



LAN Standards, News & Trends

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February 20, 2009

Objectives

- Review the recent events and activities of the TIA TR-42 Subcommittees
- Review the recent events and activities of the LAN application Subcommittees

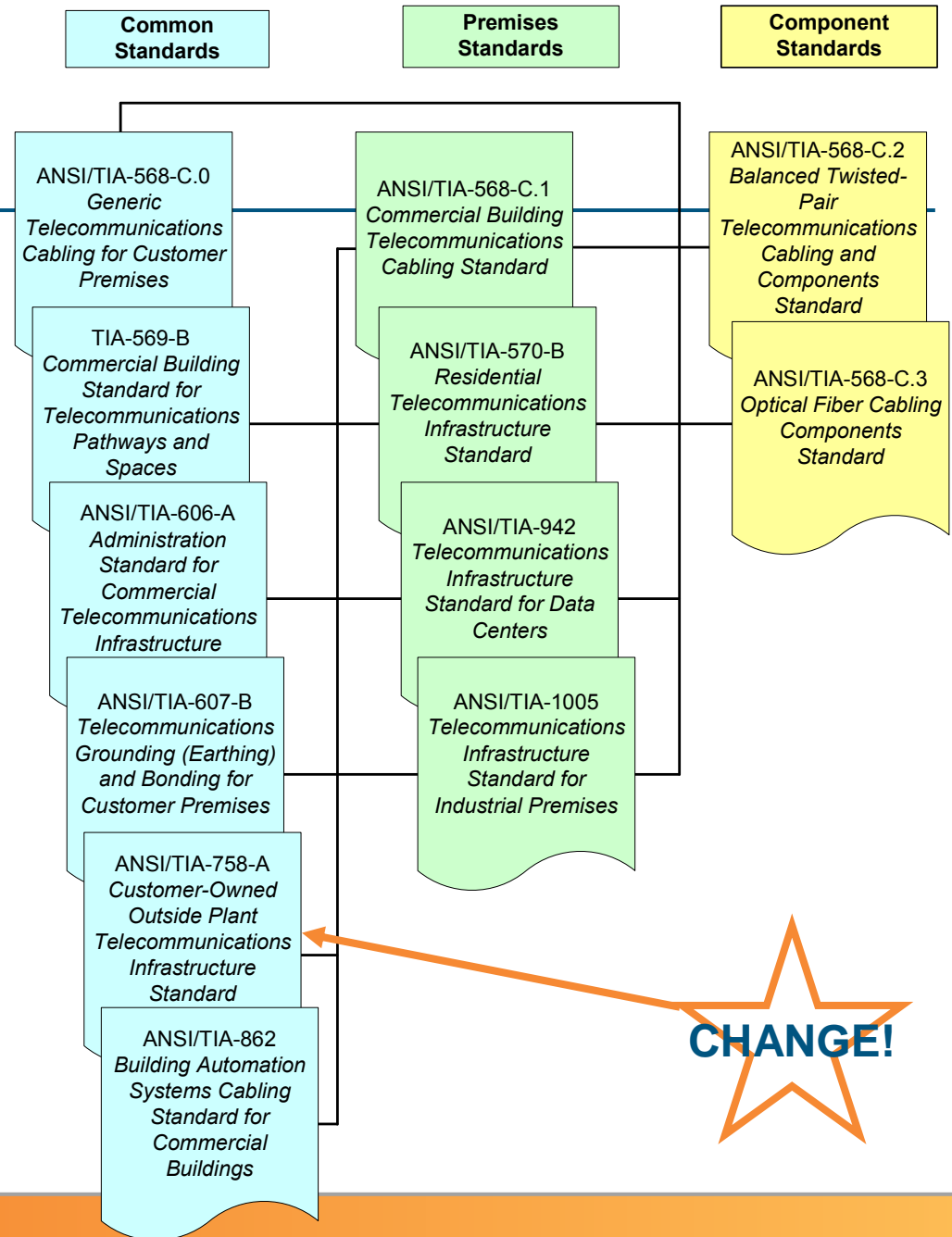
TR-42 Subcommittees

- “Original 9” Subcommittees
 - 42.1 Generic and Comm’l Building
 - 42.2 Residential
 - 42.3 Pathways & Spaces
 - 42.4 Outside Plant (Inactive)
 - 42.5 Terms, Definitions and Abbreviations
 - 42.6 Administration
 - 42.7 Copper Components
 - 42.8 Optical Fiber Components
 - 42.9 Industrial
- Merged from FO-4
 - TR-42.11 Optical Systems
 - TR-41.12 Optical Fibers and Cables
 - TR-42.13 Passive Optical Devices and Components
 - TR-42.15 Fiber Optic Metrology
- Newest Subcommittee
 - TR-42.16 Bonding and Grounding

