

## **4 Wireless Application Protocol**

W. Kou

ISN National Key Laboratory, Xidian University, P.R. China

### **4.1 Introduction**

The wireless application protocol (WAP) is a suite of emerging standards to enable mobile Internet applications. The WAP standards have been created as a result of the WAP Forum that was formed in June 1997 by Ericsson, Motorola, and Nokia. The WAP Forum is designed to assist the convergence of two fast-growing network technologies, namely, wireless communications and the Internet. The convergence is based on rapidly increasing numbers of mobile phone users and the dramatic effect of e-business over the Internet. The combination of these two technologies will have a big impact on current e-business practice, and it will create huge market potential.

In this chapter, a detailed introduction to WAP is presented, including the application environment and various protocols. The security aspect in the present Internet environment is dealt with in Sect. 4.3.

### **4.2 Wireless Application Protocol**

#### **4.2.1 Overview**

The WAP standards consist of a variety of architecture components, including an application environment, scripting and markup languages, network protocols, and security features. These components and features together define how wireless data handsets communicate over the wireless network, and how content and services are delivered. With the WAP standards, a wireless data handset can establish a connection to a WAP-compliant wireless infrastructure, request and receive the content and services, and present them to the end user. This WAP-compliant wireless infrastructure may include the handset, the server side infrastructure, such as the proxy server (WAP gateway), the Web server, the application server, and the network operator (telecommunication company). The WAP architecture is shown in Fig. 4.1.

The WAP architecture can also be presented through the WAP protocol stack shown in Fig. 4.2. The WAP protocol stack covers the complete picture from

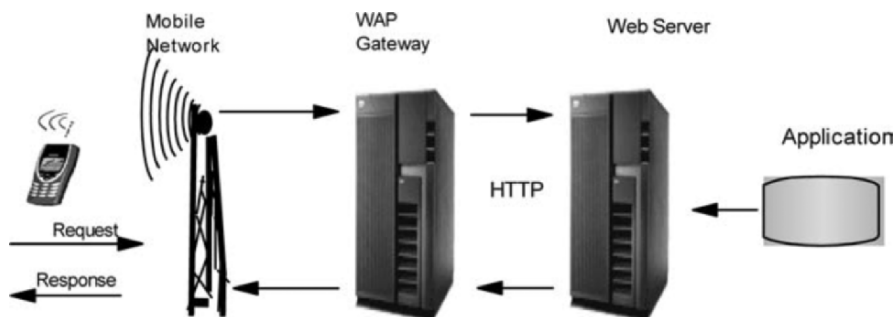


Fig. 4.1. The WAP architecture

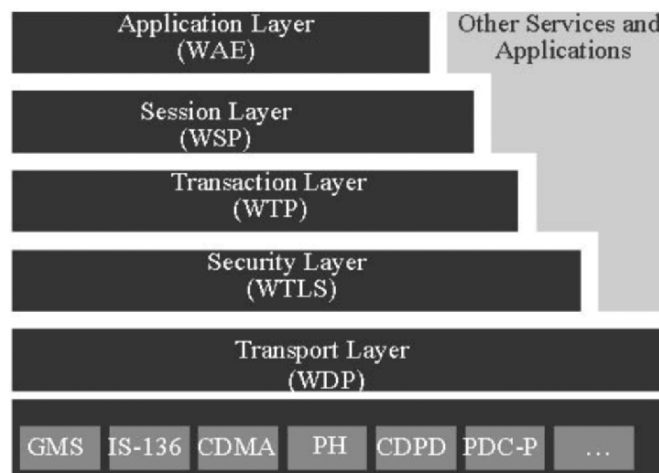


Fig. 4.2. The WAP protocol stack

bearers to applications. The bearers are the various wireless networks that WAP currently supports. The transport layer is an interface common to the underlying wireless network, and it provides a constant service to the upper layers in the WAP stack, such that the bearer services are transparent to the upper layers. In other words, with the transport layer, the specific network characteristics can be masked. The security layer provides security for the transport layer, based on the industry standard protocol and the transport layer security (TLS) protocol. The transaction layer provides a lightweight transaction-oriented protocol for mobile thin clients. The session layer provides the application layer with the capability to select connection-oriented or connectionless services. The application layer deals with a general-purpose environment for applications.

The WAP protocols in Fig. 4.2 include wireless application environment (WAE), wireless session protocol (WSP), wireless transaction protocol (WTP),