ezTCP Technical Documents

WLAN Serial Tunneling

Version 1.0

☞ *Caution: Specifications of this document may be changed without prior notice for improvement*

Sollae Systems Co., Ltd.

Contents

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1 Overview

1.1 Serial Tunneling

Serial tunneling means long-distance communication between two serial devices connected over TCP/IP protocol. Using serial tunneling, you can extend communication distance between two serial devices.

And modification is not required for firmware of user device.

Figure 1-1 Serial Communication
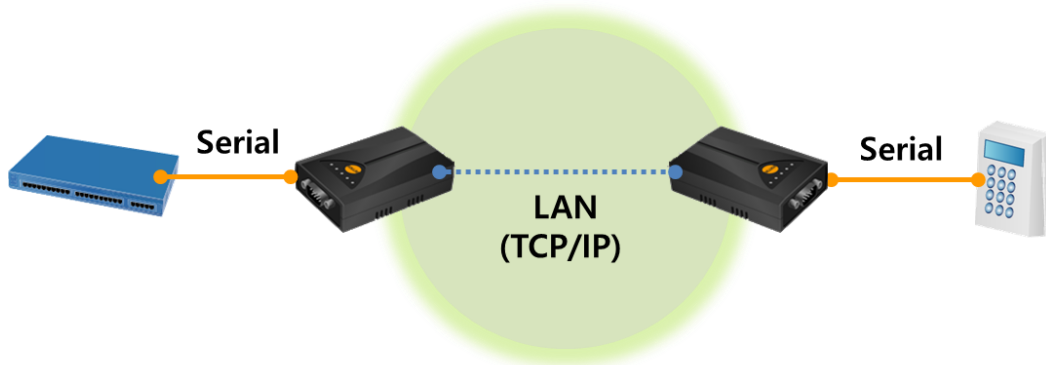
1.1.1 Wired Serial Tunneling

Figure 1-2 Wired Serial Tunneling

1.1.2 Wireless Serial Tunneling
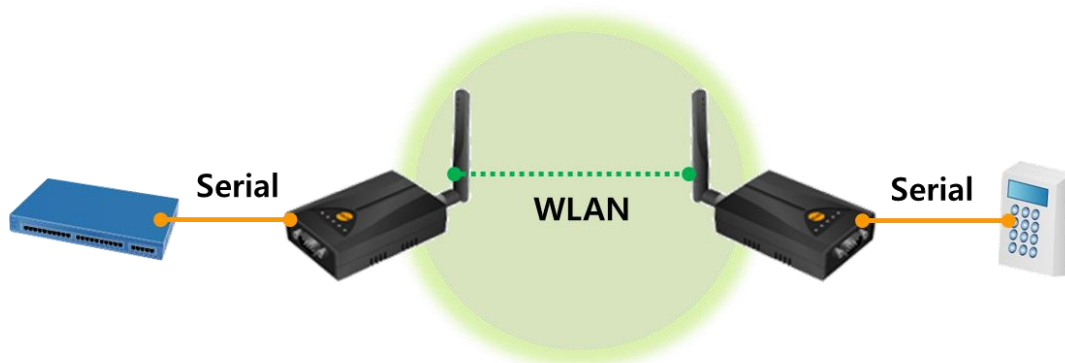
Figure 1-3 Wireless Serial Tunneling

2   WLAN Serial Tunneling

2.1 WLAN Serial Tunneling

Serial tunneling with wireless LAN can be implemented in two modes: infrastructure mode is using AP and Soft-AP mode is connect to products each other without AP. If you use WLAN AP, it is easier to debug than 1:1 connection. But If you can not connect to WLAN AP, 1:1 connection is also possible.

2.1.1   Connection through AP

Figure 2-1 Connection through AP

Figure 2-2 Connection through AP on the Internet

2.1.2   1:1 Connection

Figure 2-3 1:1 Connection

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3   Configuration

3.1 Settings of ezTCP

3.1.1   Network Tab

● Settings of Local IP address, Subnet Mask, Gateway IP Address, DNS IP address.

