

# Technical Reference Guide:



Release 2.00



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# Table of Contents

<b>1.</b>	<b>Introduction .....</b>	<b>6</b>
1.1	<i>How it Works .....</i>	6
1.2	<i>Overview of the Guide .....</i>	8
<b>2.</b>	<b>Blazer Feature Overview .....</b>	<b>9</b>
2.1	<i>System Requirements .....</i>	9
2.2	<i>Overview of Key Features.....</i>	9
2.2.1	Intuitive graphical interface .....	9
2.2.2	Fast loading of web pages .....	9
2.2.3	Support for multiple markup languages .....	9
2.2.4	Support for secure web sites .....	9
2.2.5	Optimization of content for Palm OS devices .....	10
2.3	<i>User Interface Overview .....</i>	10
2.3.1	Web Page View .....	10
2.3.2	Bookmark View .....	13
2.4	<i>Preferences .....</i>	14
2.4.1	Browser Preferences .....	14
2.4.2	Advanced Preferences .....	14
2.5	<i>Network Connections.....</i>	14
2.6	<i>Launching Blazer .....</i>	15
<b>3.</b>	<b>Designing Pages for Mobile Devices .....</b>	<b>16</b>
3.1	<i>General Rules.....</i>	16
3.2	<i>Screen Resolution.....</i>	16
3.3	<i>Connection Speed.....</i>	17
3.4	<i>Content .....</i>	17
3.4.1	Page Titles .....	17
3.4.2	Blazer Optimized Content.....	17
3.4.3	mailto command .....	17
3.4.4	Forms.....	18
3.4.5	Tables.....	18
3.4.6	Images .....	19

3.4.7	Unsupported Content .....	23
<b>4.</b>	<b>Working with Blazer .....</b>	<b>25</b>
4.1	<i>Palm OS Integration Tags</i> .....	25
4.1.1	Date Picker .....	25
4.1.2	Time Picker .....	25
4.2	<i>Browser Identification</i> .....	26
4.3	<i>Cookies</i> .....	26
4.4	<i>Session Handling</i> .....	26
4.5	<i>Security</i> .....	27
4.6	<i>Caching</i> .....	28
<b>5.</b>	<b>Testing your Site .....</b>	<b>29</b>
5.1	<i>Making Development Content Accessible</i> .....	29
5.2	<i>Multiple Devices</i> .....	29
5.3	<i>Refreshing Content</i> .....	29
5.4	<i>Using POSE</i> .....	29
<b>6.</b>	<b>International Support .....</b>	<b>32</b>
6.1	<i>HTML Encoding</i> .....	32
6.2	<i>WML Encoding</i> .....	32
6.3	<i>Accept-Language Header</i> .....	32
6.4	<i>Sample Screen Shots</i> .....	33
<b>7.</b>	<b>Appendix .....</b>	<b>34</b>
7.1	<i>List of Acronyms</i> .....	34
7.2	<i>Palm OS Integration Tags</i> .....	35
7.3	<i>HTML Tags</i> .....	36
7.4	<i>WML Tags</i> .....	38
7.5	<i>XHTML Tags</i> .....	41

Change History		
Date	Revision	Description of Changes
08 June 2001	1.00	Initial Release
19 April 2002	2.00	Include information on Blazer 2.0 and 2.1 Added information on Blazer interface Added information on how to launch Blazer with a URL Updated supported tags Updated design guides Updated screen shots

# 1. Introduction

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Handspring Blazer® is a powerful handheld web browser designed for the Palm OS® that can access multiple Internet standards, including HTML, cHTML and WML. With Blazer, a user can download a wide range of web pages from the Internet and view it on the compact screen of their device. The key features of the Blazer web browser are,

- Intuitive graphical interface
- Fast loading of web pages
- Support for multiple markup languages
- Support for secure web sites
- Optimization of content for Palm OS devices

Blazer 2.1 introduces the following features over 2.0:

- In-line editing of text fields on Palm OS 3.5 devices
- Rocker Switch support on the Treo to highlight and select links

