



LAN Standards, News & Trends

Herbert V. Congdon II, PE
Tyco Electronics
Updated: March 2009

March 18, 2009

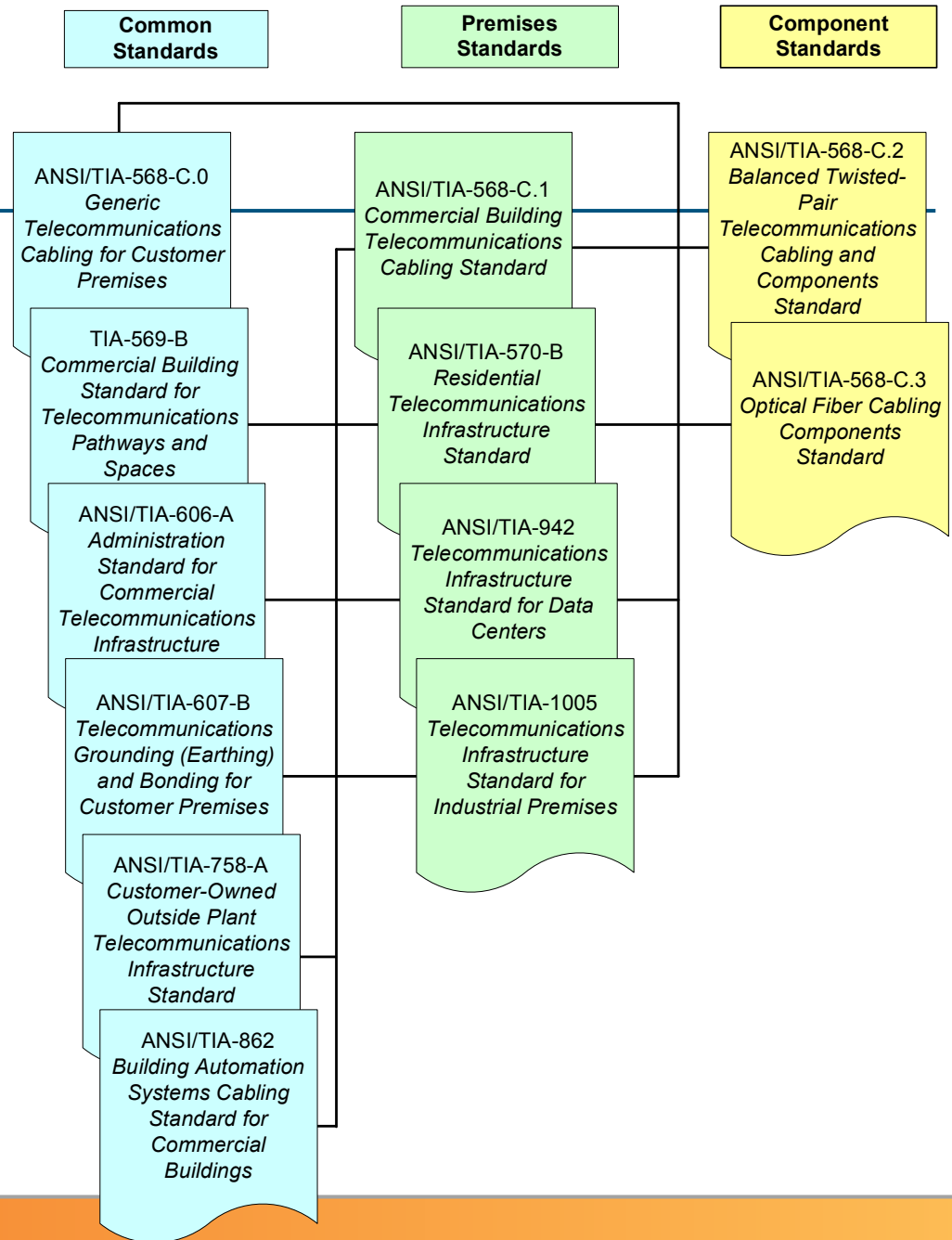


Objectives

- Review the recent events and activities of the TIA TR-42 Subcommittees
 - Most recent meetings held in early February 2009
- Review the recent events and activities of the LAN application Subcommittees

