

EAGLE

Power over Ethernet Products for IP Powering Applications

Flexibility, Simplicity and Value...



LAN POWER
SYSTEMS

Trend Datacom USA, Inc.

Presentation Agenda

- IEEE802.3af PoE Technology
 - Definitions and Implementations
- PoE Markets and Applications
 - Wireless LANs
 - VoIP Phone Systems
 - Building Security Devices
- LAN Power's EAGLE PoE Product Line
- Putting it all together
- Choosing the right PoE Technology

IEEE 802.3af PoE Definitions

The IEEE 802.3af Standard (July 2003) specifies Power over Ethernet (PoE) Technology in two different classes:

Power Supplying Equipment (PSE) which may use either the Endspan PoE or Midspan PoE technology.

Powered Devices (PD's) must accept power from either Endspan or Midspan PSE's. The PD must not care whether power is coming to it via the Endspan or Midspan PoE technique. PD's include Voice over IP Phones, Wireless Access points, IP Security Cameras and other Emerging Products.

IEEE 802.3af PoE Definitions

Power Supplying Equipment (PSE) can be either:

- **Endspan Technology** - Power originates from the Ethernet Switch, current flows along with the data on the 10 or 100 Mbs data pairs on wires 1,2,3, and 6
OR
- **Midspan Technology** – Data from the Ethernet Switch flows into the Power Hub which injects balanced current onto the non-data pairs, wires 4,5,7, and 8 (the data still travels on wires 1,2,3 and 6)
- **PoE** works on Cat 5, 5e or 6 LAN Data Cable

IEEE 802.3af defines PoE Operation

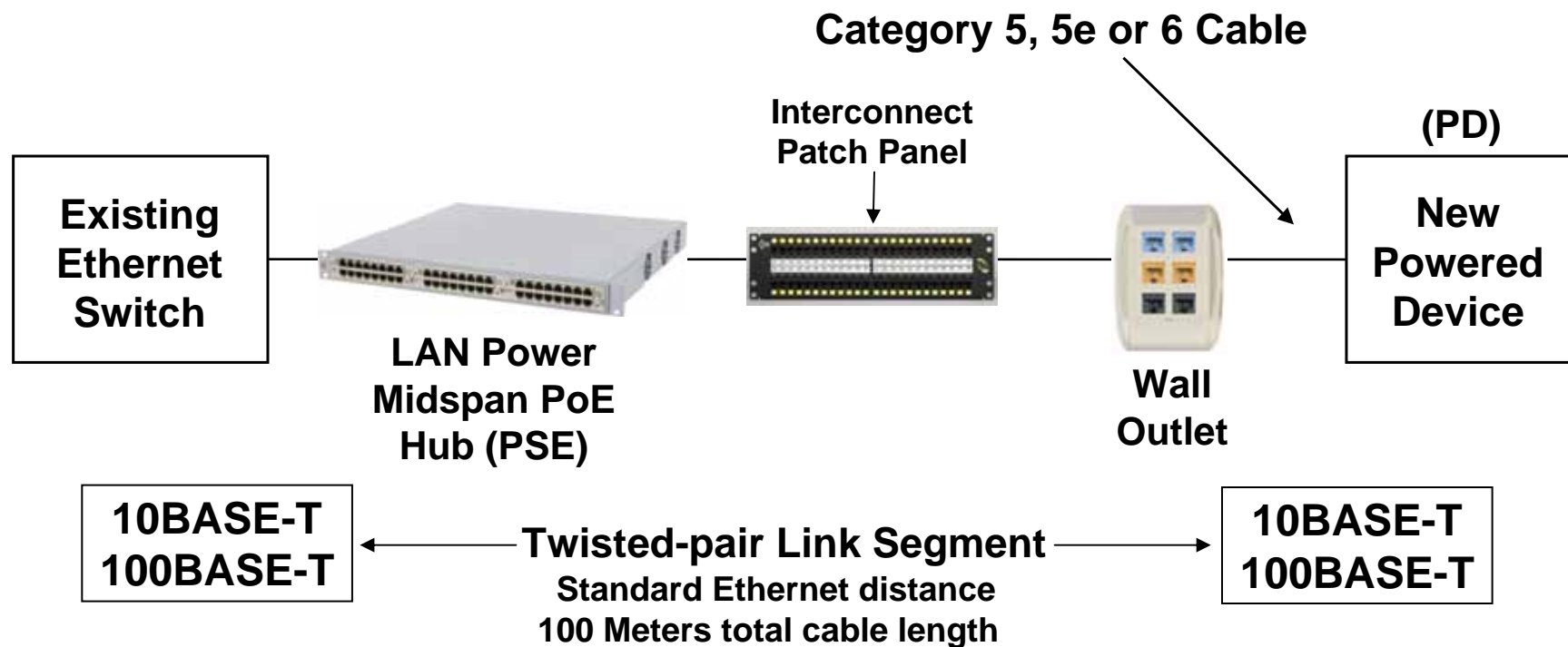
The IEEE 802.3af Standard defines the operation of both the Power Supplying Equipment (PSE), whether Endspan or Midspan, and the Powered Devices (PDs) including IP Phones, Access Points, IP Cameras, etc.