Most recent meetings held Feb 2-6, 2009 (Arizona)

TR-42 Suite

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





Subcommittee Review

February 20, 2009



TR-42.1 - Generic and Commercial Building Cabling

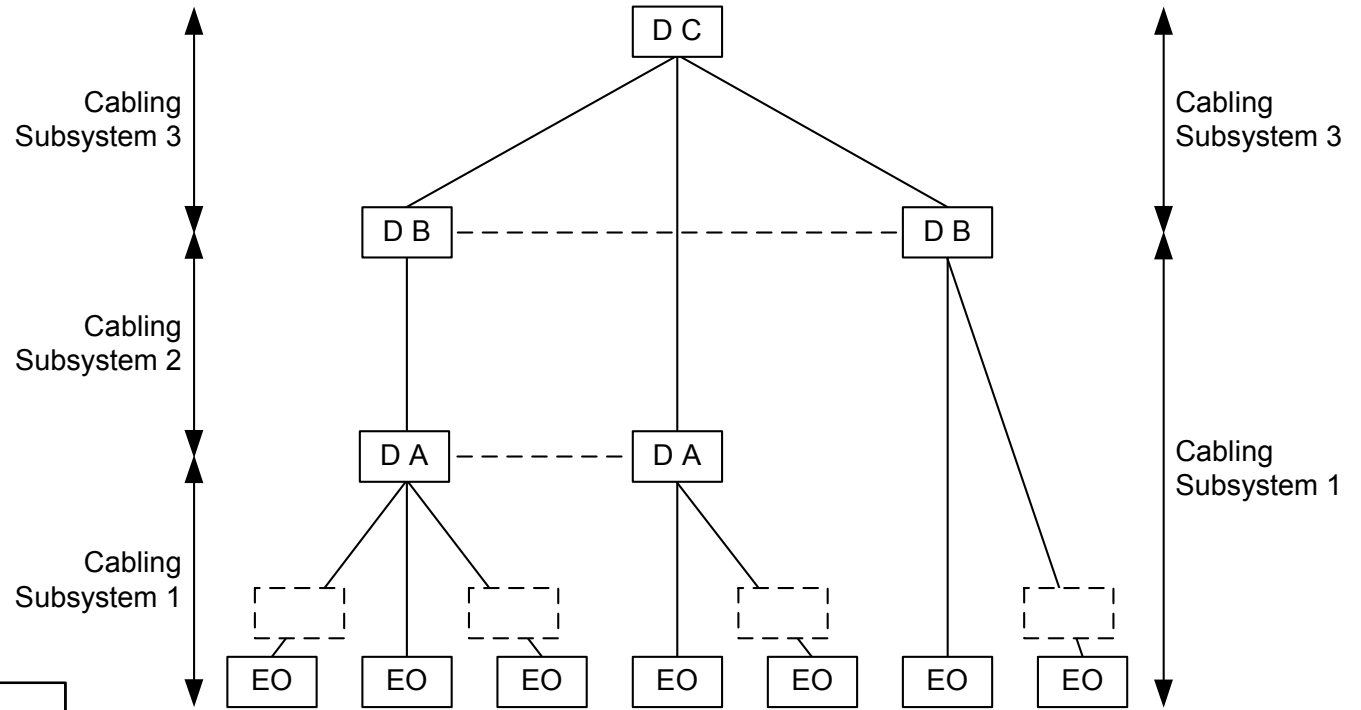
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568-C.0

