Throughput Application

User guide
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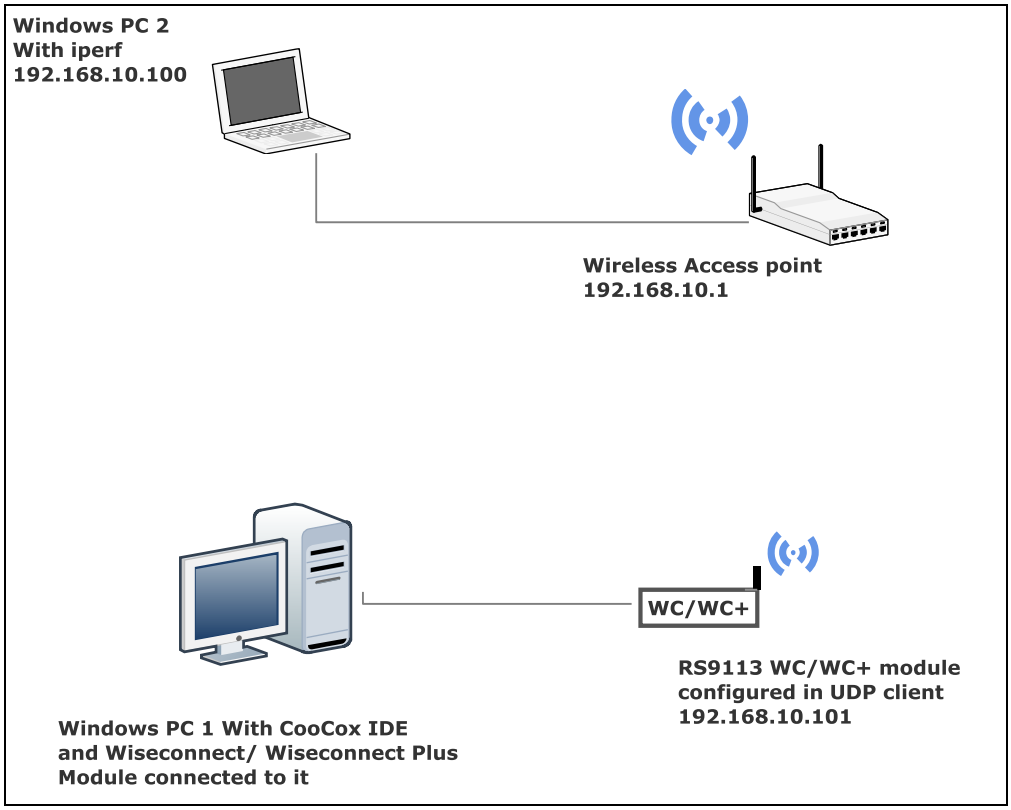
Application Overview:

Throughput is the rate of production or the rate at which something can be processed. When used in the context of communication networks, such as Ethernet or packet radio, throughput or network throughput is the rate of successful message delivery over a communication channel.

This application will demonstrate the throughput measurement for different type of traffic passing through the RS9113.

Setup required:

1. Windows PC with Coocox IDE
2. WiSeConnect/WiSeConnect Plus device
3. Access Point
4. Application program like iperf



Description:

This application can be used to configure RS9113 module in UDP client/server or TCP client/server. To measure throughput, following configuration can be applied.

1. To measure UDP Tx throughput, module should configured as UDP client
2. To measure UDP Rx throughput, module should configured as UDP server
3. To measure TCP Tx throughput, module should configured as TCP client
4. To measure TCP Rx throughput, module should configured as TCP server

Configuring the Application:

Edit the **rsi_throughput_app.c** file in the following path .

sapis/examples/wlan/throughput_app/

1. From given configuration,

   SSID refers to the name of the Access point to connect.

   CHANNEL_NO refers to particular channel used to scan by the device.If channel is 0 then it will scan all channels.

   SECURITY_TYPE refers to type of security like OPEN,WEP,WPA,WPA2.

