Physical Layer Topology considerations for DTE power over MDI

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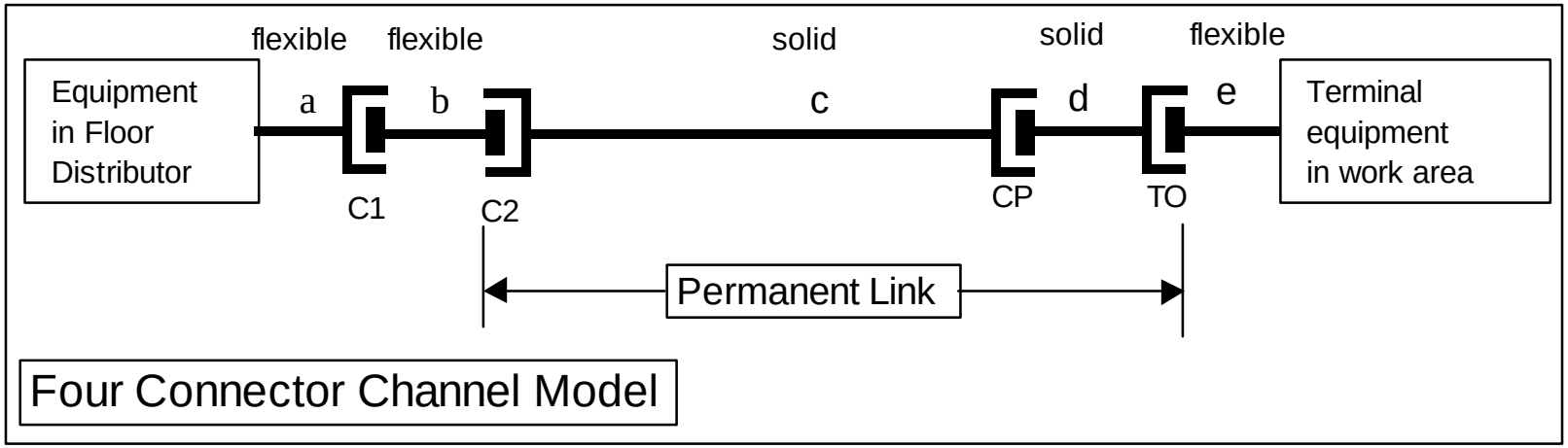
Physical layer topology

- Channel
  - Up to 4 connectors are allowed, not including those in the active equipment.
  - 2 equipment cords and 1 modular patch cord are allowed.
  - NEXT calculations are based on 2 connectors at the near end plus horizontal cable.

Physical layer topology

- Permanent Link
  - Defined as permanently installed portion from the patch panel in the communications closet to the work area outlet installed in a wall or modular furniture.
  - May contain up to 3 connectors.
  - NEXT modeled as 1 connector and cable.
  - Equipment cords are not included.

Channel Topology



- Permanent link required to be “generic”. No application specific components are allowed. Designed for 10/20 year life.

Mid Span insertion for power

- Replacement of patch panel
  - Labor intensive operation
  - Requires skilled (union) labor in many areas.
  - Requires retest of permanent link.
  - New panel must be same form factor as old panel. Including depth behind panel face.
  - May be performance issues due to physical design constraints of new panel.

Mid Span insertion for power

- Add new modular panel with power
  - Adds two connectors to channel in closet.
  - If installation already uses cross-connect, there is no connector budget.
  - If existing installation uses interconnect topology, there is budget for 1 connector.
  - For Cat5e, there may be some available NEXT margin. None for ELFEXT, negative margin possible for Return Loss.

Mid Span insertion for power

- New panel w/o modular connector.
  - A panel could be constructed with modular plug-ended cables replacing modular jacks.
  - A panel could be constructed with another type of connector interface that has better performance.
  - Panel would replace 1 panel of existing cross-connect, or add 1 panel to interconnect.

Mid Span insertion for power

- Add power incorporated into a repeater.
  - Redefines the channel starting point.
  - Possibly more expensive.

Conclusion

- Mid-span insertion can be done if certain conditions are met. (1 connector equivalence).
- In many existing installations will require replacement of existing patch panel.
- Replacement of existing permanent link components will meet with considerable resistance from customer base.