TR-42 Suite

- Common Standards
 - End-users
 - Broadly Applicable
- Premises Standards
 - End-users
 - Narrow Focus
 - Exceptions/Allowances to Common Standards
- Component Standards
 - Manufacturers



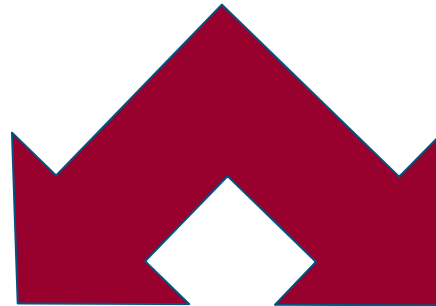
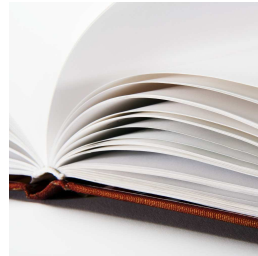


TR-42.1 – The 568-C Series

March 18, 2009

Splitting 568-B.1

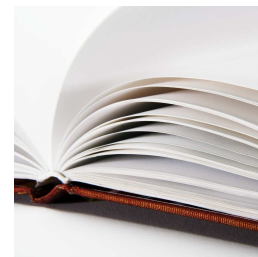
568-B.1
(94 pgs)



568-C.0
Generic
(~60 pgs)



568-C.1
CBC
(~35 pgs)

