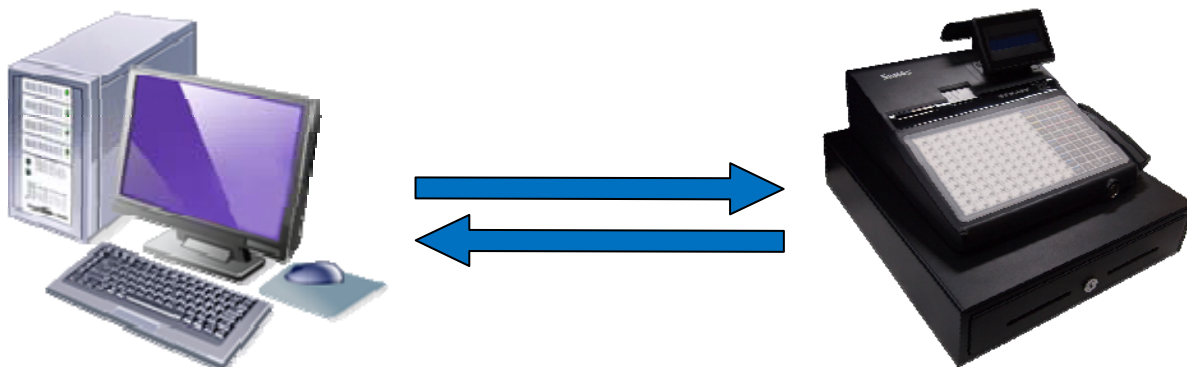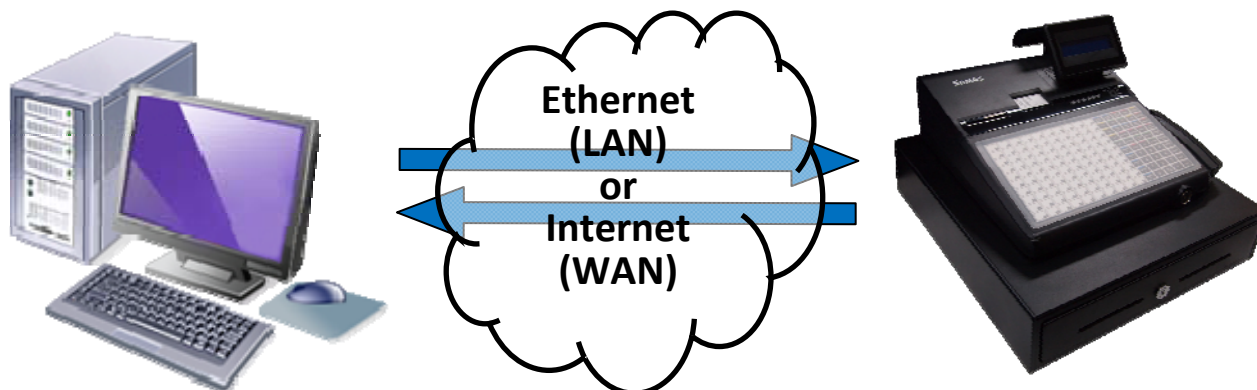# SAM4S ECR Range Ethernet Communication with PC



## Direct Link

When a SAM4S ECR links to a PC, the communication is based on serial signals. There are 3 different kinds of adaptor. DB9 - both male and female, RJ45, and USB (virtual COM USB).

| Model | Port # | | | |
|---|---|---|---|---|
| | DB9M | DB9F | RJ45 | Virtual COM USB |
| ER230 | | | 1 and 2 | |
| ER380 | | 1 | | |
| ER380M/MB | | 1 and 2 | | |
| ER390M/MB | | 1 and 2 | | |
| ER420M | | 1 and 2 | | |
| ER430M | | 1 and 2 | | |
| ER52xx Series | | 1 and 2 | | |
| ER52xxM Series | | 1 and 2 | | |
| ER900 Series | 1 and 2 | | 3 (3 and 4 - optional) | 4 |
| ER650 Series | | 1 and 2 | | |
| ER600 Series | | 1 and 2 | 3 and 4 | |
| SPS300 Series | 1 and 2 | | 3 (3 and 4 - optional) | 4 |
| SER7000 Series | | 1 | 2, 3 and 4 | |
| SPS1000 | 1 and 2 | | 3 (4 ~ 7 - optional) | |

