IEEE P802.3 Isolation Ad Hoc
Thoughts and Next Steps

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Isolation: Why?

- Isolation in IEEE 802.3 is a **feature** of the data communications system to avoid possible ground loops
- Isolation in IEEE 802.3 is **not** a safety specification
  - IEEE 802.3 does not write safety specifications
  - However, there are sub-clauses for “Network Safety” scattered around the standard
  - These are informative, not normative, but it confuses the safety issue
- Safety specifications apply to implementations and are chosen based on regulatory requirements for the application space
- Safety specifications may come from local, national or international SDOs, and may be part of a legal framework
  - Underwriter’s Laboratories in the US (UL) and Canada (CUL)
  - ISO/IEC
  - Whatever is required by the application space and regulatory framework

Isolation Testing

- Isolation is specified in IEEE 802.3 by a series of electrical tests, both steady-state and impulse for AC and DC
- Isolation is typically repeated in each clause, which is redundant
- Isolation requirements across all of IEEE 802.3 should be identified and consistency checked (this is in process)
- Isolation tests are taken from external safety standards
- Some of these tests have become obsolete/superseded and **up-to-date tests** need to be identified and substituted

IEC 60950 (1) and IEC 62368-1

- IEC 60950 deals with isolation of low-voltage DC circuitry from the AC mains and is a **safety** standard
- IEEE 802.3-1985 was published prior to IEC 60950 (IEC 950 1986)
- IEC 60950 is called out in the standard and it is stated that equipment **shall** conform to the standard
- This is inconstant with IEEE 802.3 being an interoperability standard
  - Conformance to IEC 60950 (or any other standard) should be an implementation (product) decision
  - For example, IEEE 802.3 automotive applications have no need to conform to IEC 60950
  - IEC 62368-1 supersedes IEC 60950 but the issues are the same
- References to conformance to IEC 60950 should be removed from IEEE 802.3

Single Clause for Isolation

- Instead of repeating isolation requirements in every clause, a new isolation clause should be added
- Individual clauses can simply point to the new clause
- This eliminates redundancy, confusion, and should make maintenance easier going forwards

Next Steps

- Continue ad hoc conference calls
- Decide on exactly what we want this ad hoc to accomplish
  - Simply update the isolation tests and call it good, or:
  - try to do an overall clean-up of the standard with regard to isolation and “safety”