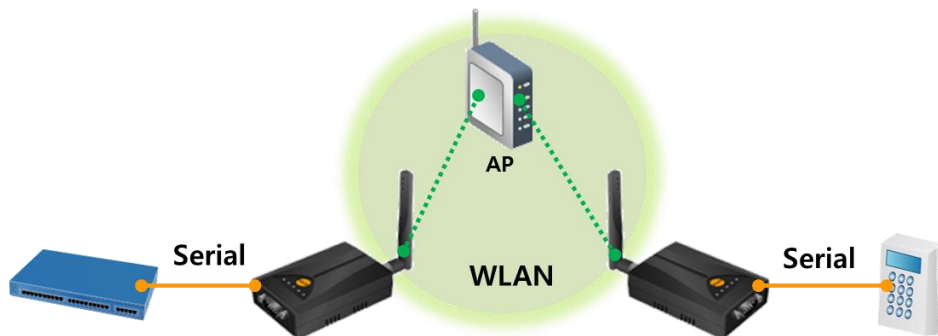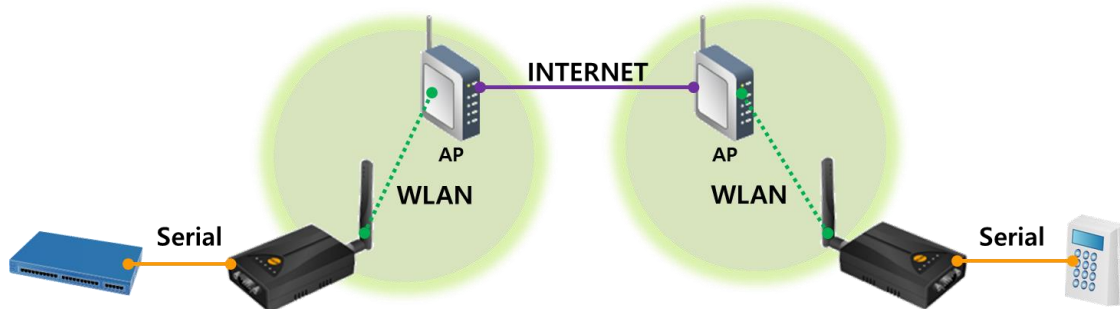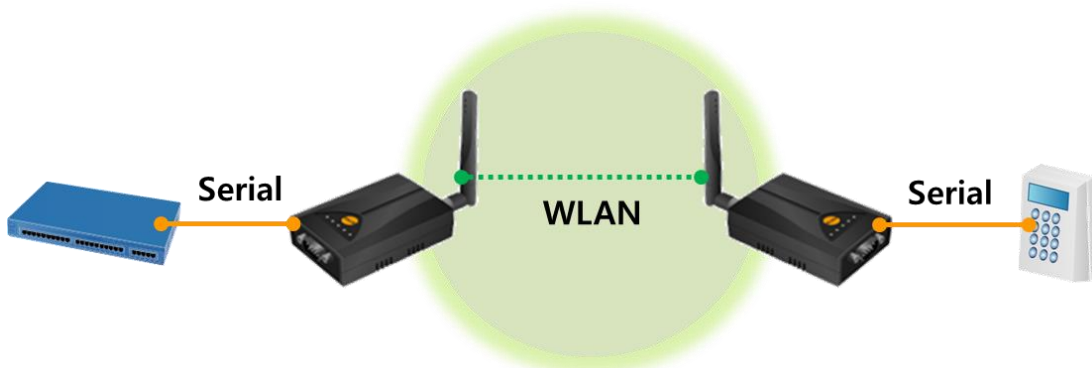① Obtain an IP Automatically (DHCP)
Receive its IP address from a DHCP server(WLAN AP including Soft AP) automatically.

② Use Static IP address
When the product has an IP address from an AP(DHCP) and it operates as a server, Local IP address could be changed. So you have to check the IP address from [STATUS] of ezManager, and select [Use Static IP address] and set that IP address directly.