- 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

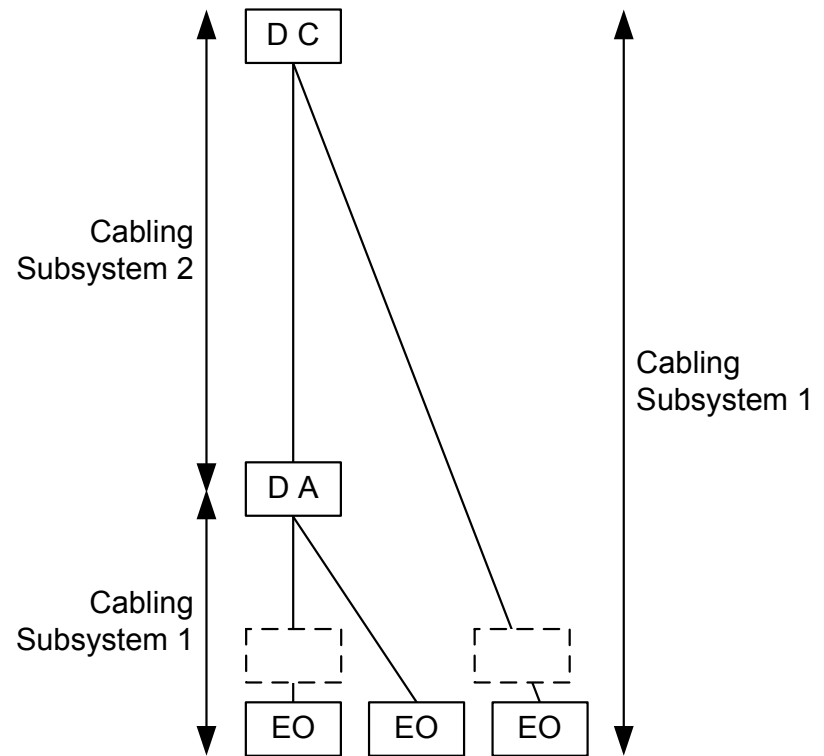
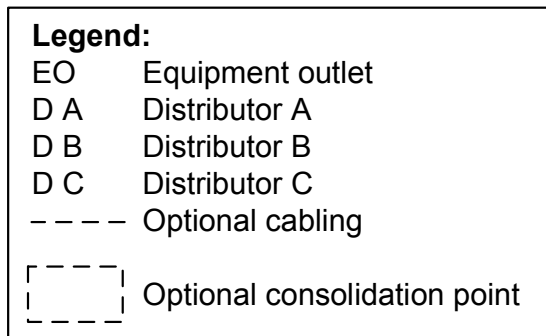
Part 1 of Figure 2



Legend:	
EO	Equipment Outlet
DA	Distributor A
DB	Distributor B
DC	Distributor C
- - - - -	Optional cabling
[]	Optional consolidation point

568-C.0 - Generic Cabling Topology

Part 2 of Figure 2



568-C.0 – Technical Changes

- Installation minimum bend radius for balanced twisted-pair cable
 - Changed to 4x cable OD for both shielded and unshielded
 - Note: Worst case minimum bend radius is now 1.5 inches
 - Not 1.0 inch
 - Largest allowable cable OD (0.354 inches per 568-B.2-11)
- Patch cable bend radius for balanced twisted-pair cabling
 - Changed to “1x cable OD” from “0.25 inches”
- Maximum untwist for Category 6A cable termination
 - Added and set to 13mm (same as Category 6)
- Single-mode recognized in horizontal

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 – Generic Cabling – Status
 - Document approved for publication
 - In final ANSI/TIA Review
 - Any Day Now

