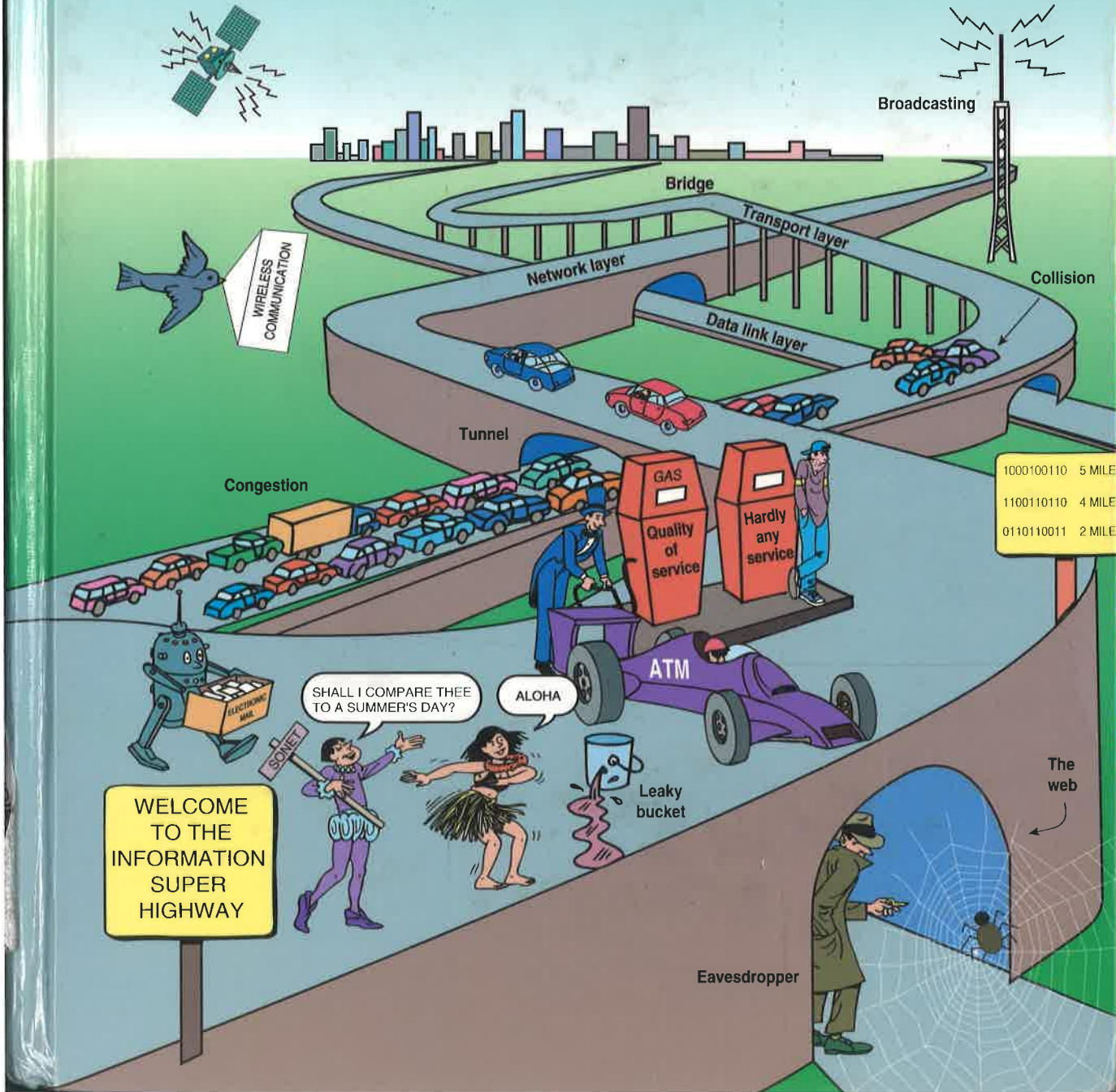


THIRD EDITION

COMPUTER NETWORKS

ANDREW S. TANENBAUM



Computer Networks

Third Edition

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Amsterdam, The Netherlands*

For book and bookstore information



<http://www.prenhall.com>



*Prentice Hall PTR
Upper Saddle River, New Jersey 07458*

Library of Congress Cataloging in Publication Data

Tanenbaum, Andrew S. 1944-.