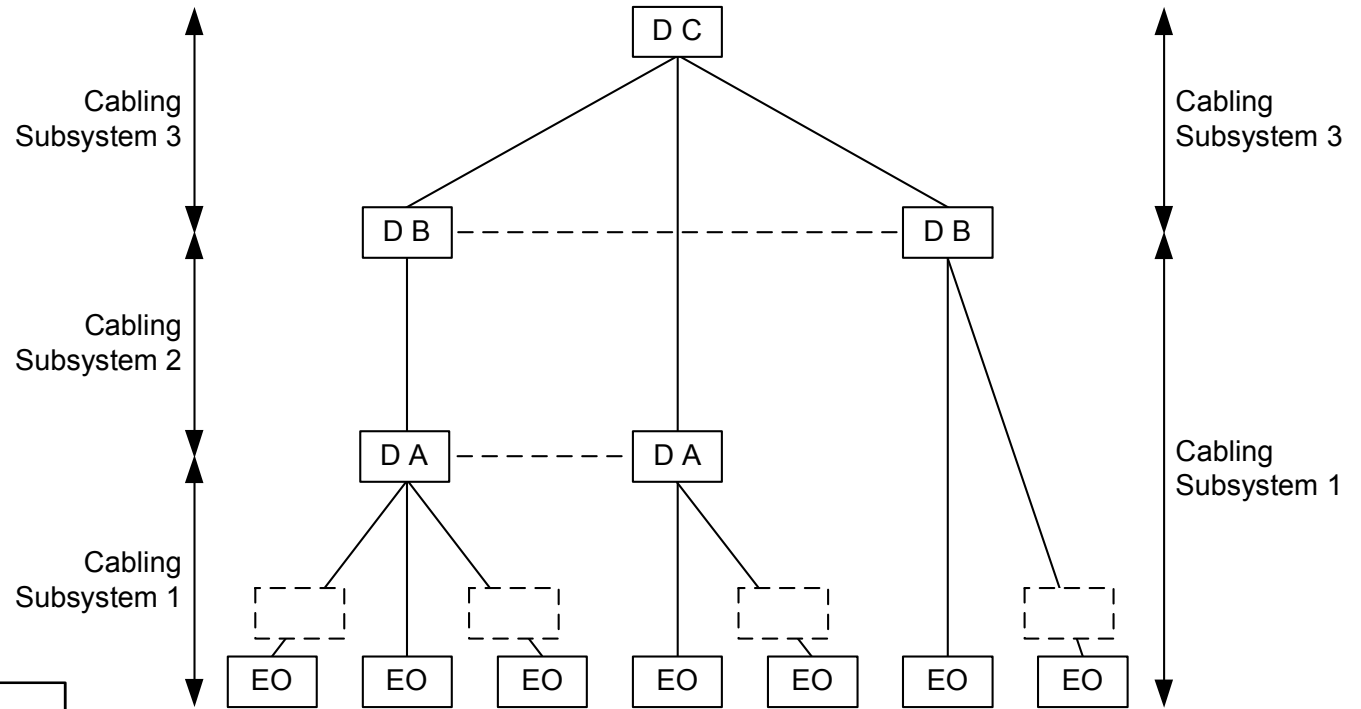


568-C.0

- 568-C.0 Generic Cabling
 - Information common to structured cabling networks
 - Establishes How a Star Network Topology Is Constructed
 - Establishes Cabling Requirements
 - Applicable to all premise Standards unless noted as an exception or allowance
 - 568-C.0 Uses Generic Cabling Nomenclature
 - Cabling Subsystem 1, Cabling Subsystem 2 and Cabling Subsystem 3
 - Distributor A, Distributor B, Distributor C and Equipment Outlet
 - Specific nomenclature assigned in premises Standards

568-C.0 - Generic Cabling Topology

Part 1 of Figure 2

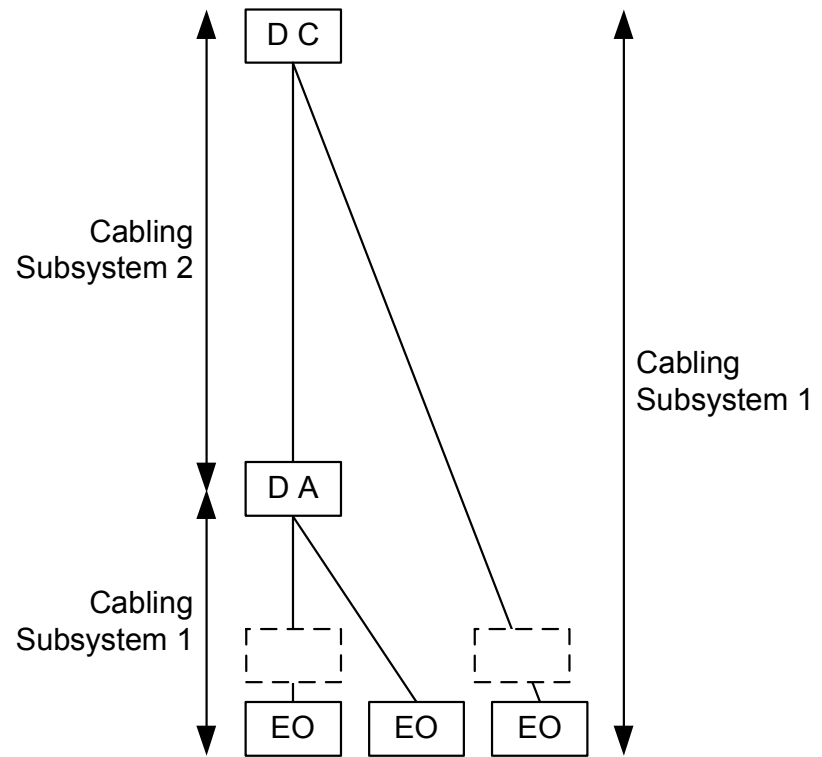
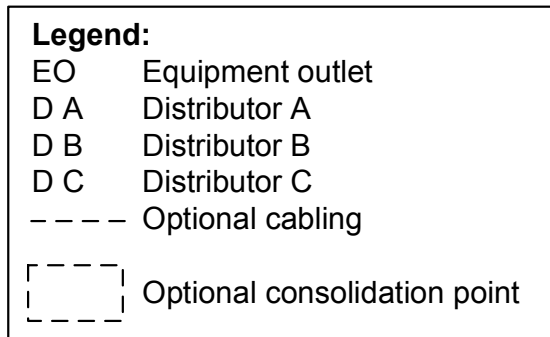


Legend:

- E O Equipment Outlet
- D A Distributor A
- D B Distributor B
- D C Distributor C
- Optional cabling
- Optional consolidation point

568-C.0 - Generic Cabling Topology

Part 2 of Figure 2



568-C.0 – Stewardship

- Telecommunications infrastructure affects raw material consumption. The infra-structure design and installation methods also influence product life and sustainability of electronic equipment life cycling. These aspects of telecommunications infrastructure impact our environment. Since building life cycles are typically planned for decades, technological electronic equipment upgrades are necessary. The telecommunications infrastructure design and installation process magnifies the need for sustainable infrastructures with respect to building life, electronic equipment life cycling and considerations of effects on environmental waste. Telecommunications designers are encouraged to research local building practices for a sustainable environment and conservation of fossil fuels as part of the design process.

