ISO/IEC JTC 1/SC 25/WG 3(Sidney/Thompson)\_\_\_\_

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# 802.3 Report to SC25/WG3 regarding **DTE Power via MDI**

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Jan 21, 2000

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# **Project Status**

- Officially approved as an 802.3 project at IEEE Stds. Bd. meeting in Singapore 30.01.2000
- Official designation: P802.3af
- Official title: Data Terminal Equipment (DTE) Power via Media Dependent Interface(MDI)

# Project Scope:

Define methodology for the provision of power via unshielded twisted pair cabling to connected Data Terminal Equipment.

The amount of power will be limited by cabling physics and regulatory considerations.

Compatibility with existing equipment will be considered.

# Project Purpose:

- To provide power for a new class of devices enabled by progress in silicon technology.
- These devices are characterized by low power requirements and LAN connectivity.

# **Device Examples:**

- IP Telephones (market driver)
- Web Cameras
- Wireless LAN Access Points
- Light Switches



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# Discover/Identify/ Loop Power Delivery **Authenticate** (What are w.c.physical limits on what we can do?) (Identify that proper device is at far end before power is applied) Management Primary side supply (not generally of concern to WG3) (out of scope of 802.3)

#### 4 Major areas re: DTE Power over MDI

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# Approved Project Objectives I:

- (1) Economically provide power to 10BASE-T and 100BASE-TX devices, and consider powering 1000BASE-T
- (2) Select one power distribution technique for world-wide use
- (3) Not cause damage and interoperate with compliant RJ- 45 MDI Ethernet devices including:
  - a. Switch- to- switch connections (both supplying power)
  - b. Cross- over cables
  - c. Common mode termination implementations
  - d. Shorted conductors, pairs or loop- back plug
- (4) Define a capability detection function that works with a powered and an unpowered device.

## Approved Project Objectives II:

- (5) Select the voltage, minimum and maximum current and wattage to be supplied
- (6) Add appropriate management objects for power capability and status
- (7) Support current standard, 4-pair, horizontal cabling infrastructure for installed Cat 3 and Cat 5 cabling
- (8) Preserve the signal transmission and isolation characteristics of existing equipment and cabling
- (9) Consider mid- span power insertion, powering over the signal pairs, and interaction with other RJ- 45 interfaces: Token Ring, ATM, FDDI TP-PMD, 1000BASE-T, ISDN, networking test equipment, PBX

# Technical Direction so far (through Jan.):

- Will probably require 4-Pair cabling.
- Will probably use "common mode" of two pairs to provide power.
- Will probably use both unused pairs for added current capability.
- Will require positive detection of a signature of a passive characteristic in devices requiring power.
- Will not support daisy-chaining/pass-through (unbounds the problem).
- Will probably be heavily dependent on 11801 Specs
- Is intended to run on installed base.
- Voltage no higher than SELV.

## Needed from SC25/WG3:

- Worst case loop resistance (element-by-element analysis)
- Allowable loop dissipation (temp rise in w.c. bundles), max temp of cabling behind the wall?
- Worst case connector contact resistance, ampacity, cycling with power
- Information on parameter limits (voltage, current, power, source impedance, etc.) for world-wide standard (I.e. restrictions beyond SELV)
- Specification references for parameter limits
- What percentage of 60603-7 connectors world-wide terminate less than 4 pair?
- DC imbalance in cables, cabling
- What did we miss?

## Up-to-date archive can be seen at:

http://grouper.ieee.org/groups/802/3/af/public/index.html