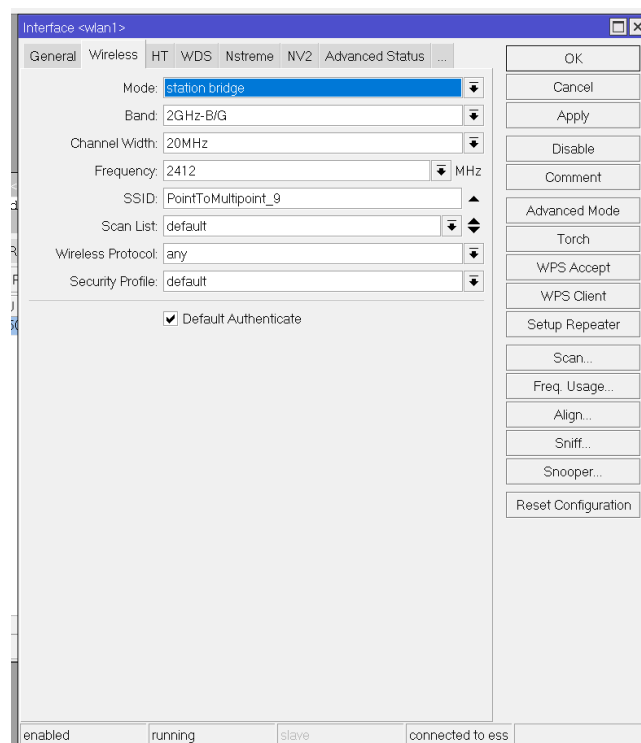
C:\Users\fahri>ping 192.168.20.1

Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time=1ms TTL=63
Reply from 192.168.20.1: bytes=32 time=1ms TTL=63
Reply from 192.168.20.1: bytes=32 time<1ms TTL=63
Reply from 192.168.20.1: bytes=32 time=2ms TTL=63

Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 1ms

C:\Users\fahri>
```

Gambar 14: Ping Multi



Gambar 15: Wlan Interface P2Multi

5.1.6 Laptop 2 Wireless Bridge

```
C:\Users\fahri>ping 10.10.10.1

Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63
Reply from 10.10.10.1: bytes=32 time=1ms TTL=63
Reply from 10.10.10.1: bytes=32 time<1ms TTL=63
Reply from 10.10.10.1: bytes=32 time=1ms TTL=63

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\Users\fahri>ping 10.10.10.2

Pinging 10.10.10.2 with 32 bytes of data:
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64
Reply from 10.10.10.2: bytes=32 time<1ms TTL=64

Ping statistics for 10.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\fahri>ping 192.168.20.1

Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time=3ms TTL=63
Reply from 192.168.20.1: bytes=32 time<1ms TTL=63
Reply from 192.168.20.1: bytes=32 time=2ms TTL=63
Reply from 192.168.20.1: bytes=32 time=1ms TTL=63

Ping statistics for 192.168.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 1ms

C:\Users\fahri>S|
```

Gambar 16: Wireless Bridge Ping