

WAP and WML... easy does it.

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Introduction

WAP is an evolving standard which currently incorporates WML as the link from mobile devices to internet connected content, servers and databases.

The following is an introduction to the WAP standard and the Wireless Markup Language in the form of an overview and tutorial.

Agenda

- **What is WAP?** (5 min)
- **A short WAP history lesson** (5 min)
- **WAP in motion** (5 min)
- **Document structure** (5 min)
- **WML Syntax Rules** (10 min)
- **Elements of WML** (15 min)
- **Assembling the Tools** (5 min)
- **Building the App** (30 min)
- **Keep in mind** (5 min)
- **Dynamicizing?** (10 min)
- **Q & A period** (10 min)

What is WAP?

- WAP is simply a protocol - a standardized way that a mobile phone talks to a server installed in the mobile phone network.
- It provides a common way of linking the Internet to cell phones and other mobile devices, thereby linking two of the most business intensive industries anywhere.

What is WAP?

- It incorporates a relatively simple microbrowser into the mobile phone, requiring only limited resources on the mobile phone.
- This makes WAP suitable for thin clients and early smart phones as well as more current devices.
- Microbrowser-based services and applications reside temporarily on servers, not permanently in phones.

What is WAP?

- The Wireless Application Protocol is aimed at turning a mass-market mobile phone into a "network-based smartphone".
- Envisaged as a comprehensive and scalable protocol designed for use with any mobile phone from those with a one line display to a multi-line smart phone to a PDA.

A short WAP history lesson

- Work on ITTP, or Intelligent Terminal Transfer Protocol, was initiated in 1995 by Ericsson.
- The initiative targeted the addition of services to mobile phones.
- 1996 and 1997, were witness to further developments...

A short WAP history lesson

- The commencement of work on a concept called Smart Messaging by Nokia.
- The creation of HDML by Openwave (then known as Unwired Planet).
- Handheld Device Markup Language is markup language based on a limited subset of HTML, and intended for devices with small screens such as cell phones.

A short WAP history lesson

- By December of 1997, in order to avoid the detriment of developing competing protocols and to expand the potential market, Ericsson, Motorola, Nokia and Openwave joined forces to found the WAP forum.
- Their combined efforts culminated with the Spring of 1998 release of the WAP 1.0 specifications.

A short WAP history lesson

- All interested parties are encouraged to become members in the WAP forum.
- Currently membership is numbered in the hundreds of companies, made up of leaders in the terminal, hardware, infrastructure, software, service provision and network operation industries.

WAP in motion

- The wireless application protocol (WAP) is a standard for displaying information on tiny screens over (low bandwidth) wireless connections.
- Providing a link between the Internet and wireless phones, PDAs, and pagers, WAP currently incorporates WML (Wireless Markup Language) — an XML compliant distant second cousin of HTML — which does not require the interface to have a keyboard or pointing device.

WAP in motion

Sending:

- New request is sent from the device and received by a WAP gateway. It is then translated into the appropriate request format (HTTP) and relayed to the web server.
- It is then translated into the appropriate request format (HTTP) and relayed to the web server.

WAP in motion

Receiving:

- Web server sends the requested/retrieved info to the WAP gateway, which extracts the data, encodes it in WML, finally forwarding it to the device.
- The reply is then decoded and displayed on the device.

WAP in motion

Viewing:

- When information is retrieved from the internet, the WAP gateway doesn't send you the entire message.
- The device receives a packet of streaming data, named a card, that includes encoded requests for specific information, such as a item price or stock quote.

Document structure

- WML data are structured as a collection *cards*.
- A single collection of cards is referred to as a *WML deck*.
- Each card contains structured content and navigation specifications.

Document structure

An end-user:

- navigates through a series of cards
- reviews the contents of each presented card
- enters any requested information
- makes choices and navigates to another card or returns to the previously visited card.

WML Syntax Rules

- All WML tags are enclosed in <...>. The tag has to follow the open bracket directly without space. WML is (in comparison to HTML) case-sensitive (<tag> is *not* equal to <TAG>) and all WML tags are lower-case.
- Tab, blank, carriage return and line feed are treated as spaces. One or more spaces directly before or behind a tag are ignored. Several consecutive spaces are treated as one single space.

WML Syntax Rules

- There is a differentiation between standalone-tags and paired tags. Standalone-tags (like `<tag/>`) can appear everywhere in the text. Please note the trailing slash ("/"), it always appears before the closing ">". Paired tags (e.g. `<tag>` and `</tag>`; also called container) enclose text and have the form `<tag>...</tag>` like in HTML. Interlocked tags have to be closed in reverse order of opening, like in HTML, too:
`<a>...`

WML Syntax Rules

- Some WML tags may occur in both forms, as standalone-tag and as paired tag. If the tag is used as standalone-tag, the slash must appear at the end of the tag, else it must appear at the beginning of the closing tag.
- Attributes to tags have the same syntax as in HTML, except that standalone-tags need the trailing slash behind the attribute (e. g. `<tag attribute='abc'/>`).

