

REVIEW LESSON

MTA Course: 98-366 Networking Fundamentals

Lesson name: Understanding Protocols and Services 3.1_A

Topic: Understand the OSI model

(One 50-minute class period)

File name: NetFund_RL_3.1_A

Lesson Objective

3.1_A: Understand the OSI model. *This objective may include but is not limited to:* OSI model; TCP model; examples of devices, protocols, and applications and which OSI/TCP layer they belong to; TCP and UDP; well-known ports for most-used purposes (not necessarily Internet); packets and frames.

Preparation Details

Prerequisite student experiences and knowledge

This MTA Certification Exam Review lesson is written for students who have learned about networking fundamentals. Students who do not have the prerequisite knowledge and experiences cited in the objective will find additional learning opportunities using resources such as those listed in the Microsoft® resources and Web links at the end of this review lesson.

Instructor preparation activities

- Make copies of Student Activity NetFund_SA_3.1_A

Resources, software, and additional files needed for this lesson

- NetFund_PPT_3.1_A
- NetFund_SA_3.1_A
- NetFund_SA_3.1A_Key

Teaching Guide

Essential Vocabulary

encapsulation—the data portion of an information unit at a given OSI layer can contain headers, trailers, and data from all the higher layers.

Internet Engineering Task Force (IETF)—a worldwide organization of individuals interested in networking and the Internet. IETF is charged with studying technical problems facing the Internet and proposing solutions to the Internet Architecture Board (IAB).

internetwork—a collection of individual networks, connected by intermediate networking devices, that functions as a single large network.

International Organization for Standardization (ISO)—an international association of 130 countries that works to establish global standards for communications and information exchange.

ITU-T—The standardization division of the **International Telecommunication Union** that develops communications recommendations for all analog and digital communications.

network protocol—A set of rules and parameters that defines and enables communication through a network.

Open Systems Interconnection (OSI)—a layered architecture (plan) that standardizes levels of service and types of interaction for computers exchanging information through a communications network. The ISO/OSI reference model separates computer-to-computer communications into seven protocol layers, or levels, each building—and relying—upon the standards contained in the levels below it.

protocols—a formal set of rules and principles that directs the way computers exchange information over a network medium.

routing—protocols for exchanging information between routers so that the routers can select the proper path for network traffic.

SAP—acronym for **Service Access Point**. Intangible place at which one OSI layer can request the services of another OSI layer.

Winsock driver—**Windows Sockets API** (later shortened to **Winsock**) is a technical specification that defines how Windows network software should access network services, especially TCP/IP.

Lesson Sequence

Activating prior knowledge/lesson staging (Anticipatory Set: 10 minutes)

1. Student prompt (PowerPoint® slide 3):
 - Problem: Personal computer use and the Internet have grown very quickly. Corporations and educational users are developing large networks and individuals access the Internet in huge numbers. There is no pattern or organization and networks have developed without planning.
 - Assignment: Think about how you might resolve the complicated issues that have arisen. List some of your ideas for unclogging and making the Internet smoother for corporations, educational institutions and individuals.
2. Give students a few minutes to respond, allowing them to work until they have finished.
3. Explain the solution to the students before your presentation: The OSI 7 Layer reference model versus the monolithic model.

Lesson activity (30 minutes)

1. Teacher Instruction (20 minutes)
 - Use the included PowerPoint presentation to review the OSI model and the vocabulary words.
 - As indicated in the slideshow, students are to complete the activity from NetFund_SA_3.1_A.

Assessment/lesson reflection (10 minutes)

1. How well do you really know the OSI networking model? Test yourself with our OSI Model game. Go to the following website and play the OSI Networking Game and Good luck! <http://www.gocertify.com/games/osi-game.shtml>
2. Do the review at the end of each game and write down any wrong answers with the correct answer to either turn in or discuss with the whole class.

Microsoft resources and Web links

- **Cisco: Intro to Internet**
<http://www.cisco.com/en/US/docs/internetworking/technology/handbook/Intro-to-Internet.html#wp1020550>
- **Microsoft: DCOM**
<http://www.microsoft.com/msj/0398/dcomfig02.gif>
- **Microsoft: DCOM**
[http://msdn.microsoft.com/en-us/library/dd923487\(office.12\).aspx](http://msdn.microsoft.com/en-us/library/dd923487(office.12).aspx)
- **Microsoft: The OSI Model's Seven Layers**
<http://support.microsoft.com/kb/103884>
- **Microsoft: The ISO Model: Theory and Function of Layered Design**
<http://support.microsoft.com/kb/103881/en-us>
- **Petri OSI: Concepts**
http://www.petri.co.il/osi_concepts.htm
- **Webopedia: OSI Layers**
http://www.webopedia.com/quick_ref/OSI_Layers.asp
- **Wikipedia: OSI**
http://en.wikipedia.org/wiki/OSI_model
- **Wikipedia: Protocol**
[http://en.wikipedia.org/wiki/Protocol_\(computing\)](http://en.wikipedia.org/wiki/Protocol_(computing))