Where would 568-C.0 apply?

- Foundation Document
 - Applies to 568-C.1
 - Will apply to all premises standards as revisions are released
- Generic Document
 - Applies to premises without a premise standard
 - Examples
 - Non-office oriented areas of an airport
 - Non-office oriented areas of a stadium

568-C.0

- 568-C.0
 - Recognizes single-mode fiber in Cabling Subsystem 1
 - Includes:
 - optical fiber field testing
 - attenuation allowance
 - polarity
 - duplex
 - array

568-C.0

- 568-C.0 – Generic Cabling – Status
 - Document approved for publication
 - Available for purchase
 - \$176 Alone
 - \$812 for 568-C Set

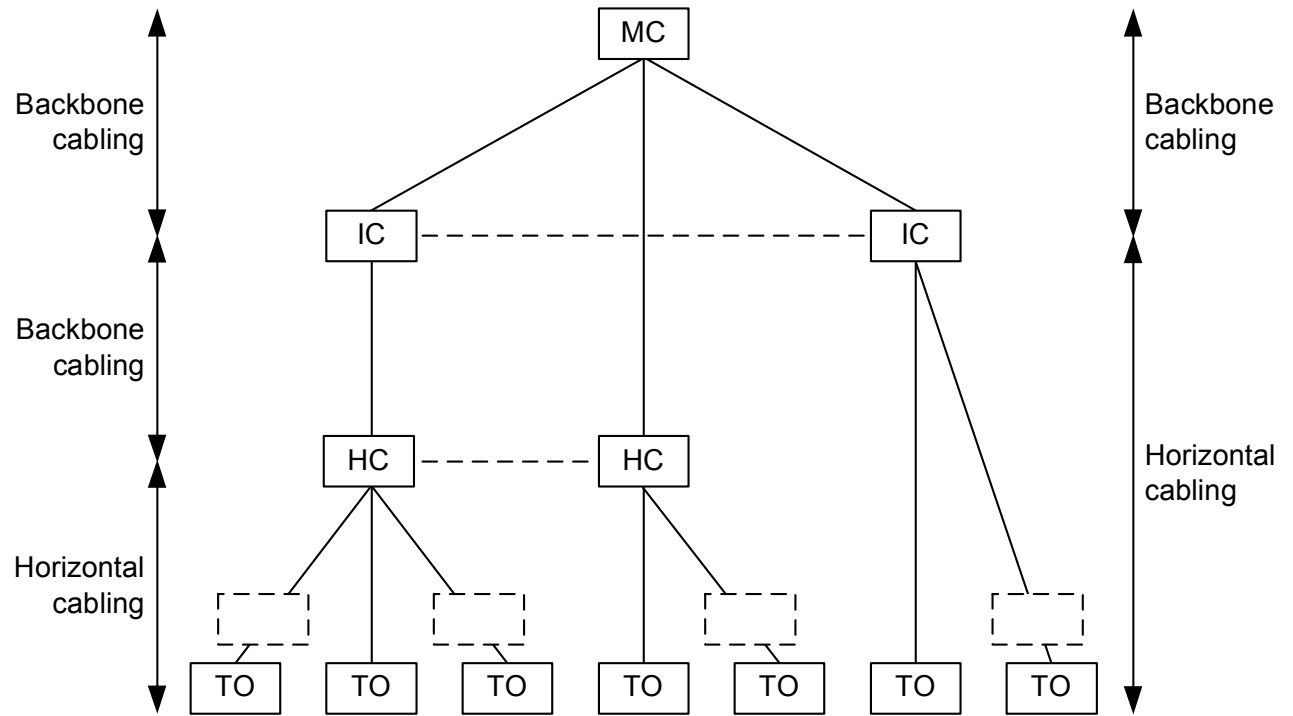


568-C.1

- 568-C.1 – (Office-oriented) Commercial Building
 - Builds on information in 568-C.0
 - Allowances and exceptions specific to office-oriented buildings
 - and office-oriented parts of buildings
 - Retains use of 568-B.1 nomenclature
 - Main Cross-connect (Distributor C in 568-C.0)
 - Interbuilding backbone cabling (Cabling Subsystem 3 in 568-C.0)
 - Intermediate Cross-connect (Distributor B in 568-C.0)
 - Intrabuilding backbone cabling (Cabling Subsystem 2 in 568-C.0)
 - Horizontal Cross-connect (Distributor A in 568-C.0)
 - Horizontal cabling (Cabling Subsystem 1 in 568-C.0)
 - The Telecommunications Outlet (Equipment Outlet in 568-C.0)

