Calculation of the adequacy of POE/POE+ power supply
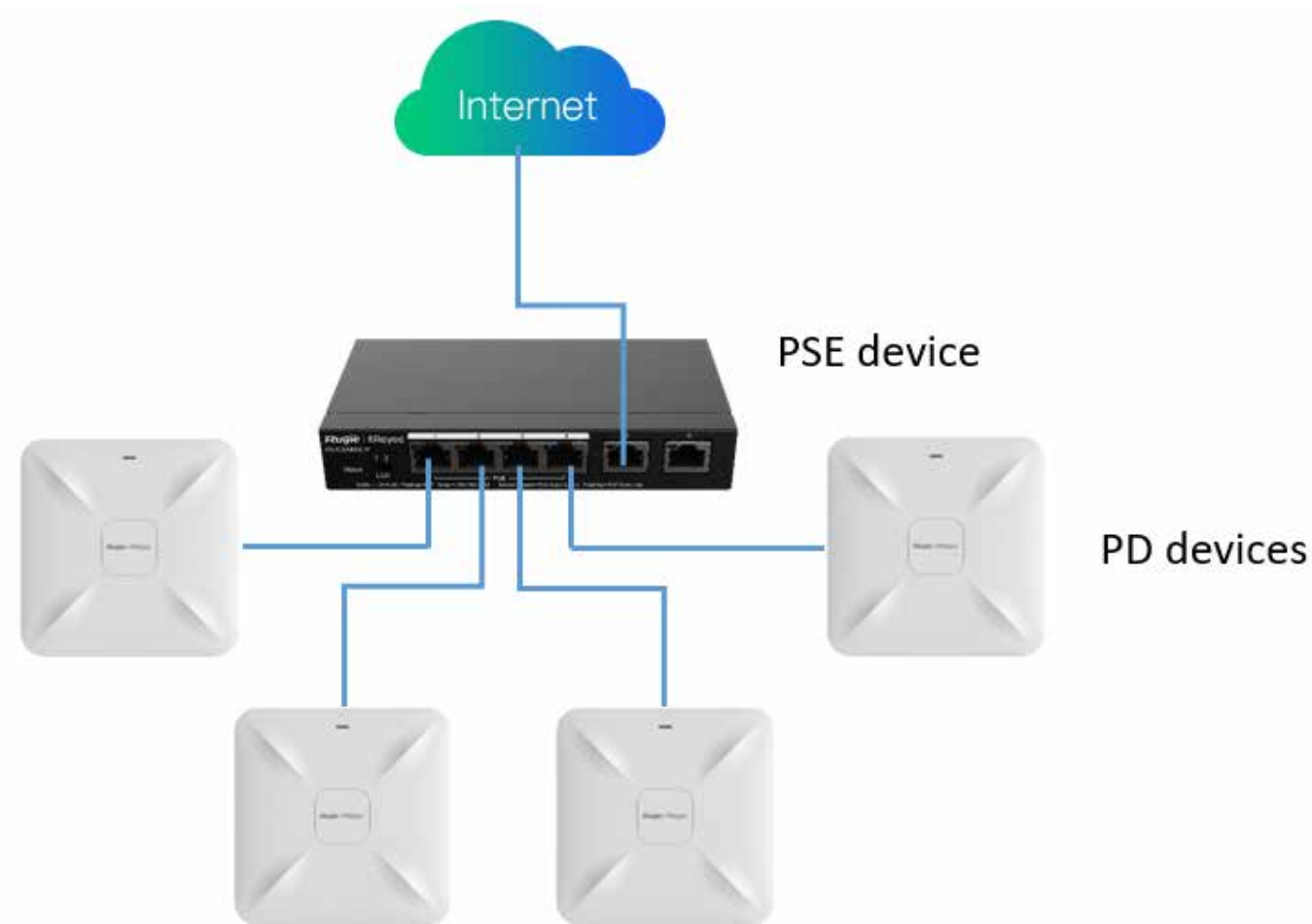
I. Application Scenario

PoE calculation is very necessary before deploying a project. In order to make sure the Powered Device (PD) work well, such as AP and Camera. We need to choose the Power Sourcing Equipment (PSE) , such as PoE adapter and PoE Switch.