Computer networks / Andrew S. Tanenbaum. -- 3rd ed.

p. cm.

Includes bibliographical references and index.

ISBN 0-13-349945-6

1. Computer networks. I. Title.

TK5105.5.T36 1996

96-4121

004.6--dc20

CIP

Editorial/production manager: *Camille Trentacoste*

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Cover design director: *Jerry Votta*

Cover designer: *Don Martinetti, DM Graphics, Inc.*

Cover concept: *Andrew S. Tanenbaum, from an idea by Marilyn Tremaine*

Interior graphics: *Hadel Studio*

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Printed in the United States of America

10 9 8 7 6 5 4 3 2

ISBN 0-13-349945-6

Prentice-Hall International (UK) Limited, *London*

Prentice-Hall of Australia Pty. Limited, *Sydney*

Prentice-Hall Canada Inc., *Toronto*

Prentice-Hall Hispanoamericana, S.A., *Mexico*

Prentice-Hall of India Private Limited, *New Delhi*

Prentice-Hall of Japan, Inc., *Tokyo*

Simon & Schuster Asia Pte. Ltd., *Singapore*

Editora Prentice-Hall do Brasil, Ltda., *Rio de Janeiro*

Below we will discuss each layer of the model in turn, starting at the bottom layer. Note that the OSI model itself is not a network architecture because it does not specify the exact services and protocols to be used in each layer. It just tells what each layer should do. However, ISO has also produced standards for all the layers, although these are not part of the reference model itself. Each one has been published as a separate international standard.