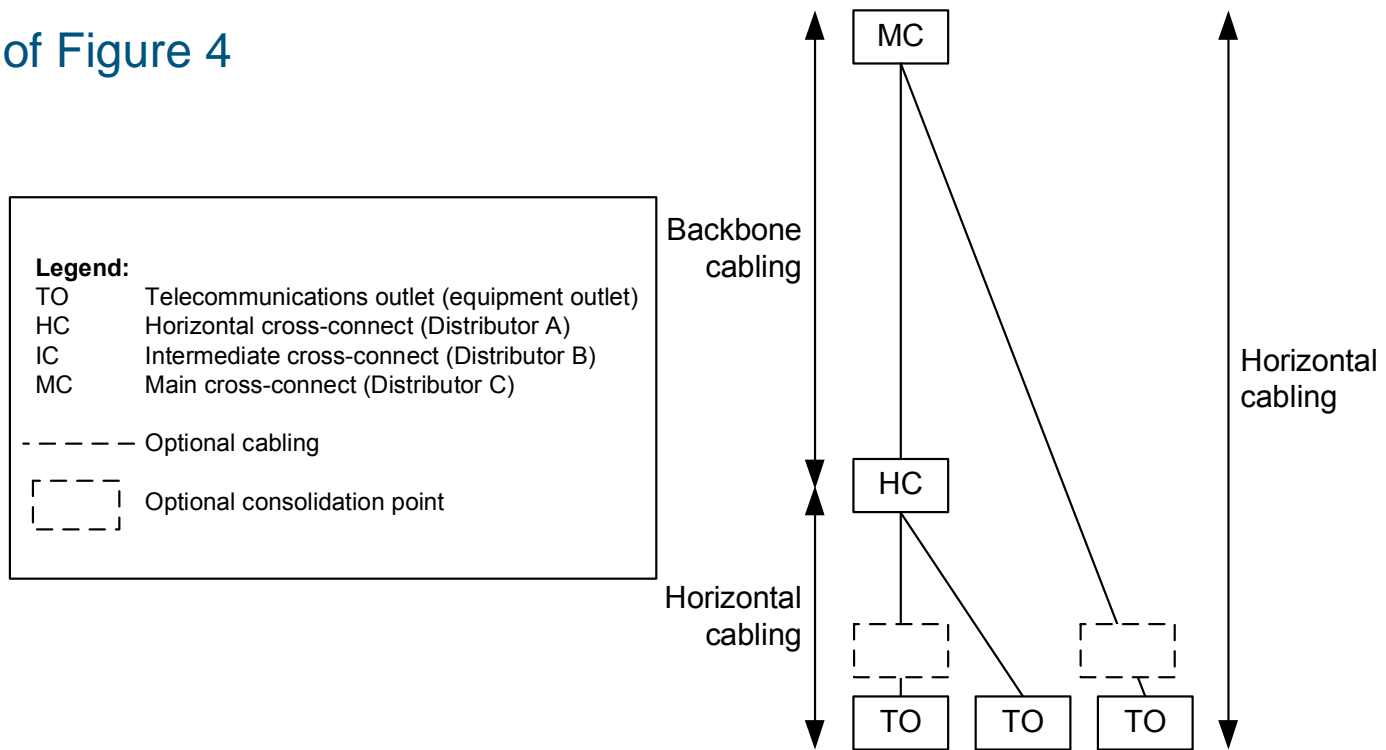
568-C.1

Part 1 of Figure 4



568-C.1

Part 2 of Figure 4



568-C.1 – Technical Changes

- From Addenda
 - Inclusion of telecommunications enclosures (TEs)
 - Inclusion of 850 nm laser-optimized 50/125 μm MM fiber
- A recommendation to select 850 nm laser-optimized 50/125 μm as the multimode fiber for commercial buildings
- Removal of balanced twisted-pair cabling performance and test requirements
 - These will be in the ANSI/TIA-568-C.2 document

