

Assignment

Network Cabling: Media and Topologies

For this assignment, you will watch several online video tutorials. The first tutorial, from Eli the Computer Guy, emphasizes network cabling's practical aspects. It also introduces you to the different types of computer networking hardware. The other video tutorials, from Professor Messer, take a more conceptual approach to networking.

Eli the Computer Network Cabling Tutorial

<http://www.elithecomputerguy.com/2010/01/24/network-cabling/>

Professor Messer's Video Tutorials

Tutorial	Description
Multimode and Singlemode Fiber	Different fiber optic cables types. Uses of the different modes of fiber and their attributes.
UTP, STP and Coaxial Cabling	Different types of copper cables. Their applications and their limitations.
Cable Categories	Technical overview of cable categories.
Crossover and Straight Through Cables	Cable design considerations for when your situation dictates a particular use.
Plenum and Non-Plenum Cabling	Keeping the Fire Marshal happy.
Converting Media	Combining different cable categories into the same run.
Media Distance and Speed Limitations	Distance and speed attributes as related to media.

Table 1 *Professor Messer's Networking Media and Topologies Tutorials*

Note that you may have to scroll down the Tutorial Page to find the relevant Network Media and Topologies Tutorials.

Instructions

For this Assignment, you will view several online video tutorials. After viewing each tutorial, answer the following questions. When you have completed your answers, post them to your online portfolio.

These tutorials can be found at:

<http://www.elithecomputerguy.com/2010/01/24/network-cabling/>

and at:

<http://www.professormesser.com/n10-005/free-network-plus/>

Deliverables

Post the answers to the following questions on your online portfolio.

Introduction to Network Cabling Questions

1. What is TIA/EIA 568?
 2. What is the difference between TIA 568A and TIA 568B.
 3. What is the function of a patch panel?
 4. Add these terms to your vocabulary list, Cat 5, Cat 6, and plenum.
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Multimode and Singlemode Fiber

<http://www.professormesser.com/n10-005/multimode-and-singlemode-fiber/>

Historically, copper wire, either coaxial or twisted pair, has been a very popular networking media. At the same time, in certain contexts, fiber optics can offer some significant advantages. Included in these advantages is the ability to run long distances, immunity to EMI and RFI, as well as relatively immunity from tapping.

Questions

1. For signaling, what type of technology does fiber optics employ?
 2. Is fiber optic cable easy to tap?
 3. In what type of situation would you employ multimode fiber optic cable?
 4. What would be a conventional light source for multimode fiber optic cable?
 5. In what situation would you employ single mode fiber optic cabling?
 6. What would be a conventional light source for single mode fiber optic cabling?
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UTP, STP and Coaxial Cabling

<http://www.professormesser.com/n10-005/utp-stp-and-coaxial-cabling/>

For local area networks, the historical dominant physical network media is unshielded twisted pair copper (UTP). Though, for a particular situation, you might also utilize shielded twisted pair (STP). Prior to UTP, coaxial cabling was the most common network media.

Questions

1. What type of cable do the terms 10base5, "Thicknet", RG-8, 10base2, and RG-58 describe?
 2. What type of cabling uses conductor pairs that are twisted?
 3. What differentiates UTP from STP?
 4. What is the most common form of Ethernet cabling for Local Area Networks?
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Cable Categories

<http://www.professormesser.com/n10-005/cable-categories/>

Here, you will learn about cable categories, the network topologies that they support, as well as the relevant standards associations.

1. What is the EIA?
2. What is the TIA?
3. For what is Category 3 cable used?

4. Compare and contrast Cat5 and Cat5e cable.
5. In what situation would you want to employ Cat6 cable?

Crossover and Straight through Cables

<http://www.professormesser.com/n10-005/crossover-and-straight-through-cables/>

Network cables come in both straight through and crossover configurations. Your specific use for the cable will dictate which configuration you should employ.

1. What is an Ethernet straight through cable? When would you use it?
2. What is the difference between a MDI and a MDIX interface?
3. What is an Ethernet crossover cable? When would you use one?
4. If you were going to connect two CSU/DSUs, what type of cable would you use?

Plenum and Non-Plenum Cabling

<http://www.professormesser.com/n10-005/plenum-and-non-plenum-cabling/>

1. What is the disadvantage of using regular TWP copper cable in a ceiling plenum?

Converting Media

<http://www.professormesser.com/n10-005/converting-media/>

When you are working in a network environment, you may have the need to convert a signal from one type of media to a different type of media. This tutorial will acquaint you with the options that you have in that situation.

1. Why do you always need to provide power to the device when you convert from fiber to copper?
2. Can a network signal from almost any type of media be converted to any other type of media?

Media Distance and Speed Limitations

<http://www.professormesser.com/n10-005/media-distance-and-speed-limitations/>

Each cable has a unique set of attributes. Examples of these attributes include how far a signal can run and still be “in spec.” Another attribute is that each cable has a speed limitation. Often these attributes are expressed in a descriptive cable naming convention.

1. What type of cable does 10base5 networking use?
2. How far can you run on a single run of 10baseT?
3. How far can you run on a single run of 100baseTx?
4. Complete Table 1 by adding the missing cable attributes.

TIA Category	Ethernet Standard	Cable (Fiber) Type	Speed	Distance
NA	10base5			
NA	10base2			
	100base-TX			
	1000base-T			
NA	1000base-SX			
NA	1000base-LX			

Table 1 *Cable Attributes*