Diode Discovery
Some Hazard Matrix tests

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Tests

- Tests carried out using Diode discovery test board set from Rick Brooks
  - FAB DTE Detection (PSE end)
  - FAB DTE LOAD (PD end)
- Cables used were 100m Cat 5, and ~ 3m Cat 5 patch cords (non X-over)
- All devices tested with external power on, and off
- My thanks to Rick for the Equipment

Tests

- devices tested
  - 3Com NBX phone
  - 3Com Superstack II Entry Hub
  - 3Com Superstack II Port switch Hub (3C16401)
  - 3Com Superstack II 3300 (3C16980)
  - 3Com Superstack II 1100
  - 3Com Office connect remote 520s (3C410005) (ISDN)
  - 3Com Airconnect
  - BT Meridian (Nortel) digital PBX (user port from desktop)
  - Various test loads inc Ricks's PD load board with 5.5W load attached

Hazard test results:

- All devices initially tested with power On
  - All tested OK, no false positives
- All devices then tested with Power off
  - All tested OK except 3Com Air Connect unit
    - “Power Base-T” technology
    - Can draw Power from both sets of pairs
    - Input has diode charecteristic
    - Shouldn’t be detected using modified Double Detect technique
      - Not had chance to upgrade PLD for PSE detection unit, and check yet

Detailed results for test loads

Test Condition			LED's				
description	48V PSU ?	Load ?	discovered	Pwr On	Fault	spare	load LED
No Load, nothing connected	Off	No	Off	Off	On	On	Off/X
as above	24V	No	Off	Off	Off	On	Off/X
as above	48V	No	Off	Off	Off	On	Off/X
160R resistive load via 3m patch cable, no ethernet connection	Off	Yes	Off	Off	On	On	Off/X
as above	24V	Yes	Off	Off	Off	On	Off/X
as above	48V	Yes	Off	Off	Off	On	Off/X
320R resistive load via 3m patch cable, no ethernet connection	Off	Yes	Off	Off	On	On	Off/X
as above	24V	Yes	Off	Off	Off	On	Off/X
as above	48V	Yes	Off	Off	Off	On	Off/X
8R resistive load via 3m patch cable, no ethernet connection	Off	Yes	Off	Off	On	On	Off/X
as above	24V	Yes	Off	Off	Off	On	Off/X
as above	48V	Yes	Off	Off	Off	On	Off/X
160R resistive load via 100m Cat5 cable + 2x3m patch cables, no ethernet connection	Off	Yes	Off	Off	On	On	Off/X
as above	24V	Yes	Off	Off	Off	On	Off/X
as above	48V	Yes	Off	Off	Off	On	Off/X
320R resistive load via 100m Cat5 cable + 2x3m patch cables, no ethernet connection	Off	Yes	Off	Off	On	On	Off/X
as above	24V	Yes	Off	Off	Off	On	Off/X
as above	48V	Yes	Off	Off	Off	On	Off/X
8R resistive load via 100m Cat5 cable + 2x3m patch cables, no ethernet connection	Off	Yes	Off	Off	On	On	Off/X
as above	24V	Yes	Off	Off	Off	On	Off/X
as above	48V	Yes	Off	Off	Off	On	Off/X
3m cable o/c	Off	No	Off	Off	On	On	Off/X
as above	48V	No	Off	Off	Off	On	Off/X
100m cable o/c	Off	No	Off	Off	On	On	Off/X
as above	48V	No	Off	Off	Off	On	Off/X

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Detailed results for test loads

Test Condition			LED's				
description	48V PSU ?	Load ?	discovered	Pwr On	Fault	spare	load LED
DTE load cct + 3K3 load + 3m cable	Off	3K3	Flash	Flash	On	Off	Off
as above	48V	3K3	On	On	Off	Off	On
as above	48V	No	Flash	Flash	Off	Off	X
DTE load cct + 3K3 load + 100m cable	Off	3K3	Flash	Flash	On	Off	Off
as above	48V	3K3	On	On	Off	Off	On
as above	48V	No	Flash	Flash	Off	Off	X
DTE load cct + 5.5W load + 3m cable	Off	3K3	Flash	Flash	On	Off	Off
as above	48V	3K3	On	On	Off	Off	On
as above	48V	No	Flash	Flash	Off	Off	X
DTE load cct + 5.5 load + 100m cable	Off	3K3	Flash	Flash	On	Off	Off
as above	48V	3K3	On	On	Off	Off	On
as above	48V	No	Flash	Flash	Off	Off	X

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Conclusions

- Given Limited testing shown here - Diode Discovery Scheme appears robust
- No False detection with Normal Hazards (inc ISDN, digital PBX)
- Double detect scheme needed - will prevent the one false detection of the Air connect unit