☞ *IP address of Soft AP mode is fixed to 10.1.0.1.*

3.1.2   Serial port Tab

● Serial Port settings
Configure the Type of Serial, Baudrate, Parity, Data bits, Stop bit and Flow control of Serial port to match the serial port of the existing user device.

● TCP/IP Communication settings

① T2S-TCP Server
In this mode, the product listens to a TCP connection request from remote host as a server. It has the Local port to listen.

② COD-TCP Client
The product sends request segments to a TCP server as a client. It has to configure Peer IP address(the IP address of Server) and Peer Port(the Local port of Server).

3.1.3   Wireless LAN Tab

●   WLAN Topology

①   Infrastructure

Every wireless LAN station communicates through an Access Point (AP) so that all stations can be connected to Ethernet, because AP is able to interface with both wireless LAN and wired LAN (Ethernet).

②   Soft AP

Soft AP (Software embedded Access Point) is a mode that a wireless client can act as an AP through software embedded AP functions. Using this mode, a wireless client allows communicate with not only laptops and smartphone but also devices which don't have Ad-hoc function.

●   Channel

Wireless LAN stations communicate through the ISM (Industrial, Scientific, and Medical) band which has the range of frequencies around 2.4GHz. IEEE 802.11 specification divides this band into 14 channels in every 5MHz. If you install more than one wireless network in the same area, the channels should be apart more than 4 channels to avoid interferences.

●   SSID

It is a name to identify the particular wireless LAN. So, every single station should have the same SSID to communicate in the network.

●   Shared Key

A wireless LAN station should get authentication from the AP in the infrastructure network. There are two methods for the authentication and those are Open System and Shared Key.

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3.2 Example of settings with an WLAN AP

IP Address: 192.168.0.100
SSID: sollae
TCP mode: Server
Local Port: 1470

IP Address: 192.168.0.101
SSID: sollae
TCP mode: Client
Peer IP/Port: 192.168.0.100 / 1470
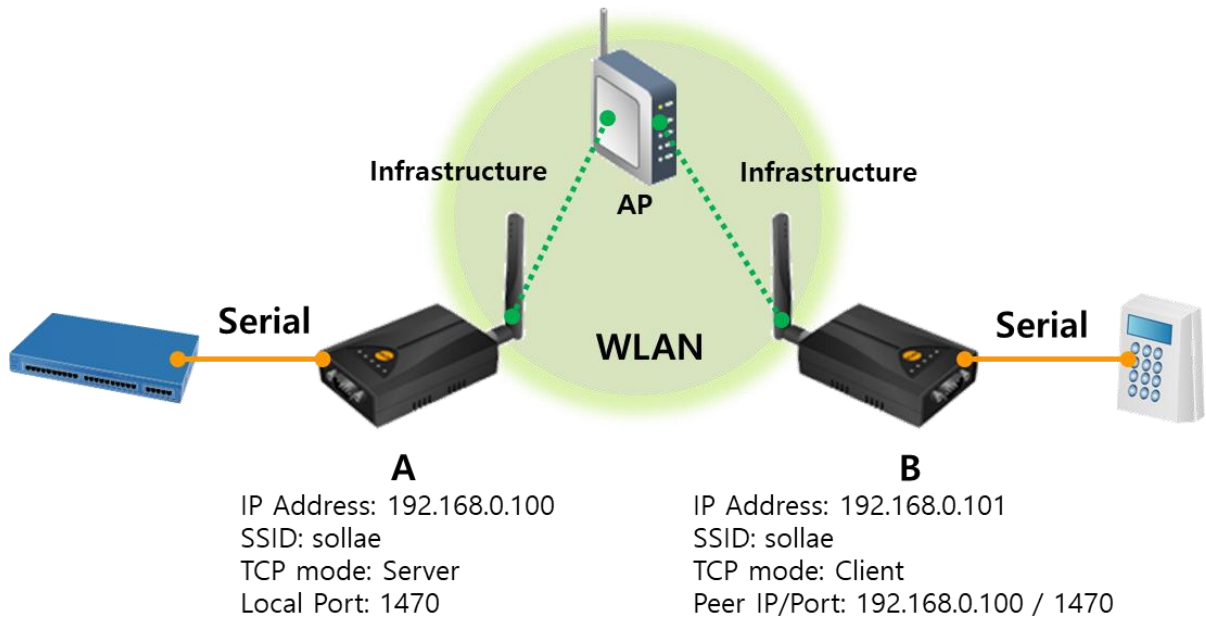
Figure 3-1 Diagram of Communication with an AP

