

Wireless Application Protocol (WAP)

What is the Wireless Application Protocol (WAP)?

The WAP standard specifies a set of protocols and an application environment for the delivery of interactive and real-time information services over a mobile network to conforming hand-held digital devices. Examples of such devices are PDAs and mobile telephones with displays. WAP aims to integrate Internet, wireless data, and telephony.

WAP works with all types of wireless networks including GSM, TDMA, CDMA, and the upcoming 3G networks.

WAP is the wireless counterpart of the Internet protocol HTTP and the Web markup language HTML. WAP addresses issues relating to wireless interaction, which is characterized by low bandwidth and devices with small displays, limited processing power and memory, and batteries that can operate only for limited periods without being recharged.

Although WAP follows the client-server Web model of interaction, WAP is incompatible with HTTP and HTML. Consequently, WAP gateways (proxies) are needed to sit between the client (WAP device) and the Web servers. Incidentally, the newer version of WAP, WAP 2.0, supports HTTP, but a gateway is still required for reasons such as WML compression, dynamic conversion of HTML to WML, etc.

WAP gateways intercept and handle user requests to Web servers and process the responses. A Web server may generate WML content for WAP devices or it may simply dish out HTML (or XML). In case the Web server generates HTML (XML), the WAP gateways must convert the HTML (XML) to WML. Before sending the WML to the WAP device, the gateway compresses it to WMLC (the C in WMLC is for compressed). If the WML generated by the Web server is already WMLC, then the compression step is skipped and the server response passed on to the WAP device.

What are the Components of WAP?

The major components of the WAP (actually WAP 2.0) specification are:

- o Protocol Support
 - IP networks: Protocols supported include the wireless “profiled” versions of TCP (called WP-TCP), TLS, and HTTP (called WP-HTTP).

- Non-IP networks: Wireless Session Protocol (WSP), Wireless Transaction Protocol (WTP), Wireless Transport Layer Security (WTLS), and Wireless Datagram Protocol (WDP).
- o Application Environment
 - WML Specification: WML is a markup language like HTML based on XML and XHTML (the XML version of HTML). WML is designed for devices with small screens, limited processing power, and low bandwidth connection to the servers.
 - WMLScript Specification: WMLScript is a scripting language, similar to JavaScript, for running code on clients.
 - WAP Micro Browser. The WAP micro browser is designed especially for operating in the limited resource environment of WAP devices.
- o Services and Capabilities
 - Real-time Content Delivery: WAP provides facilities for asynchronously “pushing” content to WAP devices allowing the immediate delivery of real-time messages, alerts, and other content that needs to be delivered immediately.
 - Customization of User Profile: WAP allows servers to customize content delivered to users based on user preferences and client device capabilities.
 - Telephony Support: WAP enables telephone services to be operated from within a data environment. Consequently, WAP phones can operate as integrated voice and web devices.

What are the Advantages of WAP?

Using WAP, which is a global and open standard, has the following advantages:

- o Portability: A WAP application on one network should be easily portable to a different environment with little or no change. The alternative to using WAP is to write applications using proprietary protocols. Such applications will require substantial code rewriting when porting to a
 - different type of network (examples of network types are GSM and CDMA),
 - different bearer protocol (examples of bearer protocols are SMS, short message service or CSD, circuit switched data), or
 - a new device type.
- o User Experience: WAP aims to enhance the user experience by addressing characteristics of wireless environment:
 - Narrow bandwidth connection.
 - Devices with small screens, limited battery use without recharging, limited memory, and limited processing power.
- o Cost and Application Development Time Reduction: New services can be added quickly and at a lower cost using WAP. This is made possible by the easy availability of standardized WAP tools and platforms such as WAP software development tool kits, WAP gateways, and WAP devices.

Where Can I Find More Information?

- o [Wap Forum: Standard and Other Resources](http://www.wapforum.org/) (http://www.wapforum.org/)
- o [WAP Tutorial](http://www.iec.org/online/tutorials/wap/) (http://www.iec.org/online/tutorials/wap/)