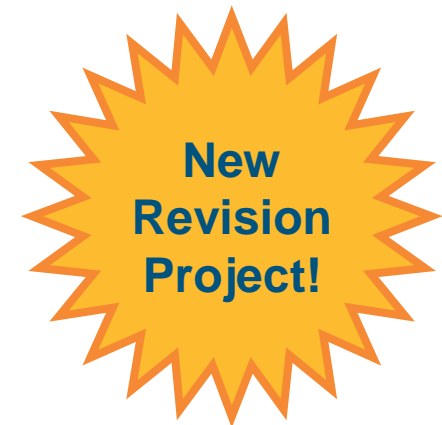
568-C.1

- 568-C.1 – Commercial Building Cabling – Status
 - Document approved for publication
 - Available for purchase
 - \$124 alone
 - \$812 for 568-C suite



TR-42.1

- Building Automation Systems (BAS)
 - Update the TIA-862 document and harmonize with the 568-C series
 - Committee Ballot issued



Healthcare Facility Cabling

- Healthcare Facility Cabling Task Group has been Reactivated
 - Herb Congdon (hvcongdon@tycoelectronics.com) appointed chair
- Task Group will create a draft standard for healthcare facilities based on using the 568-C.0 document as a foundation
 - Soliciting contributions on what makes healthcare facility cabling different from traditional commercial building cabling



- TR-49 is a new TIA Engineering Committee for Healthcare Communications Technology

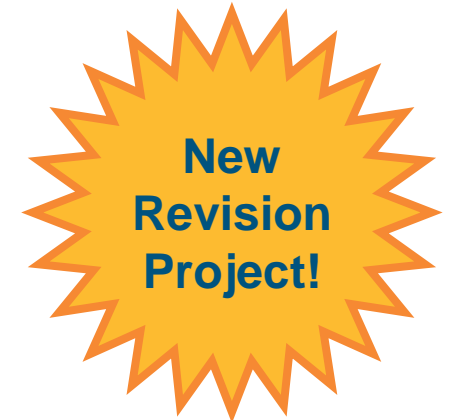
TR-42.2: Multi-tenant/Multi-dwelling Units

- TR-42.2, TR-42.12 and TR-42.13 looking at this emerging vertical
 - Optical cabling standards in wiring multiple-dwelling units to extend the reach of single-mode fiber (“FTTx”) services
 - Define the optical infrastructure for both MDU residential (apartments, townhouses, condominiums) and MTU commercial properties including mixed-use buildings
 - TR-42.2, TR-42.12 & TR-42.13 will evaluate and present a list of impacts on TR-42 standards in a joint meeting in February 2009
 - TIA-568-C.0, TIA-568-C.3
 - TIA-570-B, TIA-758 and maybe others
 - No decision yet



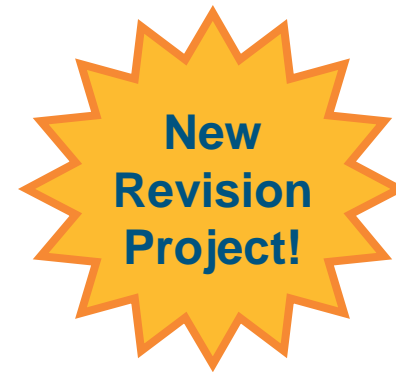
TR-42.3

- Third Revision Project Initiated
 - Will be ANSI/TIA-569-C
 - Will broaden scope (beyond commercial building)
 - Will align with ANSI/TIA-568-C.0



TR-42.4

- Opened Revision Project
 - Recognize the existence of 568-C.0
 - New information or technology
- First draft created and being circulated