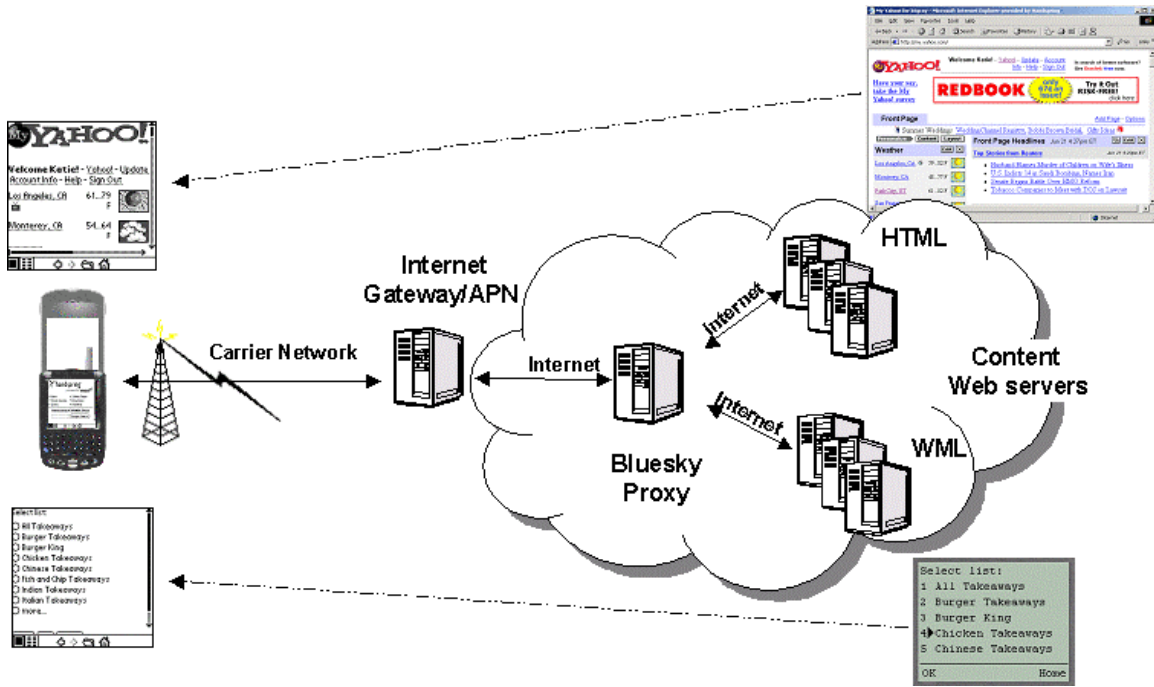
Where appropriate, the guide will call out particular differences in the user interface.

This guide goes over the various technical features of the Blazer system to allow web site designers and programmers to deliver a better web experience.

## 1.1 How it Works

Blazer uses a client/server model for requesting, processing, and displaying a web page. On the server end is the Bluesky proxy server. The Bluesky proxy server adapts pages from the remote web servers to meet the capabilities of the target device, reduces file sizes, and streams content to the client. The client application that is installed on the user's device is the Blazer web browser. The browser will receive the content from the proxy server and display the web page on the device's screen. The Blazer browser will only connect to the proxy server and cannot access a web server directly. Figure 1 contains the diagram of the Blazer client/server system. The diagram also shows how a traditional web page and WAP screen will look like in the Blazer browser.

Figure 1 - Blazer System Architecture



Blazer uses the standard networking library (Netlib) of the Palm OS to make the connection to the proxy server. This means that any device can use a wired or wireless modem to dial up to an Internet Service Provider (ISP) to browse web sites with Blazer.

## 1.2 Overview of the Guide

This document covers a wide range of material for various audiences. Table 1 suggests relevant sections for different readers.