3.2.1 WLAN settings

Items	Product A	Product B
WLAN Topology	Infrastructure	Infrastructure
SSID	Network name of AP (mandatory)	Network name of AP (mandatory)
Shared Key	Shared Key of AP (Optional – according to the AP)	Shared Key of AP (Optional – according to the AP)

Table 3-1 WLAN settings with an AP

3.2.2 Network settings

Items	Product A	Product B
Local IP Address	Assigned IP address from AP (e.g.: 192.168.0.100)	Assigned IP address from AP (e.g.: 192.168.0.101)
Communication Mode	T2S – TCP Server	COD – TCP Client
Local Port	1470	-
Peer Address	-	IP address of Product A (e.g.: 192.168.0.100)
Peer Port	-	1470

Table 3-2 Network settings with an AP

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3.3 Example of 1:1 communication
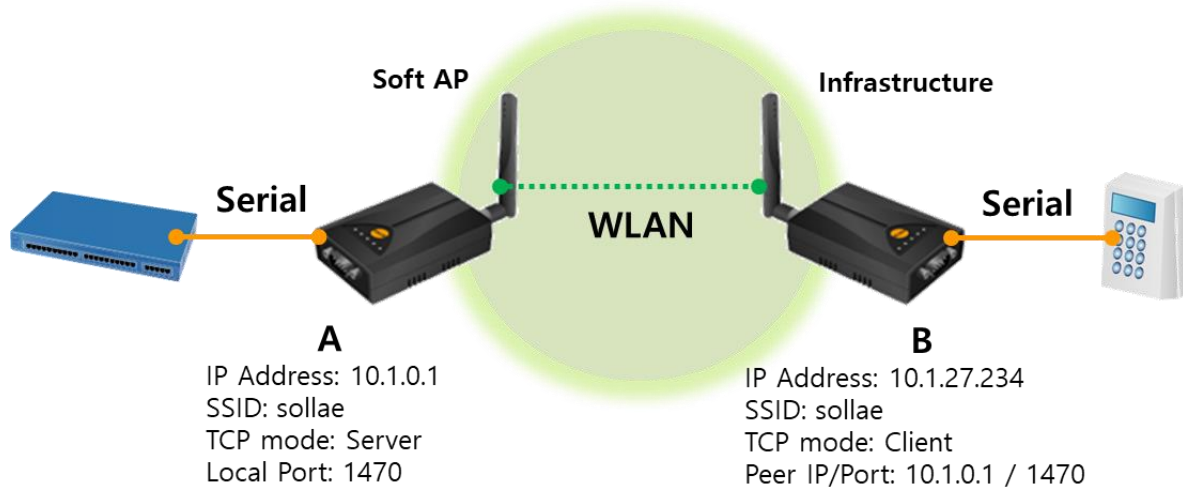
Figure 3-2 1:1 communication

3.3.1 WLAN settings

Items	Product A	Product B
WLAN Topology	Soft AP	Infrastructure
Channel	Channel number	-
SSID	Network name (mandatory)	Network name of A(mandatory)
Shared Key	Shared Key settings (recommendation)	Shared Key of Product A (recommendation)

Table 3-3 1:1 WLAN settings

3.3.2 Network settings

Items	Product A	Product B
Local IP Address	10.1.0.1 (fixed)	Assigned IP address from Product A(Soft AP) (e.g.: 10.1.X.X)
Communication Mode	T2S – TCP Server	COD – TCP Client
Local Port	1470	-
Peer Address	-	IP address of Product A (10.1.0.1)
Peer Port	-	1470

Table 3-4 1:1 Network settings

4 Revision History

Date	Version	Description	Author
2019.7.19	1.0	○ Initial release	Amy Kim