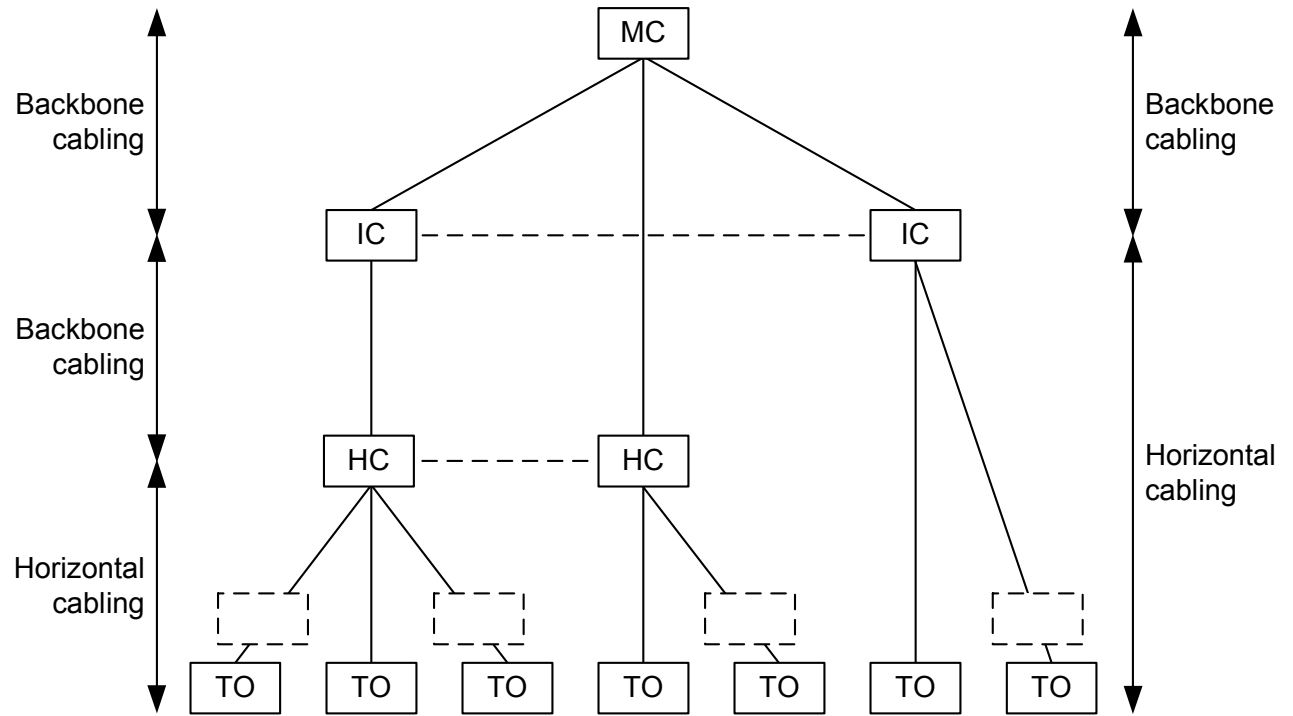


568-C.1

- 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)

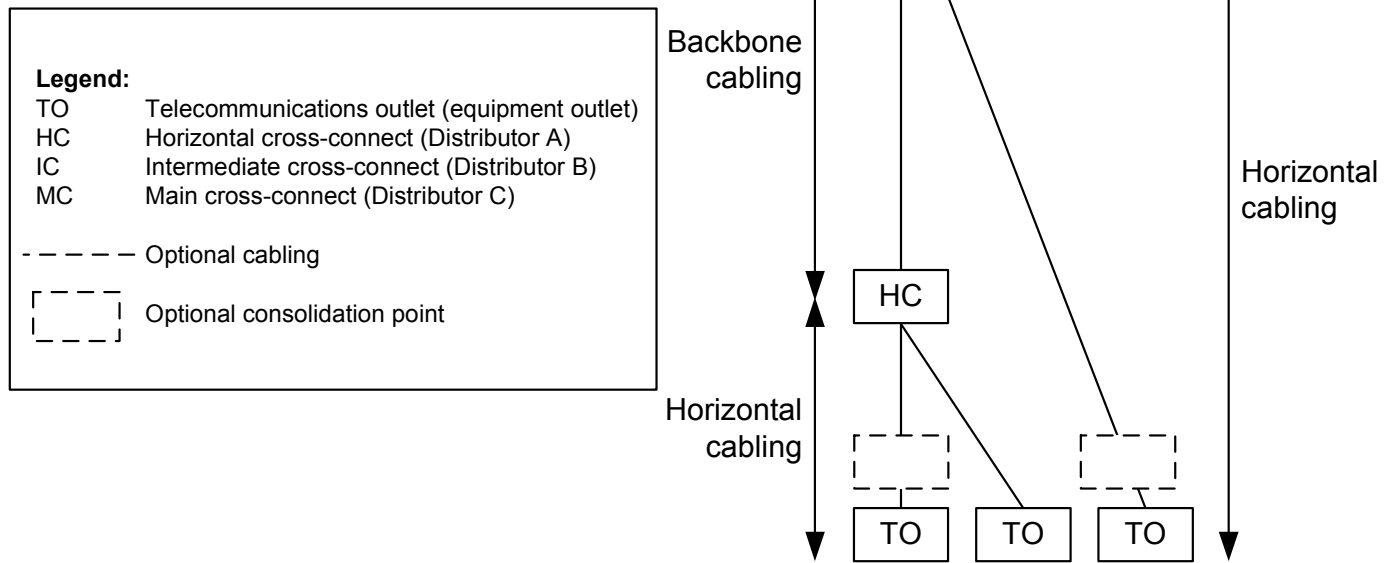
568-C.1

Part 1 of Figure 4



568-C.1

Part 2 of Figure 4



568-C.1 – Technical Changes

- From Addenda
 - Inclusion of category 6 balanced twisted-pair cabling
 - Inclusion of augmented category 6 twisted-pair cabling
 - Inclusion of 850 nm laser-optimized 50/125 μm MM fiber
 - Inclusion of telecommunications enclosures (TEs)
- A recommendation to select 850 nm laser-optimized 50/125 μm as the multimode fiber for commercial buildings

