



Powering and Discovery Alternatives

Arlan Anderson

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Access IAD Tec

Powering via Pairs 1-2, 3-6

- **Issues:**

- Potential noise interference into data signal
- 100 BASE-TX transmission is close to the margin for cable performance
- Possible interoperation problems with legacy equipment
- Mid-span insertion likely requires data repeaters
- “Pure DC” power source and load required

- **Attributes:**

- Powering would work on non-standard legacy two-pair cabling
- Uses less wires

Powering via Pairs 4-5, 7-8

- **Issues:**
 - Powering requires standard four pair cabling
- **Attributes:**
 - Does not require revising specifications for existing transmission interfaces
 - “Three fingers” of isolation between the powering signaling pairs
 - Mid-span insertion of power is transparent to the d
 - Greatly reduces interoperation risks with legacy ec

Differential Detection

- **Issues:**

- If detection and power are on signal pairs:

- Authentication and data signals interfere with each other
- Central back-up support for locally powered terminals require data service interruption
- Increases crosstalk paths at DTE end

- Detection on signal pairs and power on other pairs cause safety and inter-operational liability problems

- May miss common mode faults e.g. DC power shorts

- **Attributes:**

- Detection means is IEEE 802.3 type digital signature

- Discovery and data can share interface and PHY due to commonality

Common Mode Detection

- **Issues:**

- Reliability of detection subject to mechanism for user identification
- May miss some benign differential mode faults

- **Attributes:**

- Detection and power are on same pairs separate from 10/100 data pairs:
 - Minimizes interference between discovery and data
 - Facilitates central back-up power authentication for powered terminals
 - Improves control over crosstalk paths
- Reduces safety and inter-operational liability problems
- Approach allows integration into either power supply silicon designs

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