NORTEL NETWORKS

Powering and Discovery Alternatives

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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 f[or] cable performance**
  - ➜ **Possible interoperation problems with legacy equip[ment]**
  - ➜ **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 existin 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**

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Differential Detection

- **Issues:**
  - ➔ **If detection and power are on signal pairs:**
    - ➢ Authentication and data signals interfere with each o
    - ➢ Central back-up support for locally powered termina 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 problem**
  - ➔ **May miss common mode faults e.g. DC power shor**

- **Attributes:**
  - ➔ **Detection means is IEEE 802.3 type digital signatur**
  - ➔ **Discovery and data can share interface and PHY de commonality**

Common Mode Detection

- **Issues:**
  - ➔ **Reliability of detection subject to mechanism for u**
    identification
  - ➔ **May miss some benign differential mode faults**

- **Attributes:**
  - ➔ **Detection and power are on same pairs separate fr**
    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 probl**
  - ➔ **Approach allows integration into either power supp**
    silicon designs

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