**Table 1 - Documentation Reference**

<b>Audience</b>	<b>Section</b>	<b>Description</b>
Web Developer/Designer	2.3 - User Interface Overview 3 - Designing Pages for Mobile Devices 4 - Working with Blazer 6 - International Support 7.2 - Palm OS Integration Tags 7.3 - HTML Tags	These sections go over the special tags that Blazer supports and tips on how to optimize your site for Blazer.
Mobile Content Developer/Designer	2.3 - User Interface Overview 2.5 - Network Connections 3 - Designing Pages for Mobile Devices 4 - Working with Blazer 7.4 - WML Tags	These sections go over the how to ensure your mobile site will work well with Blazer.
Palm OS Application Developer	2 - Blazer Feature Overview 4 - Working with Blazer 7.2 - Palm OS Integration Tags	These sections will cover the specifications of the Blazer application and how an application can interact with the browser.



## 2. Blazer Feature Overview

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This chapter covers the various features of Blazer. This is useful to understand the requirements to run the software, technical features, and the various user interface elements.

### 2.1 System Requirements

Blazer 2.0 runs on all Handspring Visor handhelds with 8 MB of memory or more, as well as other Palm OS devices that have a minimum of 8 MB of memory and Palm OS version 3.5 or higher. Blazer is already installed in ROM on the Treo devices. Blazer will also require a connection to the Internet. Typically this is done via a modem and an ISP. On the Visor handheld, one can add a Springboard modem module or the VisorPhone. On the Treo, one can use the built-in phone as a modem. In either case, one must setup the appropriate accounts to dialup and connect to an ISP.

### 2.2 Overview of Key Features

Blazer incorporates a number of key technical features shown below.

#### 2.2.1 Intuitive graphical interface

Blazer's user interface takes advantage of the 160 x 160 pixel screen standard on Palm OS devices. Users have one touch access to bookmarks, navigation, home page, and opening new web pages. Blazer provides users with a familiar look and feel comparable to a desktop browser. For more information on the user interface elements please refer to the User Interface Overview section shown below.

#### 2.2.2 Fast loading of web pages

Due to Blazer's unique content streaming and progressive rendering technologies, the browser quickly loads web pages. Because web page text loads first, users can quickly jump to relevant content without waiting for the images to load. The proxy server compresses, scales, and converts graphics for faster downloads.

#### 2.2.3 Support for multiple markup languages

Blazer supports a wide variety of markup languages. This allows the user to access a wide variety of web and wireless content from a single browser. This also gives the content provider some flexibility to determine what type of markup language to use. Table 2 lists the various markup languages. For specific tags that the browser supports, please refer to the various tables in the Appendix located at the end of this document.

**Table 2 - Supported Markup Languages in Blazer 2.0**

Markup Language
HTML 3.2
cHTML
xHTML
WML 1.2
HDML 3.0

#### 2.2.4 Support for secure web sites

Blazer supports 128-bit strong encryption, providing access to secure web sites and services.

## 2.2.5 Optimization of content for Palm OS devices

Blazer optimizes the content to take advantage of Palm OS devices. In addition to Palm OS optimization, Blazer 2.1 is optimized for the Handspring Treo communicator. The application will take advantage of the rocker switch to highlight and select elements in the web page. In addition to the rocker switch support, the main screen of the browser will display the current signal strength or call status of the phone.

## 2.3 User Interface Overview

Blazer has two main views: Page View (Figure 2) and Bookmark View (Figure 3). The user can change views by tapping on the View buttons in the lower left corner of the screen or by pressing on the Blazer application button (provided that Blazer is mapped to one of the hardware application buttons on the device).