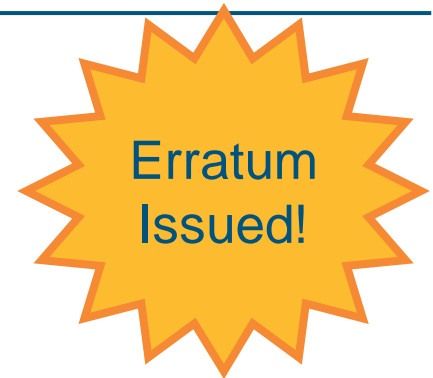


TR-42.7

- 568-C.2, Copper Cabling Components
 - Ballot will close in March
 - Comment resolution at interim meeting in May
 - TR-42.7 requested approval to publish if no technical changes are made as a result of comment resolution
 - not likely, but possible
 - plans to publish by October 2009 are still viable
- TIA-1152, Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling
 - Send out for industry ballot
 - Conditional approval for publication in May

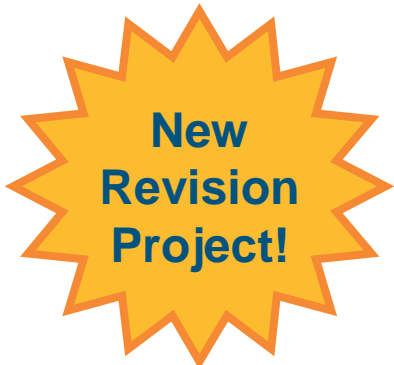
TR-42.8

- Review of 568-C.3 status
 - Errata approved (20 items)
 - Formatting and corrupted references to tables and clauses
 - Posted document (for purchase)
 - Modified to incorporate errata
 - If purchased between June 2008 and December 2008, check to see if you received erratum



TR-42.9

- Publication of TIA-1005, Telecommunications Infrastructure Standard for Industrial Premises, was approved in October
 - Available for purchase
 - \$99
- Approved project to revise ANSI/TIA-1005
 - Align with 568-C.0
 - Include new technologies
 - POF is being considered



TR-42.11

- OFSTP-14A, *Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant*
 - Will be revised with the intent to adopt IEC 61280-4-1 ed.2 when at FDIS, expected Spring 2009
- FOTP-243
 - New results on multiple PMD methods and multiple installed links
 - Issued as a committee ballot

TR-42.12

- New projects
 - Skew measurement
 - Revise FOTP-204 on multimode bandwidth
- Documents for ballot
 - FOTP-244, temperature cycling of tubes expressed in pedestals
 - Committee ballot
 - TIA-492AAAD, OM4 fiber specification
 - Committee ballot

TR-42.16

- J-STD-607-A is at it's five-year life limit
 - A revision is necessary to cover more than the current document
- Working on first draft of what will become J-STD-607-B
 - Section 7 revision
 - Design information in NECA/BICSI-607 (design info from busbar to equipment)
 - Grounding busbar task group (performance based, alloys)
 - EMI annex content task group
 - Another task force on supplementary grounding methods (star grounding, mesh, and ground mats)



Other TR-42 Notes

March 18, 2009

TIA Going Green

- Task Group formed in TR-42.3
 - Summary of findings presented to all TR-42 subcommittees
- “Stewardship” paragraph drafted and out for review
 - Maybe for inclusion in 568-C.0
- Liaison letter to IEEE looking for opportunities to join forces
- Working with BICSI and USGBC for LEED credit support of structured cabling

Next Meeting

- Interim meeting scheduled for May
 - Only TR-42.7 will meet that week
- Most subcommittees will be having interim teleconferences
- Next full TR-42 meeting will be in August



