

INTRODUCTION

ROAMEO is a wireless matrix system from RTS. In this Application Note, we will look at a way of connecting the ROAMEO Access Points using Power over Ethernet, PoE.

WHAT IS PoE?

Power over Ethernet is a way of simplifying wiring for devices that connect to Ethernet. With PoE, there is no need for a separate power supply. There is an upper limit on the amount of power that can be supplied using PoE, and the limit is dependent on the type of PoE switch used. In general, PoE is intended for devices that require little power, up to about 13 Watts. (There is another standard called PoE Plus, which allows up to 25 Watts of power, but we will not get into that here.) With PoE, the data signal is superimposed on the power. On the receiving end, filters are used to pick out the data from the power. When a PoE device is turned on, it communicates with the PoE switch to “negotiate” the right electrical parameters. For this reason, PoE devices can never be connected in cascade.

THE ROAMEO AP

The ROAMEO Access Point, AP-1800, is designed to be tolerant to PoE, but it is not designed to use PoE directly. Expressed differently, it is PoE tolerant but not PoE enabled. RTS does supply a PoE adapter kit, to allow the AP-1800 to work with a PoE enabled switch. The PoE kit is shown in Figure 1.

The kit can be ordered as any other part. The part number is F.01U.335.167 (POE ADAPTER 12V) and it contains the following parts:

- The PoE adapter
- A barrel adapter
- A short DC-cable
- Two Ethernet-cables



Figure 1. The PoE kit for AP-1800

SETTING THE VOLTAGE ON THE PoE ADAPTER

The PoE adapter is designed to support three different voltages. The AP-1800 expects 12 V. The setting on the PoE adapter (TP-Link) must be set to 12 V before it is connected to the Access Point. This is shown in Figure 2. To set it to 12 V, slide the little selector to the left. Note if the selector is in the wrong position, nothing will break. The AP simply will not power up.



Figure 2. The voltage selector should be in the left-most position for 12V

HOW TO CONNECT THE PoE ADAPTER

Once the voltage has been set to 12 V as described in the previous section, the cable from the PoE switch is connected to the rear of the PoE adapter, and the signal output and DC connectors are connected to the AP-1800. Note you must use the barrel adapter to make a reliable electrical connection between the cable and the AP-1800. Without the barrel connector, it will not work.

We will now look at some ways in which the PoE-enabled Access Point can be connected to the system. To symbolize a PoE-enabled Access Point, we will use the symbol shown in Figure 4.



Figure 3. How to connect the PoE adapter

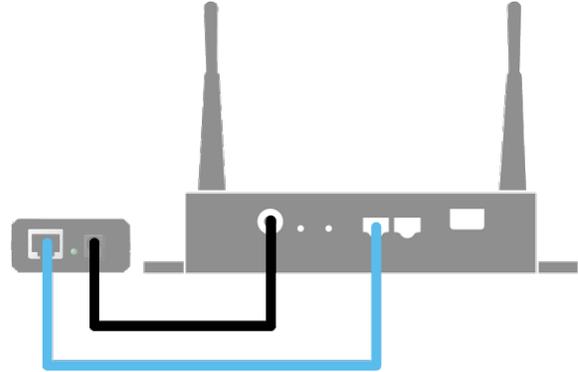


Figure 4. This is the symbol for a PoE-enabled AP-1800

SYSTEM DIAGRAMS

In the first example, we will show how a single AP-1800 may be connected. Note the PoE-enabled AP-1800 on the right is connected directly to the switch. The other two APs are running on local power (meaning they are connected to power using the supplied AC to DC converter). The first AP is connected to PoE, but is not utilizing that power.

In the second example, another AP is connected to the PoE-enabled AP. The second AP must have local power. The OMNEO signal coming out of the second Ethernet jack on the PoE-enabled AP no longer has power.

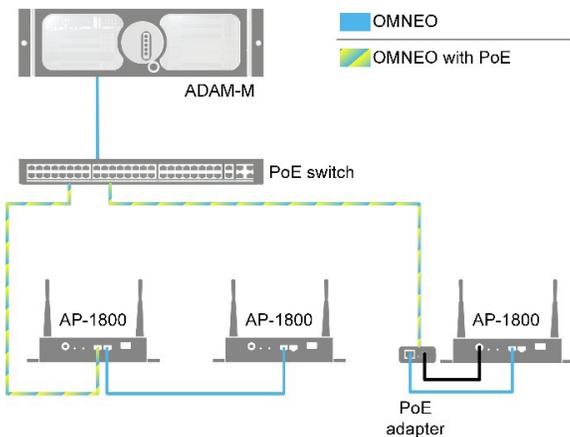


Figure 5. Connecting a single PoE-enabled AP-1800

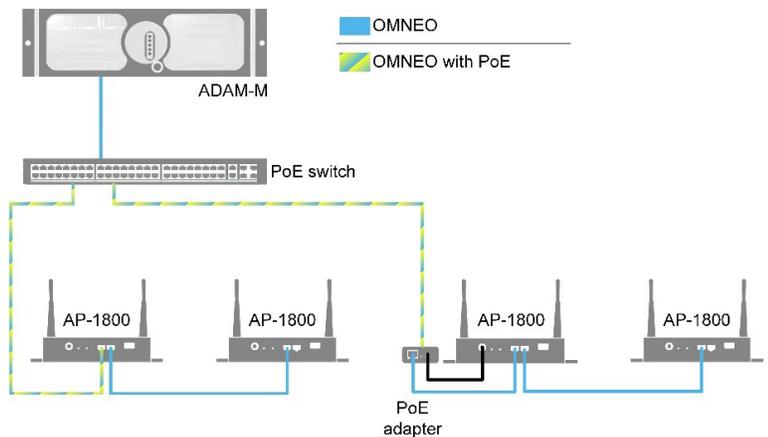


Figure 6. Connecting another AP to a PoE-enabled AP

CONCLUDING REMARKS

ROAMEO Access Points can work with PoE, but they require an adapter, which must be purchased separately (e.g., it is not included). Each AP that requires PoE must be connected directly to a PoE switch. The total power of all PoE enabled APs must not exceed the total power of the PoE switch.