WML Syntax Rules

As in HTML documents are specified by a uniform resource locator (URL):

- **method://server[:port]/[path/][file][#cards]**
(Actually only http is allowed as method, e.g. mailto: and tel: links are not allowed.)
- The only difference in comparison to HTML is that fragment anchors -- the URL part starting with an hash mark ("#") -- refer to cards and not to reference anchors.

Elements of WML

- Document Structure (Table 1)
- Header Elements (Table 2)
- Logical Formats (Table 3)
- Physical Formats (Table 4)
- Paragraphs and Lines (Table 5)
- Hyper-link header elements (Table 6)
- Hyper-link task elements (Table 7)

Hello World

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD
WML 1.1//EN"
"http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
  <card id="Hello" title="mobiledev.com">
    <p>
      <!-- example --> Hello World
    </p>
  </card>
</wml>
```

Gets me from Point A to Point B

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
    "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>

<card id="Origin" title="mobiledev.com">
  <do type="accept" label="Next">
    <go href="#Destination"/>
  </do>
  <p>
    Here is the origin.
    Select Next to reach the Destination.
  </p>
</card>

<card id="Destination" title="mobiledev.com">
  <p>
    Here is the Destination.
  </p>
</card>

</wml>
```

Have the time?

```
<?xml version="1.0"?> <!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML  
1.1//EN" "http://www.wapforum.org/DTD/wml_1.1.xml">
```

```
<wml>
```

```
<card id="Intro" ontimer="#Main" title="mobiledev.com">
```

```
<timer value="150"/>
```

```
<p>
```

'Splash' page.

You will be re-directed in 15 seconds.

```
</p>
```

```
</card>
```

```
<card id="Main" title="Menu">
```

```
<p>
```

Main menu.

```
</p>
```

```
</card>
```

```
</wml>
```

Creating your first WAP application.

What's your name again?

```
<?xml version="1.0"?> <!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
    "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
  <card id="main" title="mobiledev.com">
    <do type="accept" label="Next">
      <go href="#wel"/>
    </do>
    <p>
      Please enter your name:
      <input type="text" name="name"/>
    </p>
  </card>
  <card id="wel" title="Welcome">
    <do type="prev" label="Back">
      <prev/>
    </do>
    <p>
      Your name is $(name). Click Back to go to previous
      page.
    </p>
  </card>
</wml>
```

Getting the data back

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML 1.1//EN"
  "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
  <card id="main" title="mobiledev.com">
    <do type="accept" label="Next">
      <go method="post" href="www.myserver.com/search.cgi">
        <postfield name="firstname" value="$(first)"/>
        <postfield name="gender" value="m"/>
      </go>
    </do>
    <p>
      Please enter your first name:
      <input type="text" name="first"/>
    </p>
  </card>
</wml>
```

It's all image...

```
<?xml version="1.0"?>
<!DOCTYPE wml PUBLIC "-//WAPFORUM//DTD WML
 1.1//EN" "http://www.wapforum.org/DTD/wml_1.1.xml">
<wml>
  <card id="Welcome" title="mobiledev.com">
    <p>
      
    </p>
  </card>
</wml>
```

Keep in mind

- Some emulators actually don't care about, that mobile devices may have problems storing and parsing large WML decks, so always remember, that big WML decks may properly work on every emulator you have around, but will not work on most WAP devices.
- The size of WML pages is restricted to 1024 Bytes in the binary WMLC (Compiled WML) format. So if you want to test, if your pages have the right size, you need to compile it.

Dynamicizing?

- Now that we've 'mastered' the art of delivering static content to mobile devices, in order to incorporate real usefulness into our interface, evaluating the necessities for delivering dynamic content to the devices is the next step.
- As noted previously, the components necessary for static mobile delivery are essentially the same as for web browser delivery. Let's review those components.

Dynamicizing?

- The same holds true when it comes to adding dynamic content to the wireless web.
- While there are products targeted directly at delivering WAP \ WML content, most of the tools \ servers being used for web content delivery can also be used for mobile content delivery.
- Some popular choices include JSP, ASP and Perl.

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Summary

In summary, it should be safe to say that we have a basic understanding of what WAP encompasses and the brevity with which important information can be formatted for display to a mobile device using the internet. Making the whole thing dynamic and interactive is a small leap from there.

Question and Answer