TCP/IP Illustrated, Volume 1

The Protocols

W. Richard Stevens

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Introduction

1.1 Introduction

The TCP/IP protocol suite allows computers of all sizes, from many different computer vendors, running totally different operating systems, to communicate with each other. It is quite amazing because its use has far exceeded its original estimates. What started in the late 1960s as a government-financed research project into packet switching networks has, in the 1990s, turned into the most widely used form of networking between computers. It is truly an *open system* in that the definition of the protocol suite and many of its implementations are publicly available at little or no charge. It forms the basis for what is called the *worldwide Internet*, or the *Internet*, a wide area network (WAN) of more than one million computers that literally spans the globe.

This chapter provides an overview of the TCP/IP protocol suite, to establish an adequate background for the remaining chapters. For a historical perspective on the early development of TCP/IP see [Lynch 1993].

1.2 Layering

Networking *protocols* are normally developed in *layers*, with each layer responsible for a different facet of the communications. A *protocol suite*, such as TCP/IP, is the combination of different protocols at various layers. TCP/IP is normally considered to be a 4-layer system, as shown in Figure 1.1.