568-C.1 – Technical Changes

- Removal of common information (this was moved into 568-C.0)
- Removal of 150-Ohm STP cabling
- Removal of category 5 cabling
- Removal of 50-ohm and 75-ohm coaxial cabling
- Removal of balanced twisted-pair cabling performance and test requirements
 - These will be in the ANSI/TIA-568-C.2 document

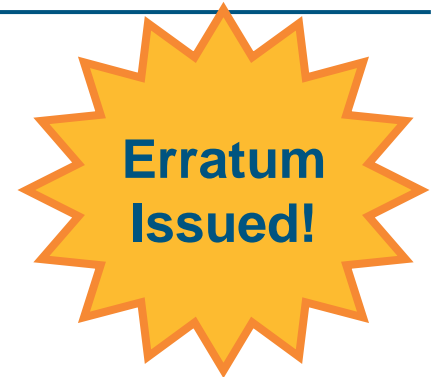
568-C.1

- 568-C.1 – Commercial Building Cabling – Status
 - Document approved for publication
 - In final ANSI/TIA Review
 - Any Day Now



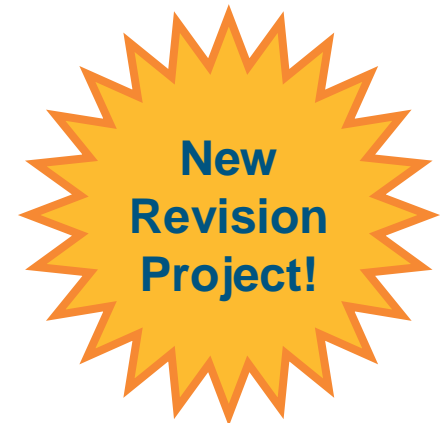
TR-42.1: TIA-942 (Data Center)

- Errata for corrections in Annex G (Tiers)
 - Fix a few typographical errors
- 2nd Addendum going for committee ballot
 - New media types
 - Cat 6A, OM4 (?)
 - Environments
 - RF Noise (example – use of radios in a data center)
 - Temperature and Humidity (relaxing requirements “green” issue)
 - Reliability tiers revision
 - Bring up to date with latest guidance



TR-42.1

- MICE Tutorial TSB
 - Explains why the M, I, C and E values in the MICE table were selected
 - First ballot closed, comments resolved
 - Waiting to see referenced IEC documents for second ballot
- 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 - Residential

February 20, 2009

TR-42.2 Residential

- Addendum 1 to TIA-570-B, Coaxial Cabling in Residences
 - Specific to 75-ohm Series 6 (RG6) and Series 11 (RG11) coaxial cabling (including dual-, tri- or quad-shield)
 - Series 59 is outside the scope of this addendum
 - Addendum is approved for publication
 - Currently caught up in some administration issues
- ANSI/TIA-570-B issued for Reaffirmation Ballot
- Study Group for home theater, distributed audio and video cabling



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 – Pathways and Spaces

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TR-42.3

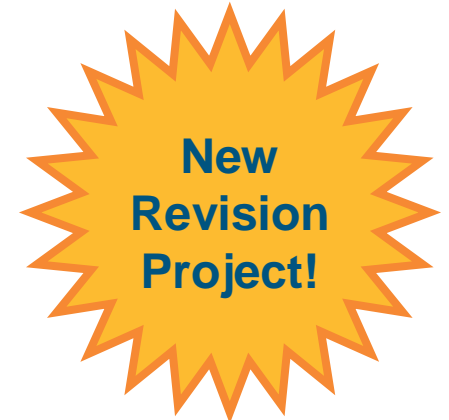
- 1st Addendum to 569-B
 - Proposed changes to the temperature and humidity/dew point ranges for spaces
 - “Green” benefits
 - Industry ballot closed, comments resolved
 - Issued for default ballot

- Addendum for Industrial Pathways and Spaces
 - To become the first addendum to TIA-1005
 - Industry ballot closed, comments resolved
 - Released for second industry ballot

