CISCO SYSTEMS

Q&A

Cisco Unified IP Phone Power Injector

GENERAL QUESTIONS

Q. What is the Cisco® IP Phone Power Injector?

A. The Cisco Unified IP Phone Power Injector Is a single port midspan power injector for use with Cisco Unified IP phones. It supports a maximum 100m of cable length between the unpowered switch and the Cisco Unified IP Phone.

Q. Where in the network is the Cisco Unified IP Phone Power Injector intended to reside?

A. As a midspan device, it is connected between a switch port and the Cisco Unified IP phone, and may reside in either the switch closet or at the desk.

Q. Is the Cisco Unified IP Phone Power Injector a managed device? Is software required? Are there Cisco Unified CallManager version dependencies? What effect does the injector have on network traffic?

A. It is an unmanaged device - no software is required, and there are no Cisco Unified CallManager version dependencies. The injector merely passes traffic through, transparently.

Q. Which Cisco Unified IP phones can be powered by this device?

A. All Cisco Unified IP phones (including Gigabit versions).

Q. Will the Cisco Unified IP Phone Power Injector work with other devices, e.g. non-Cisco IP Phones?

A. It has been specifically tested for use only with Cisco Unified IP Phones, and is not supported for use with any other devices.

Q. How does the Cisco Unified IP Phone Power Injector differ from other power injectors on the market?

A. It has been specifically designed and tested for use with Cisco Unified IP phones to ensure elimination of 60Hz hum that can be introduced by similar devices. Additionally, it can enhance network reliability in some cases where Cisco Unified IP phones are currently locally powered (via a power cube), particularly in CAT3/10Mbps environments with short cable lengths that may introduce susceptibility to port loopback.

Q. Who are the target customers for the Cisco Unified IP Phone Power Injector?

A. The injector is intended as an alternative means of locally powering a Cisco Unified IP phone. Those customers currently using local power bricks may wish to use the injector. CP-PWR-CUBE-3= will continue to be available as a basic local powering option; however, some customers specifically require power injectors to support a maximum 100m distance between an unpowered switch and the Cisco Unified IP phone's location (where a local power outlet isn't available). Example: Line power can be a significant obstacle to the deployment of IPT at Retail customers' remote locations. The Cisco Unified IP Phone Power Injector provides a low cost, low density line power solution. Additionally, refer back to the preceding question/answer for network/deployment environments which may trigger a customer to consider use of the Cisco Unified IP Phone Power Injector.

Q. Why is the Cisco Unified IP Phone Power Injector noticeably bigger than power injectors offered by third parties?

A. The Cisco Unified IP Phone Power Injector has an integrated power supply, unlike many other vendors' units that require separate external power supplies. Additionally, the Cisco Unified IP Phone Power Injector is an Enterprise-class product, specifically designed and tested to work with Cisco Unified IP phones (both 10/100 and 10/100/1000 models). For example, this injector has been designed so as not to introduce 60Hz hum.

Q. **What type of Ethernet cables can/must be used?**

A. We support all standard cable types. See below. Note: A standard 6' CAT5e cable is included when ordering the injector.

CAT3	Supported for 10Mbps
CAT5 and above	Supported for 10/100/1000Mbps

SETUP/INSTALLATION

Q. **How is the Cisco Unified IP Phone Power Injector connected for operation?**

A. An Ethernet cable from an unpowered switch port is connected to the port labeled 'DATA-Network' on the Cisco Unified IP Phone Power Injector; the Ethernet cable from the port labeled 'DATA and PWR – PHONE' is connected to the switch port on the phone. A country power cord is then connected to the AC wall outlet. The Ethernet cable between the injector's output port and the phone provides inline power to the phone.

Q. **Is the injector stackable?**

A. Yes. It is designed to accommodate 2-high stacking.

Q. **What is the meaning of the status lights on the front of the unit?**

A. See Table 1

Table 1.   Status lights

LED State	Description
'Power' LED glowing solid GREEN and 'Status' LED is OFF	Unit is plugged into AC outlet but inline power to phone is disconnected
Both 'Power' and 'Status' LEDs glowing solid GREEN	Unit is plugged into AC outlet and is supplying inline power to the phone

POWER

Q. **Is it necessary to purchase a power supply for use with the injector? What about a power cord?**

A. As noted above, the Cisco Unified IP Phone Power Injector already includes an integrated power supply. A country-specific power cord (same power cords used with existing local power cubes) can be ordered with the injector.

Q. **Does the injector need to be connected in a certain way/order? For example, what if a regular local power brick (e.g. CP-PWR-CUBE-3=) is currently being used, and the customer wishes to replace it with the Cisco Unified IP Phone Power Injector? What is the effect on the IP phone?**

A. The injector should be connected while the phone is still powered by the power brick. The power brick may then be removed. Note that the power injector as a midspan device provides inline power to the downstream phone. As is normally the case when switching between local brick power and inline power, a phone reset usually results (variation between phone models), with subsequent power-up via the 'inline'—in this case 'midspan'—power source (the Cisco Unified IP Phone Power Injector).

