NORTEL NETWORKS

DTE Power over MDI: Terminal powering over LAN wiring

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July 7, 1999

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Background

- Standards & historical view of LANs: They only support data communications for AC powered office equipment (PC's, workstations, servers).
- With the web and IP telephony, LAN access devices are proliferating.
- With major drops in cost and power, LAN access devices are expanding into new applications.
- External powering is a barrier to new class devices.
- A single cable connection, greatly expands the potential for new products.
- Customers expect basic phones to have only one cord.

Why standardize LAN powered terminals?

- Independent implementations are happening;
- Independent implementations are probably incompatible;
- Simplify the installation & deployment of LAN equipment;
- Enable centralized power backup facilities for high reliability uninterrupted service;
- Improve probability for successful inter-operation;
- Minimize risk of damage & customer complaints due to system incompatibilities;
- Reduce cabling clutter;
- Define the LAN interface as the new “local loop.”

Issues in the solution space

- IEEE 802.3 standard has provisions which may preclude distribution of power over Cat 5 cabling;
- The pertinent UL/CSA/ISO safety standards for inside building, current limited, circuits are:
  - ➔A maximum of 60 Volts DC (excepting Japan with 45 Volts max.);
  - ➔The source of the power must be limited to 100 VA.
- RJ-45 connectors have limited current carrying capacity on the order of 1.3-1.5 Amperes.
- PHY and controller silicon technology easily fits within these power limitations.
- Telecom powering methods are mature and standardized.