

# Ad Hoc (Peer-to-Peer) Mode

Linking two Serial Server devices together in a “Cut Cable” type of application.

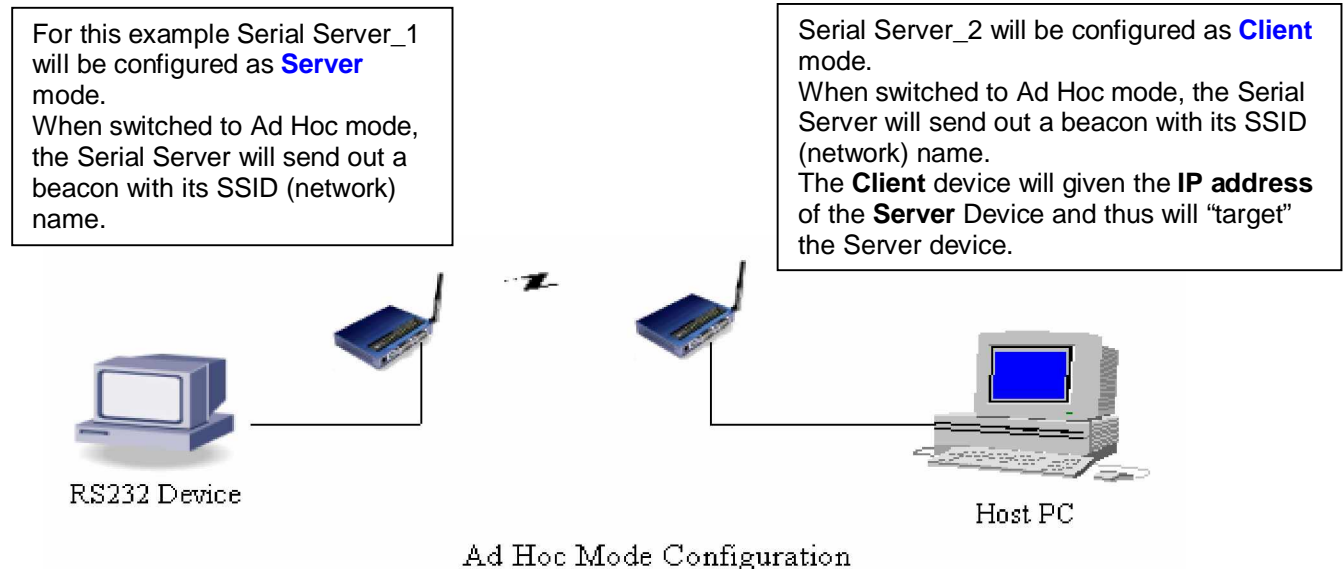
Two Peer devices may be linked together to form a direct connection without an Access Point between them. This direct one-to-one connection is called “Ad Hoc” mode (also called “Peer-to-Peer”). It is also called ‘cut cable’ since it wirelessly simulates a cabled installation.

In addition to paired Serial Server links (serial Server-to-Serial Server) the Ad Hoc mode is also used for other peer-to-peer links such as Serial Server-to-Laptop, Serial Server-to-PDA, and Serial Server-to-USB Dongle links, and examples of these connections are shown on subsequent pages.

This Ad Hoc mode example shown below simulates a “cut cable” by wirelessly eliminating a cable with data transferring to/from Serial Server\_1 Port 1 Male connector and wirelessly linking to Serial Server\_2 Port 2 Male connector.

**Hint: A key to getting Ad Hoc to work properly is to assign one Peer device set as “Server” and the other Peer device set as “Client.”**

Assume that Serial Server\_1 is connected to RS232 device via RS232 port 1 and Serial Server\_2 is connected to another RS232 device such as a Host PC via RS232 port 2.



The following procedures can be used to set up the Ad Hoc (Peer-to-Peer) mode for two Serial Server Devices. The examples are real values that will result in a functioning set up. There is space provided for you to enter in your own choice of values in a printout. The two Serial Server devices Set Up screens are shown side-by-side so the settings relationship of the two devices can be better understood.

## Server Device:

This device will be configured as **“Server”**. The **“Server”** device will wait to be contacted by a **“Server”** device that sends out a beacon.

### 1a) Configure Serial Server\_1 “Net” Tab window as follows:

The IP Address of this device is set to 192.168.1.**253** (for example). Make sure no other device uses this IP address. If another device already uses 192.168.1.253, then change to another appropriate IP address. (Notice the address for Serial Server\_1 and Serial Server\_2 (in the right hand column) are different.)