Figure 2 – Page View



Figure 3 - Bookmark View

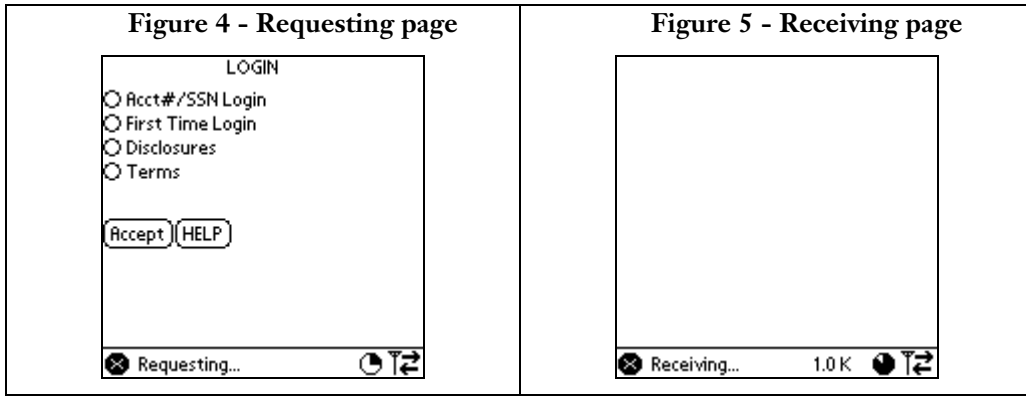


### 2.3.1 Web Page View

The web page view will launch to the last viewed page; tapping the home button will launch the home page. If no home page is specified in the preferences, the browser loads the default Handspring mobile home page. Table 3 identifies the various elements found on the Web Page View. This view provides easy access to most of the common functions. Icons for navigation, similar to the standard web browser icons, appear at the bottom of the screen. This area is also used to display the status of page load operation (see Figure 4 and Figure 5). When the page is loaded, the standard icons will appear.

Table 3 - Blazer Icons

Icon	Function
	Back
	Forward
	Load home page
	Open specific page (brings up open Web Page dialog. See below)
	Secure web page (see below)
	Cancel page loading button
	Page loading icon



### 2.3.1.1 Data Call Indicator

Figure 6 shows a Web Page view with the data call indicator active where the signal strength indicator used to be. The data call indicator appears when the device is in an active data call. If the device is in a standard voice call, the standard signal strength indicator is shown.

Figure 6 - Web Page View (device in data call)



### 2.3.1.2 Secure Web Page Indicator

Blazer displays a lock icon at the bottom of the screen to indicate that content was downloaded over a secure SSL connection. Figure 7 shows a secure web page with the security indicator next to the signal strength/data call indicator. If the user taps on this icon, the security information dialog will be shown (Figure 8).

Figure 7 - Secure Web Page

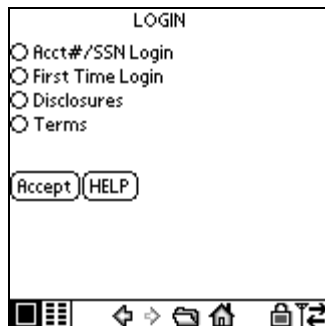


Figure 8 - Secure Page Dialog



### 2.3.1.3 Open Web Page Dialog

Figure 9 shows the Blazer open web page dialog. This is used to enter a URL for Blazer to open. Special buttons are provided for commonly used text in an URL. This dialog also supports an auto-complete feature. URL entries are stored in a special database and are matched when the user starts entering text.

Figure 9 - Open Web Page Dialog



### 2.3.1.4 Text Input

Many web sites contain one or more input boxes where the user enters a variety of information to submit to the web server. Blazer provides a special user interface that makes text entry easy on the mobile device. Blazer 2.0 brings up a special text entry dialog of which the contents will be copied to the text input form. Blazer 2.1 allows the user to input text directly on the web page without the need for a special input dialog. If the text input exceeds the size of the text field, a text input dialog will automatically pop up. In both cases the on-screen keyboard is available for Graffiti based devices. Figure 10 and Figure 11 show the input methods for Blazer 2.0 and Blazer 2.1 respectively.

Figure 10 - Text Input Dialog (Blazer 2.0)



Figure 11 - Inline Text Input (Blazer 2.1)



### 2.3.1.5 Rocker Switch Support

Blazer 2.1 includes support for the rocker switch available on the Treo devices. This allows the user to select links and other selectable elements on a web page. The scroll up/down action will cycle through the links and the button press action will select the link. In addition to the rocker switch, the user can also use the Shift + Scroll Up/Down keys. Figure 12 is the screen shot of a link highlighted when the user is using the rocker switch. On Blazer 2.0, the rocker switch can only be used to scroll the page.