Q. **How much power is supplied by the Cisco Unified IP Phone Power Injector?**

A. The power module is rated at 15.5W of power at 48V DC nominal output. Refer to the data sheet for further detail.

Q. **How will a Cisco Unified IP phone determine which of the powering modes is used?**

A. This depends purely on the phone, and is not a function of the power injector (refer to phone Admin Guides, etc for specifics). A given Cisco Unified IP phone may support two modes of detection on the spare pair. When both detection schemes are initiated simultaneously by the power injector, only one of them will result in a successful detection when the downstream device connected is a phone. Cisco Discovery Protocol (CDP) with power negotiation gives the ability to move to high power mode, if supported.

Q. Is there any difference in support for a phone like the Cisco Unified IP Phone 7960G—which can be powered via Cisco inline or power—and, for example, the Cisco Unified IP Phone 7971G-GE which requires either local power or IEEE 802.3af power?

A. The Cisco Unified IP Phone Power Injector supports all Cisco phones, regardless of powering methods supported.

Q. The Cisco Unified IP Phones 7970G and 7971G-GE have 'low power' modes, in which the phones operate at reduced screen brightness. How does the Cisco Unified IP Phone Power Injector affect this behavior?

A. Note that the injector is a midspan/inline power device. CDP messages are passed transparently between switch and phone. When the injector is used with a Cisco Unified IP Phone 7970G, and the upstream switch port does not support CDP power negotiation (in CDPv2), the phone will operate only in low power mode (with reduced screen brightness). This behavior (low power mode as default at boot-up) is consistent with interaction between inline-powered devices (including the injector) and all switches that Cisco is shipping today. If connected to an unpowered switch that supports CDP power negotiation, the injector will realize that it's receiving midspan power, then move to full power mode (with full screen brightness). The Cisco Unified IP Phone 7971G-GE will show only a very slightly reduced brightness under similar 'low power mode' conditions. In summary, the reason a phone might power up in low power mode with the power injector is due to the phone's inability to distinguish midspan versus switch power when receiving power over Ethernet.

Q. Which Cisco switches support CDPv2 with the required power negotiation protocol to allow moving to high power mode?

A. This is a function of both switch and IOS. See Table 2 below, plus the following Question/Answer:

Table 2.   CDPv2 Support

Platform/Module	IOS/CatOS min.
3560	12.2(20)SE3
3750	12.2(20)SE3
3550	12.2(25)SE
CAT6K	CatOS 8.2.1
CAT4K	12.2(18)EW in IOS 8.3.GLX in CatOS

Q. Do the ISRs have support for bi-directional CDP yet? If so, what products and what IOS versions?

A. Yes, the ISRs support bi-directional CDP on the Etherswitch Service Modules (NME-16ES-1G-P, NME-X-23ES-1G-P, NME-XD-24ES-1S-P, NME-XD-48ES-2S-P). All versions of Cisco IOS that run on the Cisco EtherSwitch Service modules support bi-directional CDP as they require a minimum of CISCO IOS of 12.2(25)EZ to operate as shown in the Etherswitch Service module datasheet: http://www.cisco.com/en/US/prod/collateral/routers/ps5855/product_data_sheet0900aecd8028d15f.html. All other switch modules that are supported on the ISRs (including the HWIC-4ESW-POE, HWIC-D-9ESW-POE, NM-16ESW-PWR, and NMD-36-ESW-PWR) do not support bi-directional CDP and currently there are not any plans to add support for this feature on these modules.

AVAILABILITY AND ORDERING

Q. What is the orderable part number for the Cisco Unified IP Phone Power Injector?

A. CP-PWR-INJ or CP-PWR-INJ= (spare version; no power cord)

Q. Is there anything else that needs to be configured when ordering the device?

A. A country-specific power cord is needed to connect to wall power (see the data sheet for specific part numbers). These are the same power cords used today with CP-PWR-CUBE2 and CP-PWR-CUBE3 to power a phone from wall power.

Q. **What comes in the package?**

A. The Cisco IP Phone Power Injector itself, country-specific power cord (if configured), one Cat5e cable (standard 6' version that ships with Cisco Unified IP Phones), a graphics-only installation guide, Warranty card, and RCSI document. Note: Does NOT contain long Ethernet cable that may be desired to maximize distance between the Cisco Unified IP phone and the switch.

Q. **What is the list price of the injector?**

A. Refer to Cisco pricing pages or price lists for current pricing. List price at time of release is USD $125.

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