

## Using CN2x4 IP Phones with Allied Telesis PoE Ethernet Switches

Application Note, 96-90010-04, November 2008

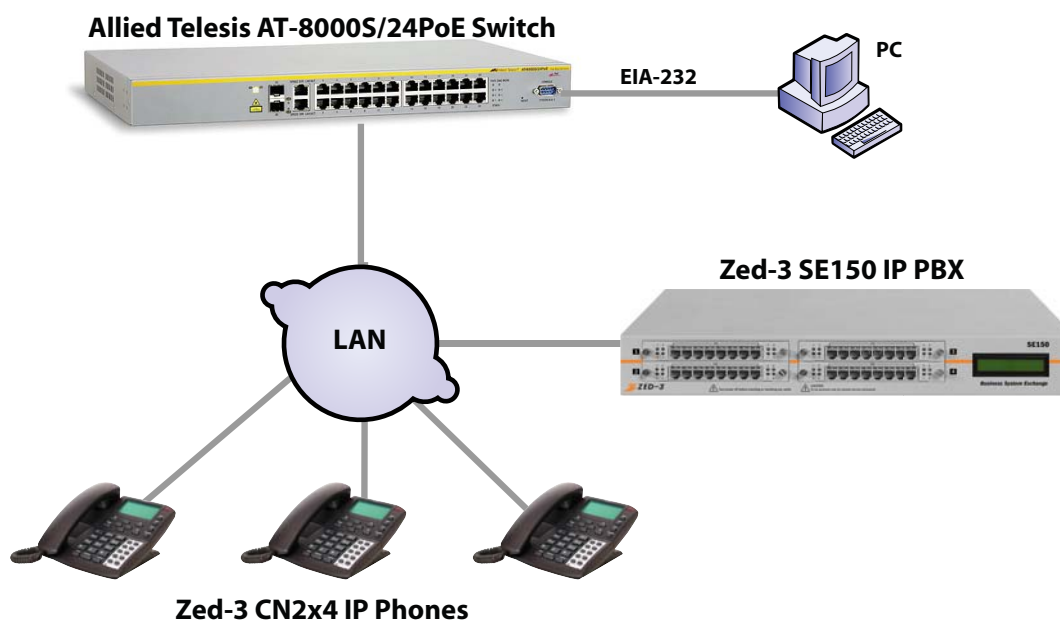
### 1 Introduction

This application note describes the test that Zed-3 conducted to ensure interoperability between its CN2x4 IP phones and the power over ethernet (PoE) switches from Allied Telesis. Specifically, the document describes tests conducted with the AT-8000S/24PoE switch, but Zed-3 believes all members of this family of switches from Allied Telesis will provide similar results.

### 2 Background

Power over Ethernet, implemented according to IEEE 802.3af, allows a system to transfer both electrical power and data over standard Ethernet cables. PoE-enabled Ethernet switches can supply power directly to Ethernet devices, thereby simplifying installation and obviating the need for separate power supplies for those devices. The IEEE 802.3af standard defines the mechanisms for Power Sourcing Equipment, such as PoE-enabled Ethernet switches, to detect, classify, and supply electrical power to Powered Devices, such as PoE-enabled IP telephones. In this application, the AT-8000S/24PoE switch is configured to supply in-line PoE to multiple CN2x4 IP phones. Zed-3's IP phones and business system exchanges do not require any change in configuration.

The test configuration is shown in the figure below:



### 3 Connecting to the AT-8000S/24PoE switch

- 3.1 In this test, we connected 23 CN2x4 IP phones and one SE150 IP PBX to the AT-8000S/24PoE switch with factory default configuration. Under the factory default configuration, the AT-8000S/24PoE switch auto detects PoE equipment and supplies electrical powers to them. The CN2x4 IP phones support PoE while the SE150 IP PBX does not.
- 3.2 The AT-8000S/24PoE switch detects the signature resistances of the CN2x4 IP phones, measures their power class, and finally supplies power to them. The CN2x4 IP phones connected to the AT-8000S/24PoE switch, powered up, and functioned normally.

### 4 Configuring the AT-8000S/24PoE switch Manually

If you connect the CN2x4 IP phone to an Ethernet port on the AT-8000S/24PoE switch with the powered device discovery protocol disabled, you can enable the protocol manually. This section describes how to manually configure the AT-8000S/24PoE switch to provide in-line power to the CN2x4 IP phone.