According to industry standards, the maximum length for USB communication is 5 meters, and serial communication is recommended no longer than 15 meters. Therefore, when the distance between register and PC is too far, converting the serial signal to Ethernet signal is the solution for that kind of environment. After convert serial singal to network signal, the signal then can follow network protocols and communicate through Ethernet (Local Area Network - LAN) or Internet (Wide Aea Network - WAN).
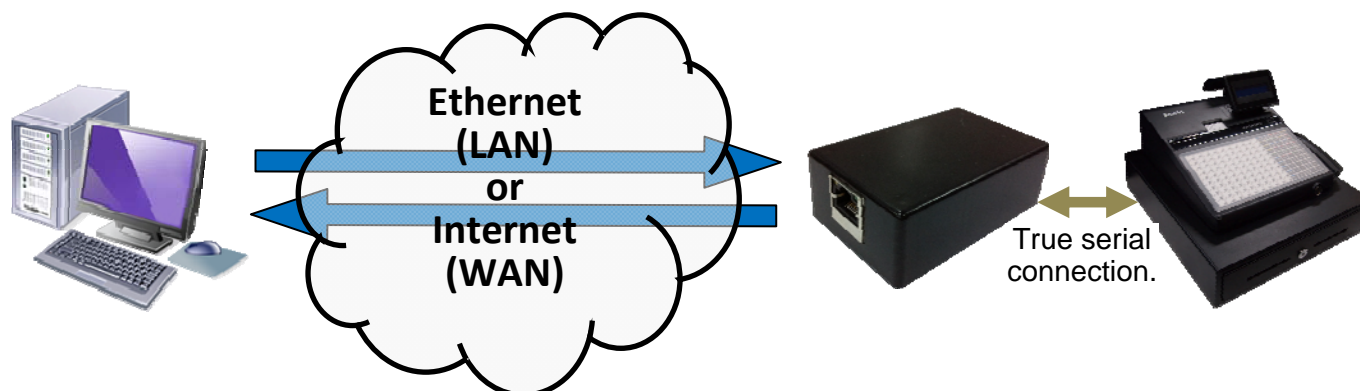
As the recommend maximum length of a Cat-5 cable is up to 100 meters, with Port-Server, a SAM4S ECR is possible to communicate with PC in much longer distance. The network connection can have two different types - via Local Area Network (LAN) or via Wide Area Network (WAN)
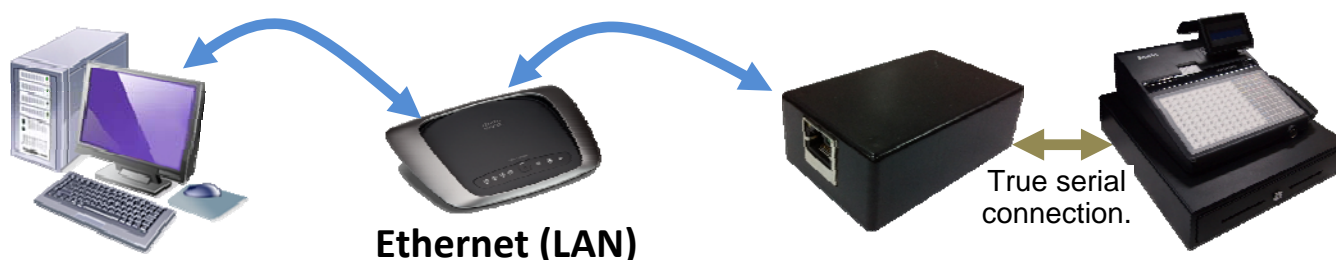
# Port-Server (Serial to Ethernet Convertor)

The device is called "Port-Server", which is a device that converts a serial signal to a network signal. A Port-Server is a peripheral of the cash register, and is programmed as the PC/polling on the register's port settings. After the register received the enquiry from the computer, the register will prepare the data as requested in serial format, send through the port-server on the register. The Port-Server then converts the serial data into network format, then send back to the PC through network.