Figure 12 - Link highlighted



### 2.3.2 Bookmark View

Blazer provides the user the ability to quickly and easily setup bookmarks to web pages. Users can store up to 100 bookmarks that are divided into ten “pages.” Each bookmark page has a title that can be edited by the user. Users can add a new bookmark in one of two ways, by choosing “Add Bookmark” from the menu or tapping on an empty bookmark page in the Bookmark View. The following images show the various dialogs for adding, editing, and managing bookmarks. To move a bookmark to a different location or page, simply drag the bookmark to the target location. In order to use a bookmark, the user can either tap directly on a bookmark or select it using the rocker switch (on Treo devices).

Figure 13 - New Bookmark Dialog

Figure 14 – Edit & Manage Bookmarks

Edit Bookmark List	
Title: Bookmarks	
Handspring	Quote
News	Movies
Movies	Dining
Street Maps	Physics
News	Fansome Inc.

## 2.4 Preferences

The Preferences is where the user can specify various Blazer settings. It consists of two tabs: Browser (Figure 15) and Advanced (Figure 16).

Figure 15 - Preference Dialog: Browser



Figure 16 - Preference Dialog: Advanced



### 2.4.1 Browser Preferences

The browser preference dialog is where the user can specify the application options. The user has the option to set the bit-depth of the images that the browser downloads and displays. Web site developers should not assume that the images would be displayed at the highest bit-depth of the device. Some Wireless Service Providers may not allow the user to change the default Home Page.

### 2.4.2 Advanced Preferences

The advanced preference dialog is where the user can set some of the more advanced options of Blazer. Most users will accept the default values of this dialog.

The cache size is the maximum size of the cache that the application should preserve when it exits. When the application is running, it will use more available memory than specified here. Any data that is above the maximum value specified in this dialog is discarded when the application exits.

The user has an option of accepting cookies from the web server. The cookies will be passed from the proxy server to the Blazer browser, which is enabled by default.

The “Set Proxy” button will depend on the user’s ISP settings for accessing the Internet. This is similar to the proxy settings one would use for their desktop system. This setting does not change the Bluesky server that Blazer connects to. Typically one would set this when dialing into an ISP that requires a proxy to make HTTP/HTTPS requests to the Internet.

## 2.5 Network Connections

Blazer relies on the Palm OS network library (Netlib) to establish a connection to the Internet and connect to the proxy server. Based on the user preference (see section 2.4), Blazer will either automatically connect to the Internet or ask the user if it should connect. If the system is not connected to the Internet, Blazer will first try to access the page from its internal cache. If the cache is out of date or the page is not available, it will prompt the user to connect to the page. Figure 17 and Figure 18 show the dialogs presented to the user.

Figure 17 – Page Out of Date

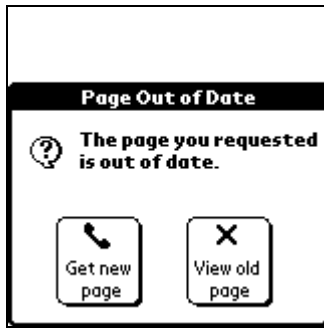


Figure 18 - Connect to Internet



## 2.6 Launching Blazer

For applications that would like to direct the user directly to a web page, Blazer has the ability to launch with a specific URL. The following code sample demonstrates how to launch Blazer with the special launch code that will directly go to a specific web page.

```
#define blazerAppFileCreator      'BLZ1'

static void
LaunchBlazerWithURL(char* urlP)
{
    Err err = 0;
    UInt16 cardNo;
    LocalID dbID;
    DmSearchStateType searchState;
    char* url;

    // first check if Blazer is installed
    err = DmGetNextDatabaseByTypeCreator(true, &searchState, sysFileTApplication,
    blazerAppFileCreator, true, &cardNo, &dbID);
    if (err)
    {
        // Display appropriate error dialog...
        return;
    }
    // ok, now let's call Blazer with the URL
    // must first copy the URL, because it will be disposed of by Blazer
    url = MemPtrNew(StrLen(urlP));
    if (!url)
    {
        return;
    }
    StrCopy(url, urlP);
    // set the memory owner to zero, so it is not deleted
    // by the system when we switch apps
    MemPtrSetOwner(url, 0);
    SysUIAppSwitch(cardNo, dbID, sysAppLaunchCmdGoToURL, url);
}
```