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

- First Addendum Project to ANSI/TIA-568-C.1
 - Information specific to office-oriented commercial building cabling
 - Might otherwise get lost in 569-C project



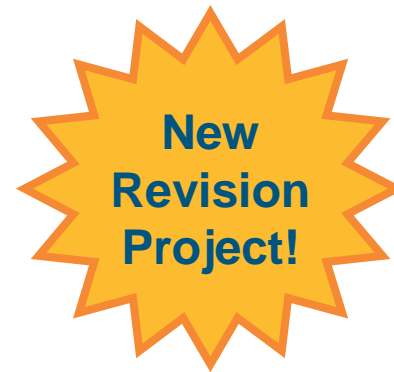


TR-42.4 – Outside Plant

February 20, 2009

TR-42.4

- 758-A Standard is approaching it's five-year limit
- Subcommittee reactivated in October
 - Held elections for Chair and Vice-chair
- Opened Revision Project
 - Recognize the existence of 568-C.0
 - New information or technology
- First draft created and being circulated





TR-42.6 - Administration

February 20, 2009

TR-42.6 Administration

- TIA-606-A Addendum 1, Equipment Rooms and Data Center Computer Rooms
 - All default ballot comments resolved
 - Released for publication





TR-42.7 – Copper Cabling Components

February 20, 2009

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

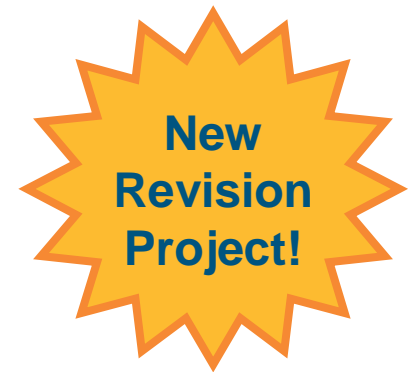
TR-42.7

- TSB-184 on Current Capacity of Balanced Twisted-pair Cabling
 - Ballot closed and comments resolved
- Specifies DC resistance; Safety and EMC are NOT addressed
- Implementations that enables remote powering of PD's
 - Bundling, cabling in conduits, different categories and cable types
 - Currently, specific to 568-B.1
- Issuing as a default ballot
 - Conditional approval for publication in May

- Will consider inclusion or addition of coaxial cabling in 568-C.2 at interim meeting in May

TR-42.7

- Approved a project to revise TSB-155 (10G on category 6)
 - Updating with latest information
 - Completion predicted in February 2010



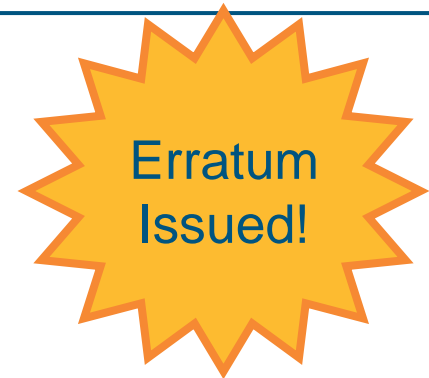


TR-42.8 – Optical Fiber Cabling Components

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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



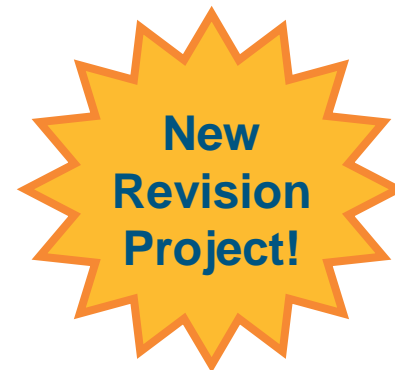


TR-42.9 - Industrial

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TR-42.9

- Publication of TIA-1005, Telecommunications Infrastructure Standard for Industrial Premises, was approved in October
 - Still in ANSI and TIA review
 - Expect document in March
- Approved project to revise ANSI/TIA-1005
 - Align with 568-C.0
 - Include new technologies
 - POF is being considered





TR-42.11 – Optical Fiber Systems

February 20, 2009

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 – Optical Fibers and Cables

February 20, 2009

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-42.13 – Interconnecting Devices and Passive Components