This Port-Server is only work with true serial signal, therefore, the standard Virtual COM USB port on ER900 series and SPS300 series is not compatible with the Port-Server. Alternatively, an optional dual RJ45 serial ports module is available for both ER900 series and SPS300 series.



## Local Area Network (LAN) Connection

When the polling happens in Local Area Network (LAN), a router/switch is needed. ==However, it is recommended that DHCP server is turned off, and using fixed IP Address on all devices within network instead.== In a Local Area Network configuration, the IP Address for each network device is the fundamental setting.
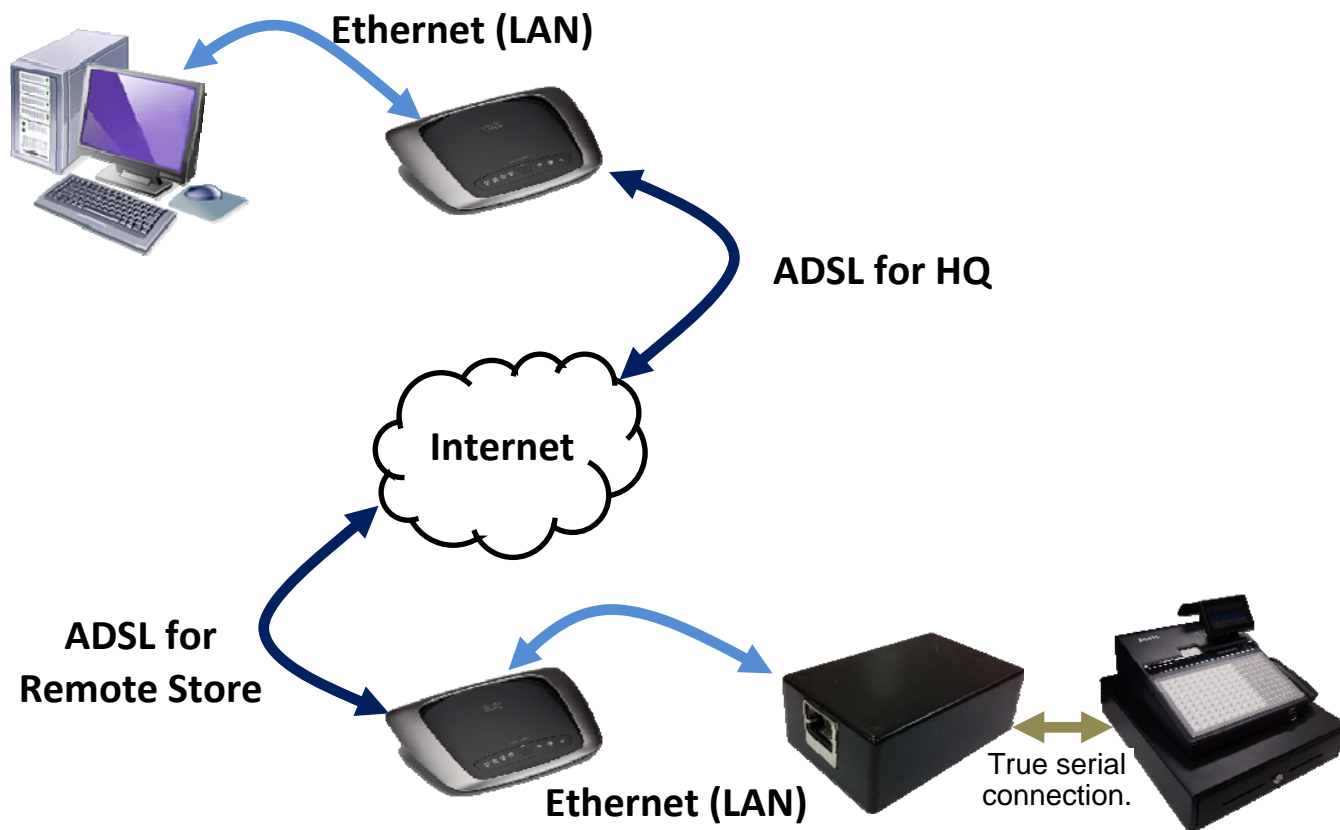