   PSK refers to the secret key if the Access point was configured in WPA/WPA2 security modes.

```
#define SSID                "<ap_name>"
#define CHANNEL_NO           <channel_num>
#define SECURITY_TYPE        <security-type>
#define PSK                   "<psk>"
```

2. Enable/Disable DHCP mode

   1 – Enables DHCP mode (gets the IP from DHCP server)

   0 – Disables DHCP mode

```
#define  DHCP_MODE          <dhcp mode>
```

3. To configure static IP address

   IP address to be configured to the device should be in long format and in little endian byte order.

   Example: To configure "192.168.10.1" as IP address, update the macro **DEVICE_IP** as **0x010AA8C0**.

```
#define  DEVICE_IP          0X010AA8C0
```

   IP address of the gateway should also be in long format and in little endian byte order

Example: To configure "192.168.10.1" as Gateway, update the macro **GATEWAY** as **0x010AA8C0**

```
#define  GATEWAY              0x010AA8C0
```

IP address of the network mask should also be in long format and in little endian byte order

Example: To configure "255.255.255.0" as network mask, update the macro **NETMASK** as **0x00FFFFFF**

```
#define   NETMASK             0x00FFFFFF
```

3.To establish UDP/TCP connection and transfer/receive data to the remote socket configure the below macros

Internal device port number

```
#define PORT_NUM              <local_port>
```

Port number of the remote server

```
#define SERVER_PORT           <Remote_port_num>
```

IP address of the remote server

```
#define SERVER_IP_ADDRESS     0x640AA8C0
```

Application memory length which is required by the driver

```
#define  GLOBAL_BUFF_LEN       8000
```

Application can use receive buffer size of 1400

```
#define  BUFF_SIZE             1400
```

Application can select throughput type as UDP Tx, UDP Rx, TCP Tx or TCP Rx. Following is macro need to use.

```
#define  THROUGHPUT_TYPE       UDP_TX
```

Following is macro used for throughput type selection

```
#define  UDP_TX                0
#define  UDP_RX                1
#define  TCP_TX                2
#define  TCP_RX                3
```

Edit the Wlan configuration file:

sapis/include/rsi_wlan_config.h

CONCURRENT_MODE	DISABLE

RSI_FEATURE_BIT_MAP	FEAT_SECURITY_OPEN
RSI_TCP_IP_BYPASS	DISABLE
RSI_TCP_IP_FEATURE_BIT_MAP	(TCP_IP_FEAT_DHCPV4_CLIENT)
RSI_CUSTOM_FEATURE_BIT_MAP	0
RSI_BAND	RSI_BAND_2P4GHZ

Executing the Application:

1. Connect WiSeConnect/WiSeConnect Plus device to the Windows PC running Cocoox IDE.
2. Configure the macros in the files located at

   sapis/examples/wlan/udp_client/rsi_throughput_app.c

   sapis/include/rsi_wlan_config.h
3. To measure throughput, following configuration can be applied.

   a) To measure UDP Tx throughput, module should configured as UDP client. Open UDP server at remote port

      iperf.exe –s -u -p <SERVER_PORT> -i 1

   b) To measure UDP Rx throughput, module should configured as UDP server. Open UDP client at remote port

      iperf.exe –c <Module_IP> -u -p <Module_Port> -i 1 –b <Bandwidth>

   c) To measure TCP Tx throughput, module should configured as TCP client. Open TCP server at remote port.

      iperf.exe –s -p <SERVER_PORT> -i 1

   d) To measure TCP Rx throughput, module should configured as TCP server. Open TCP client at remote port.

      iperf.exe –c <Module_IP> -p <module_PORT> -i 1
4. Build and launch the application.
5. After the program gets executed, WiSeConnect/WiSeConnect Plus Device would be connected to Access point having the configuration same that of in the application and get IP.

6. The Device which is configured as UDP/TCP server/client will connect to iperf server/client and sends/receive data continuously. It will print the throughput per second.