## 3. Designing Pages for Mobile Devices

---

Although the proxy server does a good job of adapting web sites for mobile devices, some advanced planning will reduce the translation and download time and ensure that the results are as expected. This section will cover the different areas web site designers/programmers should take into account when designing the pages.

### 3.1 General Rules

There are some general rules that apply when designing web site for mobile devices.

- Make content accessible within one or two links
  - Since the user is typically on a slower and costly connection, it is important that the information the user is trying to access be easily available within one or two taps. Multiple taps result in multiple page loads, which consume valuable dialup time for the mobile user.
- Keep relevant content and links within the viewable area
  - These links should be within easy reach.
- Personalize and pre-fill forms whenever possible
  - Typically the user enters data while connected. Time spent in data entry will use up valuable connect time.
- Use as much screen space as possible
  - Try to maximize the use of space without cluttering the screen.
- Use simple and small graphics
  - This will reduce the download time and memory requirements for the device. If possible, try to avoid using graphics.
- Keep the page size small
  - This will also help reduce the download time of the page. Ideally one should keep the page size under 4 K.
- Keep it simple
  - Do not use JavaScript, frames, or plug-ins. These advanced features are either not supported or will end up making the page difficult to read on a mobile device.

Due to the various restrictions when designing site for mobile devices, it is recommended that a web site contain a parallel “mobile” version. The full web site can take advantage of all the web technologies while the mobile site is a slimmed down version to support mobile devices. For example, Handspring’s own web site contains a page that is designed for mobile devices:

<http://www.handspring.com/mobile>

Web developers can have their web server automatically load the appropriate page based on the User Agent of the browser. For information about the User Agent for Blazer, please refer to section 4.2 - Browser Identification.

### 3.2 Screen Resolution

Mobile devices will have a screen size that is much smaller than the desktop resolution. On Palm OS devices, the standard screen resolution is 160 x 160 pixels. Although there are devices with higher resolutions, Blazer will display content at the 160-pixel resolution. Designers should take this into account when creating images, tables, lists, and other components of the web page.



### 3.3 Connection Speed

There are several speeds at which the user can connect to the Internet. The speeds depend on the type of network they are accessing and the device that is used to connect. The Visor devices can have a number of communication Springboard modules ranging from an 802.11 wireless Ethernet module to a VisorPhone to a 56k wire-line modem. The speeds can range from 9.6kbps for mobile phones to 56kbps for wire-line modems to 2 to 11Mbps for wireless Ethernet. Actual throughput of the connection will be much lower due to limitations of the OS and other sub-systems. Web site designers should keep in mind that different users can connect using a wide range of speeds and should optimize their page to load appropriately.

### 3.4 Content

The Blazer proxy server typically will reformat the web page into a small-screen friendly format. Sites that have a simple layout with minimal tables and graphics will have a good chance of being displayed properly after reformatting. The sections below outline the areas to watch out for when designing your web page.

#### 3.4.1 Page Titles

Web page titles are not displayed in the web page view. To view the title of a web page, the user must bring up the properties dialog (Figure 19). The page title is used to pre-populate the bookmark description field when adding a bookmark.

**Figure 19 - Page Properties Dialog**



#### 3.4.2 Blazer Optimized Content

Developers that are targeting Blazer can also insert a special META tag that will tell the proxy server to minimize the amount of reformatting that is done:

```
<META name="HandheldFriendly" content="True">
```

Using this tag at the top of the page will tell the proxy server and Blazer to render the tables without any special formatting. If this tag is not present, tables may be unrolled or reformatted.