The Important functions of the PSE include:

1. Identify that the PD is enabled to receive the correct power level through a handshake called “Detect”
2. Send NO power if “Detect” is not established with the PD
3. Supply the correct power levels to the PD at all times
4. Shut down power *immediately* if the PD is disconnected from the powered cable link

IEEE 802.3af Technology Implementation

Power Inserted with an EAGLE PoE Midspan Hub



Powered Devices can be:

- VoIP Phones
- Wireless Access Points
- IP Security Cameras
- Emerging Products

The Wireless LAN Market

Wireless LANs are becoming very prevalent in these Vertical Markets:

- **Health Care and Hospitals**
- **Education K-12 and Universities**
- **Hospitality and Hotels**
- **Government – All Levels**
- **Retail and Office Suites**
- **Warehousing (RFID)**
- **Manufacturing Plants**



Wireless Access Point Issues

- Wireless APs range is 150-300 feet
- APs must be connected to the Data Network
 - via Cat 5, 5e or 6 LAN Data Cable
- APs must have a power source
 - Generally 110/220 VAC via a wall adapter or PoE
 - Often difficult to supply 110/220 VAC power in many locations like building ceilings, inside walls, etc.
 - Most new APs are only powered via 48 volt PoE
 - New 802.11n APs need higher wattages to power Gigabit Data links, **LAN Power has Solutions today**



The VoIP Phone System Market

Growing installed base of VoIP Phones

- Installed base of 15 million IP Phones in 2007
- Legacy Phones – nearly half from Cisco with 35 other IP Phone Companies also placing units
- Cisco, Mitel shipping Video Phones w/Gigabit
- 3 million new Phones will be installed in 2008
 - most models will be IEEE 802.3af PoE enabled
- Largest growth Market now is the Small and Medium Business Sector, Midspan PoE fits their needs perfectly



The Building Security Device Market

More and more IEEE802.3af PoE devices are appearing each year:

- Remote IP Security Cameras
 - Power, control and video feeds w/UTP
- Magnetic card readers, motion detectors, keypads, building automation controls



- RFID readers
 - Radio Frequency Identification



Security has become more important than ever before

LAN Power 3 Slot PoE Chassis



- Hot Swappable 8 port modules – Use 1, 2 or 3 at a time (with a full 18 Watts PoE on ALL ports simultaneously)
- Short circuit protection w/ power isolation between ports - each port powers individually, not as a group
- Auto detection of power requirement for safety
- 10/100/1000Mb transparent data throughput
- 19” rack mount ready all metal chassis

LAN Power 1 Slot PoE Chassis



- 1 Slot Chassis shown w/one 8 port IEEE 802.3af module installed. Chassis ships with 19" Rack mounts
- Module options for either Chassis include:
 - 8 port modules support Ethernet, Fast Ethernet or Gigabit Ethernet data link speeds (10,100,1000Mbs)
 - 4 port High Watt modules support up to 36 watts per port while also supporting 10Mb, 100Mb or 1,000Mb data links