Application Standards Activity

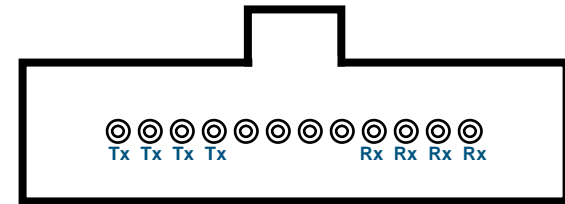
March 18, 2009

IEEE 802.3ba – 40G/100G

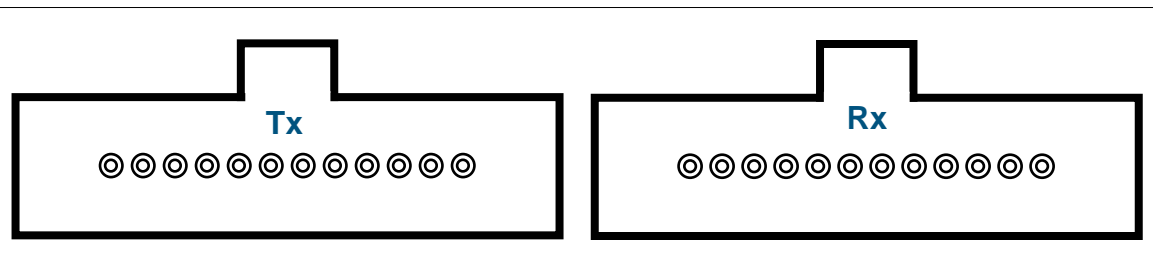
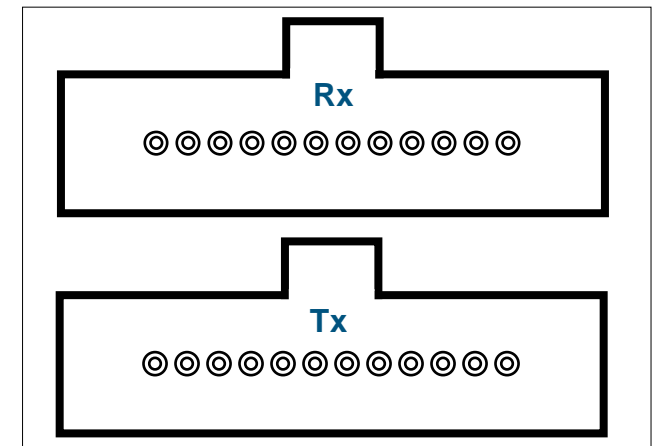
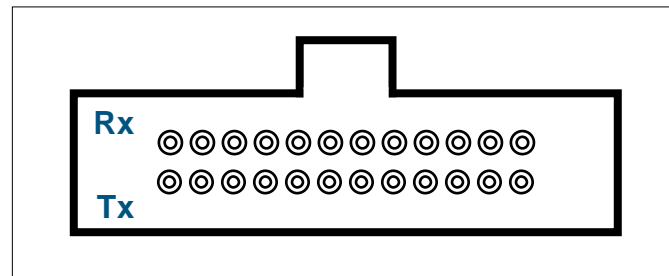
- Provide Physical Layer specifications which support 40 Gb/s over:
 - at least 10km on SMF
 - at least 100m on OM3 MMF
 - at least 10m over a copper cable assembly
 - at least 1m over a backplane
- Provide Physical Layer specifications which support 100 Gb/s over:
 - at least 40km on SMF
 - at least 10km on SMF (note: will be CWDM)
 - at least 100m on OM3 MMF
 - at least 10m over a copper cable assembly

IEEE 802.3ba

- Multimode solutions will be parallel
 - 4 TX and 4 RX for 40G
 - 10 TX and 10 RX for 100G



- 3 Options
 - 2 MPO side by side
 - 2 MPO top and bottom
 - 1 MPO



NOTE: all views are looking into transceiver

IEEE 802.3ba

- No lane assignments (1-4 or 1-10)
 - Protocol will self-detect
 - Reduces importance of polarity for these applications
- Skew budget very generous
 - Not likely to be a concern unless building with duplex links with a length differential more than 15 meters
- Longer distances on “OM4” fiber under consideration
 - Minimal support in the full task group
- Timeline shows publication in June 2010

IEEE 802.3az – Energy Efficient Ethernet

- Task Group IEEE 802.3az
 - Define a mechanism to reduce power consumption during periods of low link utilization for the following PHYs
 - 100BASE-TX (Full Duplex)
 - 1000BASE-T (Full Duplex)
 - 10GBASE-T
 - 10GBASE-KR
 - 10GBASE-KX4
 - Define a protocol to coordinate transitions to or from a lower level of power consumption
 - Timeline shows publication in early 2010



Purchasing Standards

March 18, 2009

Purchasing Standards

- TIA releases published documents to Global Engineering Documents
- Global Engineering Documents acts as a clearing house for order processing for multiple Standards Developing Organizations (SDOs)
- News:
 - Now Global Engineering Documents is “IHS”
 - www.ihs.com
- Tyco Electronics does not receive income from sales of TIA Standards



800-553-0938

www.ampnetconnect.com

AMP, AMP NETCONNECT, NETCONNECT and TYCO are trademarks.

March 18, 2009

