

# White Paper

## Power over Ethernet

Date: October 21, 2005  
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Document: faq-05-10-21-da



[www.snom.com](http://www.snom.com)

## Background

Power over Ethernet has three main advantages:

- There is only one cable needed to connect to the phone, which clears up the desktop.
- It is relatively easy to have a separate backup power supply for the telephone system. This is important when emergency procedures require that the telephone system works even when the main power is gone.
- By centralized remote power management, single devices can be checked for power. This allows simple remote booting and hardware failure detection.

Power over Ethernet is sometimes also called Power over LAN. We use the term Ethernet here because the underlying technology is Ethernet for snom products.

## Detecting Power over Ethernet

Different mechanisms are used to detect whether or not the attached Powered Device (PD) supports Power over Ethernet (PoE). This is important in order to avoid damaging a PD that does not support this feature. Power over Ethernet can either be provided over the spare twisted pairs (pins 7 & 8 and pins 4 & 5) or over the data pairs (pins 1 & 2 and pins 3 & 6) in an ordinary category 5 cable.

The Cisco Power over Ethernet uses a proprietary method. The IEEE committee approved a different standard called 802.3af. In IEEE 802.3af, a PSE uses a resistive signature to detect and measure the current required by the PD. Before IEEE decided to use the resistive signature, the capacitive signature was used (so-called „big capacitor method“). At the moment the following methods are available for PoE:

- IEEE standardized Power over Ethernet IEEE 802.3af (snom 360, snom 320, snom 200)
- Non-standard capacitive solution (snom 100, snom 105, snom 220)
- Cisco Proprietary Inline Power over Ethernet
- Cisco Proprietary Spare Line Power over Ethernet

## snom VoIP Phone 360

snom 360 is an IEEE 802.3af compatible device and it is tested with the following Power Sourcing Equipment (PSE):

1. PowerDsine's PD-60xx Midspan and PoE switch, based on PowerDsine's integrated solutions (certified) (<http://www.powerdsine.com/Products/Midspan/>)
2. RedHawkBL-8551 (<http://www.red-hawk.com>)
3. RedHawk BL-6524 (<http://www.red-hawk.com>)
4. 3Com 4400 PWR, 24 Ports (switch)

5. Microsens installation switch MS450230PM-48 (<http://www.micosens.de/>)
6. Microsens Miniswitch MS453151M (7 port 6X10/100TX) with 2 POE LAN ports
7. HP ProCurve POE Switch
8. Juce Box PH24, SEI INC.
9. Netgear Prosafe POE switch FS108P (\*)

The peak power consumption is 2.9W (Booting or maximum speaker volume, 2 Ethernet ports in use, 2 way conference). Normal operation requires 1.8 W – 2.3W. The average consumption is ~ 2.4W.

## snom 360 + 1 Expansion module

The peak power consumption is 3.2W (booting or maximum speaker volume, 2 Ethernet ports in use, 2 way conference, all LED's on). Normal operation requires 2.1 W – 2.7W. The average consumption is ~ 2.6W.

IEEE 802.3af Classification:

- snom 360 (000413230040 – 000413231558): Class 0
- snom 360 (000413231559 – ): Class 1

## snom VoIP Phone 320

snom 320 is an IEEE 802.3af compatible device and it is tested with the following Power Sourcing Equipment (PSE):

1. PowerDsine's PD-60xx Midspan and PoE switch, based on PowerDsine's integrated solutions (certified) (<http://www.powerdsine.com/Products/Midspan/>)
- 2.RedHawkBL-8551 (<http://www.red-hawk.com>)
- 3.RedHawk BL-6524 (<http://www.red-hawk.com>)
4. 3Com 4400 PWR, 24 Ports (switch)
5. Microsens installation switch MS450230PM-48 (<http://www.micosens.de/>)
6. Microsens Miniswitch MS453151M (7 port 6X10/100TX) with 2 POE LAN ports
7. HP ProCurve POE Switch
8. Juce Box PH24, SEI INC.
9. Netgear Prosafe POE switch FS108P (\*)

The peak power consumption is 2.7W (booting or maximum speaker volume, 2 Ethernet ports in use, 2 way conference). Normal operation requires 1.7 W – 2.2W. Average consumption is ~ 2.3W.

IEEE 802.3af Classification:

- Class 1

(\*) use 10MB full duplex connection (firmware version 5.0, web interface, advanced)

## snom VoIP Phone 220

snom 220 supports Power over Ethernet with widespread capacitive solution.

snom 220 is tested with the following Power Sourcing Equipment (PSE):

1. PowerDsine family 6000 (certified)

The maximum current consumption is 170 mA (48V), which gives 8.2W (display light on, maximum speaker volume, 2 Ethernet ports in use). Minimum input voltage is 44V.

## snom VoIP Phone 200

snom 200 fully supports 802.3af, which is standardized Power over Ethernet using resistance signature.

Tested devices:

1. PowerDsine family 6000 (certified)
2. RedHawk BL-8500 family

The maximum current consumption is 150 mA (48V), which gives ~.7.2W (maximum speaker volume, 2 Ethernet ports in use). Minimum input voltage is 44V.

IEEE 802.3af Classification:

- snom200B: Class 0

## snom VoIP Phone 105

The snom105 supports Power over Ethernet with widespread capacitive solution (capacitive solution, so-called „big capacitor detection“).

snom105 is tested with the following Power Sourcing Equipment (PSE):

1. PowerDsine (48V) PD-PH-4006, 4012, 4024 (certified)
2. PowerDsine family 6000 (this PowerDsine family supports both: old „Capacitive solution“ and IEEE 802.3af standard)

Max current consumption is 170 mA (48V), which gives 8.2W (Display light on, max. speaker volume, 2 Ethernet ports in use). Minimum input voltage is 44V.

**snom technology AG** is committed to providing its customers with complete solutions in the SIP area. Our main market segments are enterprises and ISPs that value snom's feature-rich solutions and its dedication to open standards, particularly SIP. snom's investment in interoperability pays off for its customers as SIP offers cost optimization and technical flexibility unavailable with proprietary solutions. Founded in 1996 and based in Berlin, the company constantly pursues a commitment to innovation and is a recognized technology leader in the SIP field. snom is a customer-oriented company producing state-of-the-art, affordable VoIP phones with a high cost-performance ratio and a range of practical SIP applications for business.

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