#### 3.4.3 mailto command

Blazer supports the mailto command to send email. Typically on desktop systems, the web browser would launch a mail application to send the mail. On Blazer, it is not guaranteed that a mail application is installed. Instead, a special web-based email form will appear when a mailto link is selected. This will allow the user to send an email that was specified in the mailto link. The following screenshot shows this web page. After the page is sent, the user is returned to the original page.

Figure 20 - Blazer's web mail form

If Treo Mail is installed, Blazer 2.1 will launch that application when the user taps on a mailto link.

### 3.4.4 Forms

Blazer supports standard HTML and WML forms, including text boxes, radio buttons, check boxes, text inputs, select lists, multiple selects, and drop-down menus. However, there are some guidelines to follow when designing forms for the mobile devices:

- Make sure that the form open and close tags (`<form>` and `</form>`) are not contained inside a table. Form inputs may safely be placed inside table cells
- Text inputs are supported (see section 2.3.1.4 - Text Input), but the maximum length is the length of the text input dialog.
- The following form features are not currently supported in Blazer:
  - Type: Button
  - Type: File
  - Multipart encoding
  - JavaScript actions

### 3.4.5 Tables

Blazer and the proxy server support tables by reformatting or unrolling the table such that it will fit on the small screen of the mobile device. The table rendering engine is optimized for displaying simple text based tables. Web page designers should avoid using one-pixel spacer images for precise content control as the images and subsequent reformatting may not look as good on the mobile device.

The table width attributes are not supported. However, the width attribute of the table cell is supported. To extend the table to be wider, use the width attribute in the table cells. The table width will be the sum of the all the column widths. As mentioned above, to preserve the width on the client display, one must use the “HandheldFriendly” tag (see the Blazer Optimized Content section shown above).

For example, the following HTML code will display a table with a table width of 140:

```
<table border="1">
<tr>
  <td width="140" colspan=5>abcdef</td>
</tr>
<tr>
  <td>1</td>
  <td>2</td>
  <td>3</td>
  <td>4</td>
  <td>5</td>
```

```
</tr>
</table>
```

This table will appear on a desktop web browser as,

**Figure 21 - Table in Desktop Web Browser**

abcdef				
1	2	3	4	5

This same HTML code will be displayed in Blazer without the extra spacing if the “HandheldFriendly” tag is not included:

**Figure 22 - Table in Blazer**

abcdef				
1	2	3	4	5

To have Blazer display the table as intended, include the “HandheldFriendly” tag at the beginning on the HTML document as shown below:

```
<META name="HandheldFriendly" content="True">
```

This will cause the client to display the table with the width tag enabled as shown in the following screenshot:

**Figure 23 - Table in Blazer (with extra spaces)**

abcdef				
1	2	3	4	5

### 3.4.6 Images

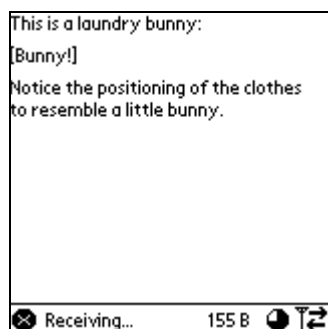
Using images on a web site can enhance the presentation of your content and the user experience. At the same time, the use of images slows down the web browsing experience. Therefore images should be carefully chosen to be suited for mobile applications.

All images pass through an imaging processor on the proxy server before they are delivered to the Blazer client. The server will scale the image that exceeds 153 pixels in height **or** width. The proxy server will also adjust the bit-depth of the image to match the Blazer image display settings and the target screen format.

When designing images for the mobile device, keep in mind the following points:

- The images will appear differently based on the display capabilities of various devices. Develop images in color, but follow the guidelines to ensure the images also look good in grayscale or black and white.
- The size of the image should be very small (under 4K).
- Use only one or two graphics per page to reduce the load time.
- Use images that are high contrast for easy readability.
- Use ALT tags to display text content while the images download.