A plan of the IP Addresses is needed like below…

| Device | IP Address (Range) | Port Number |
|---|---|---|
| PC | 192.168.000.002 | n/a |
| Router/Gateway | 192.168.000.001 | n/a |
| Device Group #1 (existing IT devices) | 192.168.000.010 to 192.168.000.050 | n/a |
| Device Group #2 (for newly added Port-Server/POS devices) | **192.168.00.051** to **192.168.000.100** | 771 (for all local devices) |
| Device Group #3 (for other devices) | 192.168.000.101 to 192.168.000.150 | n/a |
| … and more | …… | |

# Wide Area Network (WAN) Connection

When the PC that is managing all the register is located in the headquarter/remote office, the communication between the PC and a ECR will go through Wide Area Network (WAN) or say, Internet. When communication is through WAN/Internet, each location - headquarter/office, remote store(s) have to have an ADSL service.

When port-server is used in remote location, the remote store's ADSL must use a static public IP Address (always the same) and the shop router needs to be programmed to forward data coming in from HQ to the correct port-server.
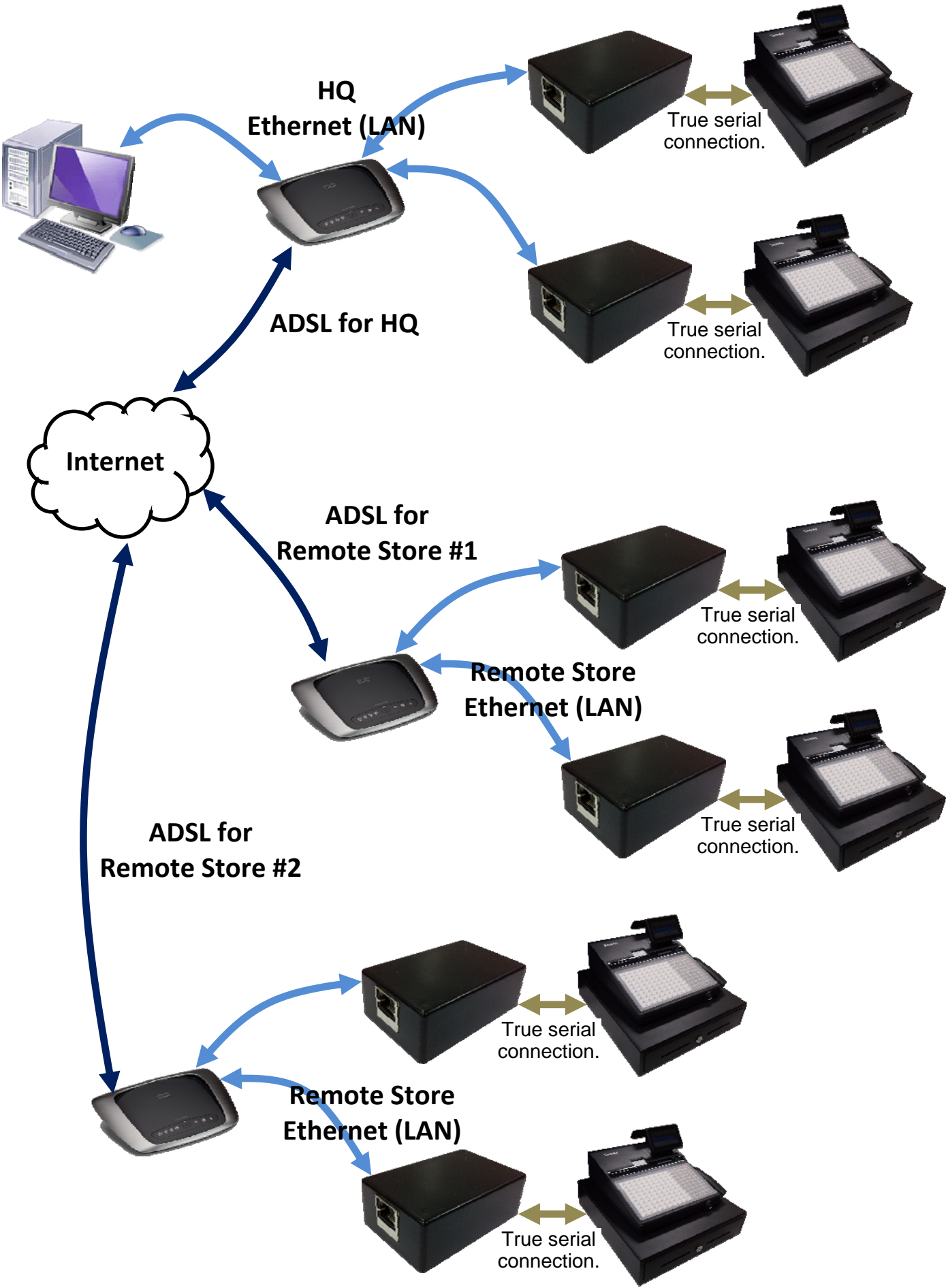