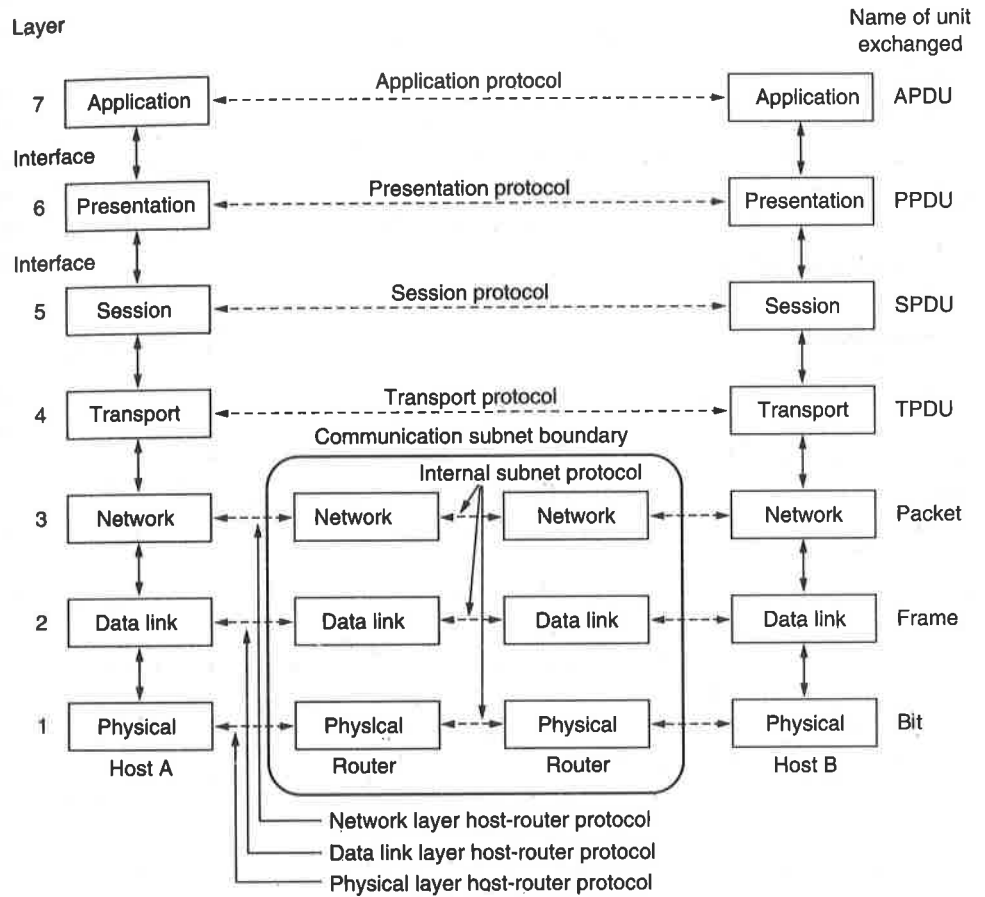


Fig. 1-16. The OSI reference model.

The Physical Layer

The **physical layer** is concerned with transmitting raw bits over a communication channel. The design issues have to do with making sure that when one side sends a 1 bit, it is received by the other side as a 1 bit, not as a 0 bit. Typical

different file naming conventions, different ways of representing text lines, and so on. Transferring a file between two different systems requires handling these and other incompatibilities. This work, too, belongs to the application layer, as do electronic mail, remote job entry, directory lookup, and various other general-purpose and special-purpose facilities.

Data Transmission in the OSI Model

Figure 1-17 shows an example of how data can be transmitted using the OSI model. The sending process has some data it wants to send to the receiving process. It gives the data to the application layer, which then attaches the application header, *AH* (which may be null), to the front of it and gives the resulting item to the presentation layer.

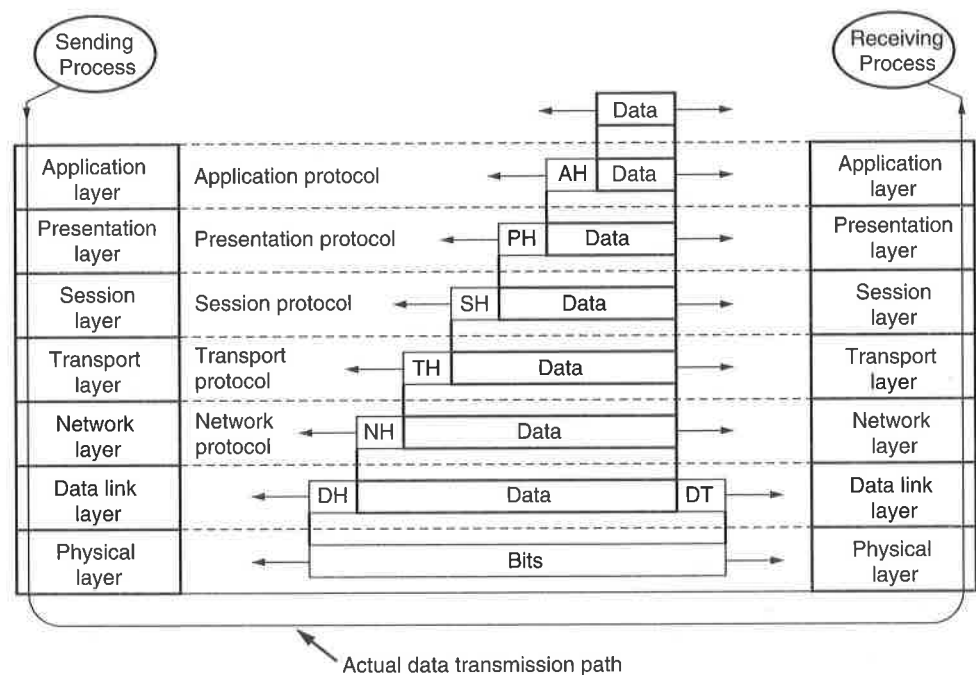


Fig. 1-17. An example of how the OSI model is used. Some of the headers may be null. (Source: H.C. Folts. Used with permission.)

The presentation layer may transform this item in various ways and possibly add a header to the front, giving the result to the session layer. It is important to realize that the presentation layer is not aware of which portion of the data given to it by the application layer is *AH*, if any, and which is true user data.

This process is repeated until the data reach the physical layer, where they are actually transmitted to the receiving machine. On that machine the various

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