- 4.1 Connect your PC to the AT-8000S/24PoE switch over an EIA-232 serial connection<sup>1</sup> as shown in the [diagram](#) on page 1. Enter the [Log in name](#) and [Password](#). By default, no authentication is required for login

```
Login:
Password:
Console#:
```

- 4.2 Enable powered device discovery protocol on the individual port connected to the CN2x4 IP phone. In this example, the CN2x4 IP phone is connected to port 22.

```
console # config
console (config) # interface ethernet e22
console (config) # power inline auto
```

- 4.3 Although it is not necessary, we recommend you to set the [Inline Power management Priority](#) to [high](#) for the port; this ensures the CN2x4 IP phone to have a high chance of staying on in the event of the AT8000S/24 not having sufficient power supply. As a good practice, you should also add comment to the port to indicate it is used by CN2x4 IP phone.

```
console# Config
console (Config) # interface ethernet e22
console (Config) # power inline powered-device IP-PCN2x4
console (Config) # power inline priority high
```

- 4.4 After you have finished configuring the AT8000S/24, you can check the changes you made by issuing the [show power inline](#) command. This command displays the following in-line power information for the specified ports.

---

1. The default data rate is 115200 bps. Set the data format to 8 data bits, 1 stop bit, and no parity, and Flow Control to none. Under Properties, select VT100 for Emulation mode. Select Terminal keys for Function, Arrow, and Ctrl keys.

- **Port** – Port number.
- **Powered Device** – Description of Powered device type.
- **State** – There are two port states: Auto and Never. By default, all ports are set to Auto.  
Auto – Enables the device discovery protocol and, if found, supplies power to the device.  
Never – Disables the device discovery protocol and stops supplying power to the device.
- **Status** – Power state.
- **Priority** – The in-line power management priority of the port. It can be Critical, High or Low.
- **Class** – There are 4 class levels, 0 to 4; each class level indicates a specific power requirement. For example, the CN2x4 IP phone is a Class 2 which means its maximum power level range at input is between 3.84 W and 6.49 W.

```
console# show power inline
Unit Power Nominal Power Consumed Power Usage Threshold Traps class
-----
1 On 180 Watts 4 Watts (2%) 70 enable 0
e1 Auto Searching low class0
e2 Auto Searching low class0
e3 Auto Searching low class0
e4 Auto Searching low class0
e5 Auto Searching low class0
e6 Auto Searching low class0
e7 Auto Searching low class0
e8 Auto Searching low class0
e9 Auto Searching low class0
e10 Auto Searching low class0
e11 Auto Searching low class0
e12 Auto Searching low class0
e13 Auto Searching low class0
e14 Auto Searching low class0
e15 Auto Searching low class0
e16 Auto Searching low class0
e17 Auto Searching low class0
e18 Auto Searching low class0
e19 Auto Searching low class0
e20 Auto Searching low class0
e21 Auto Searching low class0
e22 IP-PCN2x4 Auto On high class2
e23 IP-PCN2x4 Auto Searching low class0
e24 IP-PCN2x4 Auto On low class2
```

#### 4.5 To disable PoE on a port, you need to issue the **power** command.

```
console# config
console(config)# interface ethernet e2
console(config-if)# power inline never
```

## 5 Test Summary

This section gives a highlight on the power compliance test conducted on the CN2x4 IP phone against the AT-8000S/24PoE switch. The tests included verification of the following after the powered device was connected to the switch:

- Verify the CN2x4 IP phone boots up normally.
- Verify the CN2x4 IP phone can successfully register with the SE150 IP PBX made by Zed-3.
- Verify the CN2x4 IP phone can make and receive call.
- Verify the CN2x4 IP phone operates normally when user raises the speakerphone volume to maximum during a call. This verifies that the phone operates normally when it draws more power from the switch during a call.
- Connect multiple CN2x4 IP phones to the switch, power cycle the switch, and verify all the CN2x4 IP phones can successfully boot up and register with the SE family Business system Exchange.

All Power over Ethernet test cases completed successfully. The AT-8000S/24PoE switch successfully provided in-line power to all Zed-3 IP telephones.

## 6 Conclusion

The CN2x4 IP phones and the PoE switches from Allied Telesis are fully interoperable.

## 7 About Zed-3

Zed-3 provides products that permit people to communicate simply, efficiently, and cost effectively. With careful attention to detail, these IP telephony products work seamlessly together and interoperate with products and services from other suppliers. Zed-3 can provide VoIP solutions to connect home workers, small businesses, and enterprises with multiple offices. Zed-3 has its headquarters in Milpitas, California and has offices in Bangalore, Beijing, and Singapore. The company's products are distributed in the Americas, Africa, Asia, Europe, and the Middle East.

For more information on Zed-3 or its products, access: <http://www.zed-3.com>.

## 8 About Allied Telesis

Allied Telesis was founded in 1987 and now has offices around the globe, over 2,800 employees and over \$500M of worldwide annual revenue. The attributes which have led Allied Telesis to achieve its leading position in the enterprise, operator and connectivity business segments can be summarised by four key elements: its business focus on networking technology for professional markets, where Allied Telesis has proved to be the only company capable of providing a total end-to-end solution at a high price/performance ratio; the ability to handle every aspect of its own products from design to marketing; the development of components and solutions which accommodate flexible, efficient and reliable network construction; and support from sound warranty terms and quality services. Allied Telesis connects the IP world efficiently thanks to affordable and highly reliable network solutions.

For more information see: [www.alliedtelesis.com](http://www.alliedtelesis.com)