### “Server” Device “Net” Tab Set Up

| Network    | Wireless | RS232 Port 1               | RS232 Port 2 | Site Survey |
|------------|----------|----------------------------|--------------|-------------|
| IP Address |          | 192 . 168 . 1 . <b>253</b> |              |             |
| IP Mask    |          | 255 . 255 . 255 . 0        |              |             |
| Gateway    |          | 192 . 168 . 1 . 10         |              |             |

## Client Device:

This device will be configured as **“Client”**. The **Client** device will send out a beacon to try to connect to the **“Server”** device.

### 1b) Configure Serial Server\_2 “Net” Tab window as follows:

The IP Address of this device is set to 192.168.1.**254** (for example). Make sure no other device uses this IP address. If another device already uses 192.168.1.254, then change to another appropriate IP address. (Notice the address for Serial Server\_1 (in the left hand column) and Serial Server\_2 are different.)

### “Client” Device “Net” Tab Set Up

| Network    | Wireless | RS232 Port 1               | RS232 Port 2 | Site Survey |
|------------|----------|----------------------------|--------------|-------------|
| IP Address |          | 192 . 168 . 1 . <b>254</b> |              |             |
| IP Mask    |          | 255 . 255 . 255 . 0        |              |             |
| Gateway    |          | 192 . 168 . 1 . 10         |              |             |

With a Subnet Mask of “255.255.255.0”, the IP addresses should be the same up to the last decimal (dot). The last value can be any number between 0 and 255 that has not already been allocated.

My **“Server”** IP address is:  
 (you can write your “Server” Device IP address here).

\_\_\_\_\_ . \_\_\_\_\_ . \_\_\_\_\_ . \_\_\_\_\_

My **“Client”** IP address is:  
 (you can write your “Client” IP address here).

\_\_\_\_\_ . \_\_\_\_\_ . \_\_\_\_\_ . \_\_\_\_\_

## Server Device:

## Client Device:

2. Configure both Serial Server\_1 and Serial Server\_2 “Wireless” tab windows as follows:

2a. The **Operation Mode** is set to **Ad hoc** (instead of Infrastructure). **This is a key to Peer-to-Peer operation, in that both Peer devices must be in “Ad Hoc” mode.** This is also true if the second Peer device is not another Serial Server device, but might be a Laptop, PDA, USB Dongle or any other Peer Device. **Note that both devices have the “Wireless” tab settings set exactly the same for both “Server” and “Client” devices.**

### Serial Server\_1 “Wireless” Tab

| Wireless        | RS232 Port 1 | RS232 Port 2 | Site Survey |
|-----------------|--------------|--------------|-------------|
| Operation Mode  | Ad-Hoc       |              |             |
| Channel         | 1            |              |             |
| SSID            | WLAN_RS232   |              |             |
| TX Rate         | Auto         |              |             |
| Encryption Mode | WEP-64 Bits  |              |             |

### Serial Server\_2 “Wireless” Tab

| Wireless        | RS232 Port 1 | RS232 Port 2 | Site Survey |
|-----------------|--------------|--------------|-------------|
| Operation Mode  | Ad-Hoc       |              |             |
| Channel         | 1            |              |             |
| SSID            | WLAN_RS232   |              |             |
| TX Rate         | Auto         |              |             |
| Encryption Mode | WEP-64 Bits  |              |             |

2b. **Channel:** Select a WLAN Channel that is not locally used by other local devices, e.g. Channel 1 in this example. **Hint: BOTH devices MUST be set exactly to the same channel.** (This is not like Infrastructure mode where the channel selection does not matter because in Infrastructure (Network mode) the Serial Server Device jumps to the channel of the strongest Access Point with the same SSID.) **But in Ad Hoc mode, the two devices are being paired and locked together including exactly matching the channel settings.** You can check for channel usage in your location by using the “Site Survey” tab.

**My Channel setting is channel** \_\_\_\_\_ (Hint: channels 1, 6, 11 are non-overlapping).

2c. **SSID:** Assign the same SSID (Network Name) to each device, for example “WLAN\_RS232”. You can use another channel or SSID name as you like, but both Serial Server\_1 and Serial Server\_2 must have the same exact SSID as well as the same channel.

**My SSID (network name) is** \_\_\_\_\_

2d. **Encryption:** If Encryption is set to “Disable”, then WLAN WEP/WPA encryption function is not activated. But if Encryption is activated by setting to WEP or WPA, then both Serial Server “Server” and Serial Server “Client” must be set to the exact same values for Encryption, WEP Key Use, and Key values. (Note that it is easier to get the devices working together WITHOUT any encryption enabled, because it is a significant item that can be easily miss-set. You can always enable WEP or WPA security after the Peer-to-Peer is set up and is operating correctly.) WEP and WPA key values are “hexadecimal” which is 0-9 and A, B, C, D, E, F.