February 20, 2009

TR-42.13

- Withdrew the FOTP-241 project
- FOTP-219, approved for publication in October, is not yet available
- A project on Standardized Method for Measuring Guide-Pin-Bore Diameter in Multifiber Ferrules will await completion of work in the IEC
- Proposed changes to FOTP-11 were discussed
 - New draft to be distributed for affirmation



TR-42.15 - Metrology

February 20, 2009

TR-42.15

- New projects
 - Calibration methods and associated uncertainties for MM Launch condition measurements
 - ORL reference standard(s) and calibration issues
 - PMD reference standards and associated calibration issues



TR-42.16 – Bonding & Grounding

February 20, 2009

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

February 20, 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

February 20, 2009

IEEE 802.3at – Power over Ethernet Plus

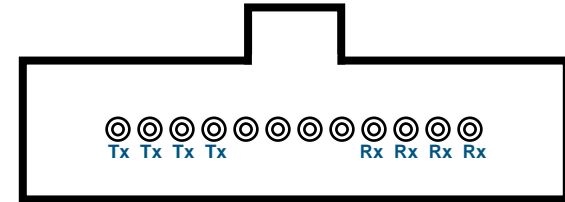
- Objectives changed in March
 - “shall support a minimum of 24W of power at the PD PI”
 - Formerly 30W
 - 802.3at argued that 30W is not practically feasible, so they will go with "the highest we can".
 - The current draft is 25.5W
 - Category 5 (or better) systems with a DC loop resistance no greater than 25 ohms

IEEE 802.3ba – 40G/100G

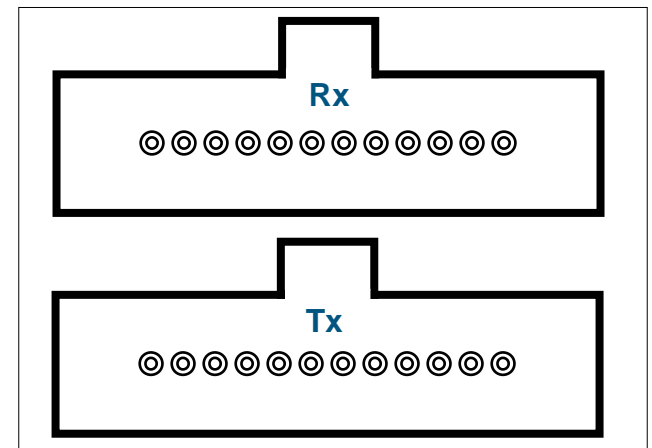
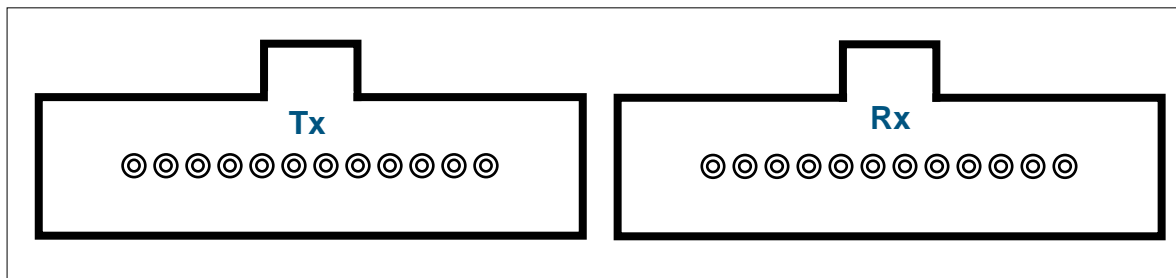
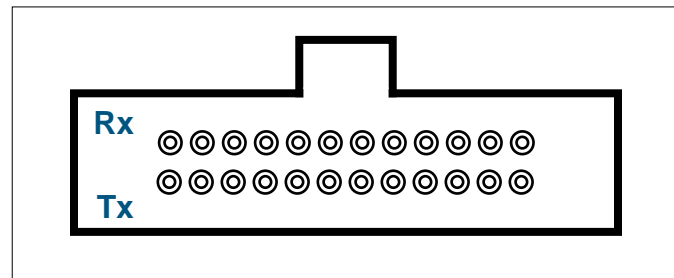
- Provide Physical Layer specifications which support 40 Gb/s over:
 - at least 10km on SMF
 - at least 100m on OM3 MMF
 - at least 10m over a copper cable assembly
 - at least 1m over a backplane
- Provide Physical Layer specifications which support 100 Gb/s over:
 - at least 40km on SMF
 - at least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

February 20, 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



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