A plan of the IP Addresses is needed like below…

| | Device | IP Address (Range) | Port Number |
|---|---|---|---|
| **HQ** | PC | 192.168.000.002 | n/a |
| | Router/Gateway | 192.168.000.001 | n/a |
| **Remote Store** | Public IP of ADSL | **220.233.225.158** | n/a |
| | Router/Gateway | 192.168.000.001 | n/a |
| | Device Group #1 (existing IT devices) | 192.168.000.010 to 192.168.000.050 | ____ to ____ |
| | Device Group #2 (for newly added Port-Server/POS devices) | 192.168.000.051 to 192.168.000.100 | **771** to **811** |
| | … and more | …… | …… |

# Mixed LAN and WAN Connection

When the size of business is growing, the connection or management can be complicated. However, if the total number of COM Ports in one PC does not exceed 256, this Port-Server will work.

**HQ Ethernet (LAN)**

True serial connection.

True serial connection.

**ADSL for HQ**

**Internet**

**ADSL for Remote Store #1**

True serial connection.

**Remote Store Ethernet (LAN)**

True serial connection.

**ADSL for Remote Store #2**

True serial connection.

**Remote Store Ethernet (LAN)**

True serial connection.

A plan of the IP Addresses is needed like below…

|  | Device | IP Address (Range) | Port Number |
|---|---|---|---|
| **HQ** | PC | 192.168.000.002 | n/a |
| | Router/Gateway | 192.168.000.001 | n/a |
| | Device Group #1 (existing IT devices) | 192.168.000.010 to 192.168.000.050 | n/a |
| | Device Group #2 (for newly added Port-Server/POS devices) | **192.168.000.051** to **192.168.000.100** | 771 (for all local devices) |
| | Device Group #3 (for other devices) | 192.168.000.101 to 192.168.000.150 | n/a |
| | … and more | …… | |
| **Remote Store #1** | Public IP of ADSL | **220.233.225.158** | n/a |
| | Router/Gateway | 192.168.000.001 | n/a |
| | Device Group #1 (existing IT devices) | 192.168.000.010 to 192.168.000.050 | ____ to ____ |
| | Device Group #2 (for newly added Port-Server/POS devices) | 192.168.000.051 to 192.168.000.100 | **771** to **811** |
| | … and more | …… | …… |
| **Remote Store #2** | Public IP of ADSL | **220.233.22.035** | n/a |
| | Router/Gateway | 192.168.000.001 | n/a |
| | Device Group #1 (existing IT devices) | 192.168.000.010 to 192.168.000.050 | ____ to ____ |
| | Device Group #2 (for newly added Port-Server/POS devices) | 192.168.000.051 to 192.168.000.100 | **771** to **811** |
| | … and more | …… | …… |
| … and more | | | |