**My Encryption Key is:**

( ) **WEP-64** \_\_\_\_\_ (10 characters)

( ) **WEP-128** \_\_\_\_\_ (23 characters)

( ) **WPA – TKIP** \_\_\_\_\_

( ) **WPA – AES** \_\_\_\_\_

### 3) Setting RS232 Serial Port settings for Ad Hoc

Remember that in this example we are eliminating a cable assembly with data transferring to/from Serial Server\_1 Port 1 Male connector and wirelessly linking to Serial Server\_2 Port 1 Male connector. The key to Ad Hoc is have one Peer device set as "Server" and the other Peer device set as "Client." **Thus the "Client" device points-to (targets) the "Server" device.** The same configuration philosophy of settings for this Port1 also applies to the second Port2.

#### Serial Server "Server" RS232 Port1

3a) Configure Serial Server\_1 RS232 Port 1 (Male connector) with mode set to "Server" (Serial Server\_2 RS232 port 1 will be set as "Client" in the right hand column).

**The "grayed-out" Remote IP and Remote Port are not used when the device is set as "Server."** (Remember that the IP address set for this device was "192.168.1.253" which will be entered into Serial Server\_2 "Remote IP" (as shown in the right hand column.)

**See settings below, how a "Client" device "Targets" the "Server" device.**

**Remember this device IP Address is 192.168.1.253. It is set as "Server".**

|              |              |             |         |           |   |           |   |              |      |                |      |           |               |                 |   |           |    |             |        |
|--------------|--------------|-------------|---------|-----------|---|-----------|---|--------------|------|----------------|------|-----------|---------------|-----------------|---|-----------|----|-------------|--------|
| RS232 Port 1 | RS232 Port 2 | Site Survey | Profile | ...       |   |           |   |              |      |                |      |           |               |                 |   |           |    |             |        |
| Baud Rate    | 57600        | Parity :    | None    | Data Bits | 8 | Stop Bits | 1 | Flow Control | None | Local TCP Port | 2001 | Remote IP | 0 . 0 . 0 . 0 | Remote TCP Port | 0 | Idle Time | 30 | Port 1 Mode | Server |

#### Serial Server "Client" RS232 Port1

3b) Configure Serial Server\_2 RS232 Port 1 (Male connector) with the Mode set to "Client" (see red circled near bottom of the window) (Serial Server\_1 RS232 Port 1 was set as "Server"). Note that when you set this device to "Client" the grayed-out Remote Port and Remote IP became active. Set the Remote Port of Serial Server\_2 to match the "Local Port" setting for the target TCP port on Serial Server\_1 (2001) as seen on the left column. Remember that the IP address assigned to Serial Server\_1 was 192.168.1.253, so enter that address into the Remote IP field of Serial Server\_2.

**Remember this device IP Address is 192.168.1.254. It is set as "Client".**

|              |              |             |         |           |   |           |   |              |      |                |      |           |                     |                 |      |           |    |             |        |
|--------------|--------------|-------------|---------|-----------|---|-----------|---|--------------|------|----------------|------|-----------|---------------------|-----------------|------|-----------|----|-------------|--------|
| RS232 Port 1 | RS232 Port 2 | Site Survey | Profile | ...       |   |           |   |              |      |                |      |           |                     |                 |      |           |    |             |        |
| Baud Rate    | 57600        | Parity :    | None    | Data Bits | 8 | Stop Bits | 1 | Flow Control | None | Local TCP Port | 2001 | Remote IP | 192 . 168 . 1 . 253 | Remote TCP Port | 2001 | Idle Time | 30 | Port 1 Mode | Client |

The **IP network address** I chose for the "Server" device was \_\_\_\_ . \_\_\_\_ . \_\_\_\_ . \_\_\_\_ , so that is the IP address that needs to be loaded into the "Remote IP" field of the "Client" device. There are 2 ports on the Serial Server, and you need to tell this **Client** device to which port on the "Server" to point. The TCP port of the Server device I want the Client device to point to is \_\_\_\_\_ (hint: use 4 or 5 digit number (greater than 2000)).

The Client device has now been configured to point to the Server device.  
The fastest linkage will be if the Server device is already powered up when the Client device is power up, but linkage will occur in any event.