LAN Power Single Port PoE Injector

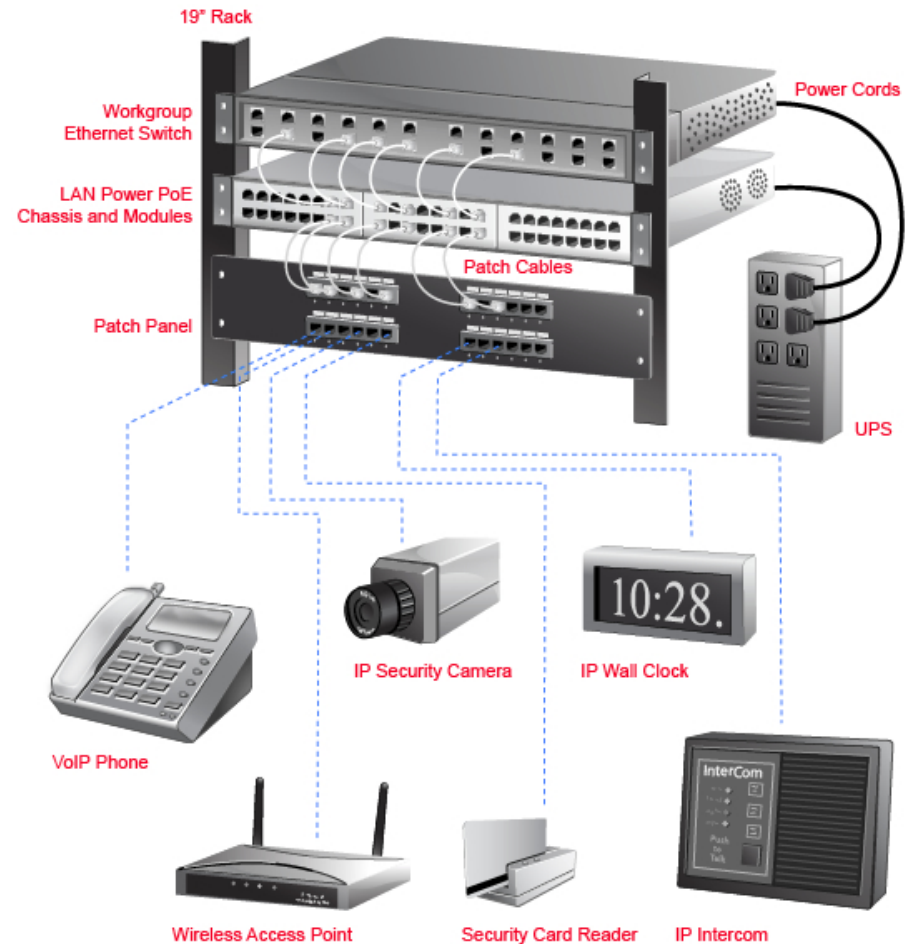


- 28 watts Output exceeds IEEE Specifications
- Supports 10,100 or 1000Mbps data links
- Extremely cost effective vs. traditional powering
- LED indicators show powering status
- Over voltage current and short circuit protected
- Ships with wall mount bracket
- Use where a Single End device needs PoE

Putting It All Together

LAN Power's EAGLE PoE Midspan Hubs work with existing non-powered Ethernet Switches already in place, saving Customers both Time and Money.

LAN Power PoE End User
Cost of approximately
\$35-\$40 per port
VS.
\$400-\$500 to install
a new electrical outlet
for each powered device



LAN Power - More PoE benefits

- PoE Technology supplies low voltage current from a central wiring closet so the Ethernet IP End devices don't have to be individually powered by an outlet
- PoE Technology uses either the data pairs or unused pairs of a Cat 5, 5e or 6 data cable, & provides 48V or less for powering many types of networked End devices without adding any network overhead or degradation of network speed
- Central UPS power back-up can provide 100% uptime for End devices receiving in-line power without having to purchase a UPS for each End device, saving additional money

Choosing PoE: Endspan vs. Midspan

Why choose Endspan PoE ?

- Customer is buying New Ethernet Switches anyway
- PoE required for the End devices is all one type
- Have limited 19" Rack space available
- Have available \$\$ budget to spend \$\$ on new Ethernet Switches with PoE built in (Endspan)
- Dislike extra patch cords required w/Midspan PoE
- “Pressure” from Switch Vendor to do it this way
- Don't need full power per port, limited power is OK
- View that Midspan is “Something else to go wrong”
- View that this is the “Easy way” to get PoE

Choosing PoE: Endspan vs. Midspan

Why Choose Midspan PoE ?

- Have perfectly good Ethernet Switches in place, don't have budget to replace w/ PoE Switches or budget for man hours to do all the set-up required on New Switches
- PoE required for End devices is only needed in certain places, no reason to buy PoE for all Network ports
- Rack space is available to mount PoE Midspan Hubs
- Desire to stretch IT budget – Midspan PoE costs less
- No issues with patch cord connectivity w/ PoE Hubs
- PoE Switches are a Single point of failure, wish to separate data/power functions, should a repair be needed
- Can withstand any “pressure” against Midspan Technology

Choosing PoE: Why pick LAN Power?

Why Choose an EAGLE PoE Midspan?

- Want modularity by multiport module
- Want to mix module types in a single Chassis
- Applications demand full power, up to 18 watts, on all ports simultaneously
- Applications call for High power, up to 36 watts, on all ports simultaneously
- Applications call for Gigabit Data links for PDs
- Want hot-swap capability by multiport module for quickest mean time to repair a power fault caused by a lightning strike or power surge
- Want Flexibility, Simplicity and Value

Why Choose LAN Power PoE?

LAN Power's EAGLE PoE is for Customers who...

- Have existing Ethernet switches in place, don't need to replace them, but now need PoE capabilities for a variety of IP End devices
- Have smaller PoE port count requirements such as Wireless AP's or IP Security Cameras or Access Control devices, don't always need a full 24 ports of PoE as found with powered Ethernet Switches
- Understand and appreciate the value of a Modular PoE Solution for both growth and maintenance reasons and to eliminate any power-related unit downtime by simply changing out a module

Why Choose LAN Power PoE?

LAN Power's EAGLE PoE is for Customers who...

- Plan on purchasing End devices which require Gigabit Ethernet connections and PoE powering
- Want to avoid costly electrical AC capacity upgrades, from 110v to 220v, in their data centers and IDFs as is often the case with powered Endspan Ethernet Switches that require more input power
- Have End devices requiring higher wattages that can't be powered by Endspan Ethernet switches.
- **Switches are limited in total power capacity, usually 200 watts divided by 24 ports or about 8 watts per port of power with all ports active**

**Thanks again for your interest in
Power over Ethernet Technology**

and in

**LAN Power Systems'
EAGLE PoE Products**

Find additional information at
www.lan-power.com