II. Topology

Single PD device power supply scenario

Multiple PD devices power supply scenario

III. Calculation Plans

1. Confirm the Power Consumption of the PD devices.
2. Confirm the PoE Power Consumption of PSE device.
3. Calculate the Power Consumption of PD devices and select the proper PSE devices.

2

IV. Single device Calculation Steps

1 Check the **"Power Consumption"** of the PD device.
Paths: **Datasheet** or **Specification** in the product introduction screen.

Model	RG-AP820-L(V2)
Power Consumption	< 12.95W

2 Check the **"Output Port Power"** of the POE adapter.
Paths: **Datasheet** or **Specification** in the product introduction screen.

	RG-E-120(GE)	RG-E-130(GE)
Ports	10/100/1000 Mbps Copper port (RJ-45) 10/100/1000 Mbps PoE Copper port (RJ-45)	
Power	Output Power Voltage: 50V DC Output Port Power: 15.4W	Output Power Voltage: 53V DC Output Port Power: 30W

3 Compare the **"Output Port Power"** of the POE adapter and the **"Power Consumption"** of the PD device.

If **"Output Port Power"** > **Power Consumption**, the device can be powered by this adapter.
If **"Output Port Power"** < **Power Consumption**, the device cannot be powered by this adapter.

Example:

I want to use RG−E−120(GE) to power the AP820−L(V2) through POE, is the adapter able to meet the requirement?

Output Port Power of RG−E−120(GE) is 15.4W
Power Consumption of AP820−L(V2) is 12.95W
Output Port Power of RG−E−120(GE) > Power Consumption of AP820−L(V2).

Therefore, the device can be powered by this adapter.

V. Multi-device Calculation Steps

1 Check the **"PoE Power Budget"** and **the number of POE/POE+ ports** of the POE switch

Product Model		XS-S1920-9GT1SFP-P-E	XS-S1920-26GT2SFP-P-E	XS-S1920-26GT2SFP-LP-E	XS-S1920-24T2GT2SFP-P-E	XS-S1920-24T2GT2SFP-LP-E	RG-S1920-18GT2SFP	RG-S1920-24GT4SFP/2GT
Ports	10/100 BASE-T	n/a	n/a	n/a	24	24	n/a	n/a
	10/100/1000 BASE-T	9	26	26	2	2	18	26
	1000M SFP	1	2	2	2	2	2	4 (with 2 combo)
Power over Ethernet	PoE	✓	✓	✓	✓	✓	n/a	n/a
	PoE/PoE+ Enabled Ports	8	24	24	24	24	n/a	n/a
	IEEE802.3af (PoE)	✓	✓	✓	✓	✓	n/a	n/a
	IEEE802.3at (PoE+)	✓	✓	✓	✓	✓	n/a	n/a
	PoE Power Budget	125W	370W	185W	370W	185W	n/a	n/a

2 Calculate the **"Total Power Consumption"** of the PD devices and compare with **POE Power Budget** of the switch.

If **"POE Power Budget"** > **Total Power Consumption**, the PD devices can be powered by this switch.

If **"POE Power Budget"** < **Total Power Consumption**, the devices cannot be powered by this switch.

Example:

I want to use XS-S1920-9GT1SFP-P-E to power 8 AP820-L(V2) through POE/POE+, is this switch able to meet the requirements?

(1) POE Power Budget and the number of POE/POE+ ports of XS-S1920-9GT1SFP-P-E: 125W * 8Ports

(2) Total Power Consumption of 8 * RG-AP820-L(V2): 8 * 12.95W = 103.06W

(3) POE Power Budget: 125W is higher than the Total Power Consumption 103.06W, which means the devices (8 * RG-AP820-L(V2)) can be powered by XS-S1920-9GT1SFP-P-E.

Official Website   Community   Facebook