**Figure 24 - ALT Tag while image is downloading**



**Figure 25 - Full Image after download**



### 3.4.6.1 Images with Text

Avoid using images in place of text. Unnecessary images add to the total download time for each page. If the proxy server needs to scale the image, the text may become unreadable. The images below show how a text image can look good on the desktop browser but can become unreadable when scaled and displayed in Blazer.

**Figure 26 - Image Text on Desktop Browser**



Figure 27 - Image Text in Blazer Browser



#### 3.4.6.2 Horizontal Header Images

Many sites use a horizontal header image for navigation purposes. Typically this image consists of many smaller images that are formatted in a table with zero length borders. On the desktop browser, the browser will display the image appropriately. On Blazer, the proxy server typically reformats the page such that the images are stacked vertically. Since image maps are not supported, one should ensure that the reformatted page would be properly displayed. The screenshots below demonstrates this behavior.

Figure 28 - Multi-Image Navigation Bar on Desktop Browser



Figure 29 - Multi-Image Navigation Bar on Blazer



One can cleanup the page by removing the spacer images and inserting the “HandheldFriendly” tag (see the section on Palm OS Integration Tags) at the beginning of the page. Figure 30 shows the updated page without the spacer images in the table. Figure 31 shows the page in Blazer without the “HandheldFriendly” tag. Since the spacer images are not present, the proxy server will display the image in a more readable format. Figure 32 shows the same page with the “HandheldFriendly” tag present. This tag instructs the proxy server not to reformat the tables. As a result, the table is displayed as intended. Blazer places horizontal scroll bars to allow the user to view the entire image.

Figure 30 - Multi-image Navigation Bar on Desktop without Spacer Images



**Figure 31 - Updated Navigation Bar on Blazer**

“HandheldFriendly” tag disabled



**Figure 32 – Updated Navigation Bar on Blazer**

“HandheldFriendly” tag enabled



### 3.4.6.3 Supported Image Formats

Blazer supports a wide variety of image formats. The images are transformed by the proxy server and optimized for delivery to the mobile device. Blazer supports the following image formats:

**Table 4 - Supported Image Formats**

Image Type	Notes
GIF	GIF89 animation is not supported. Only the first frame will be displayed.
JPEG	
WBMP	
PNG	Only 8 and 24-bit images are supported
BMP	

### 3.4.6.4 Bit Depth

As mentioned above, it is recommended that the images be developed in color. The proxy server will adjust the image appropriately for the target device or based on the user preference in the browser preference setting. It will only send the image in the appropriate bit depth. If the user only wants to display images in 4-bit color, the system will not download a 16-bit version on the image. The images below show are an example of the different bit-depths that Blazer uses:

Figure 33 - Image at 16-bit color depth

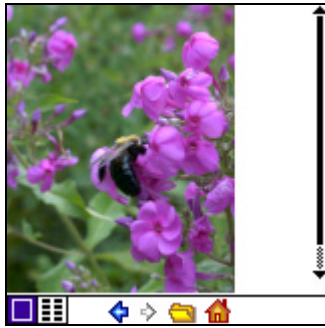


Figure 34 - Image at 8-bit color depth

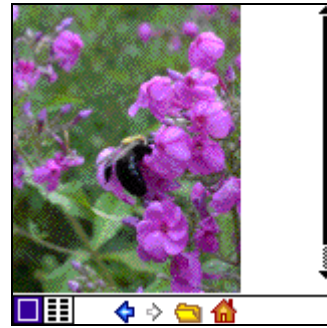


Figure 35 - Image at 4-bit color depth

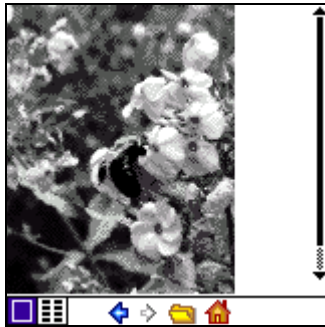


Figure 36 - Image at 2-bit color depth

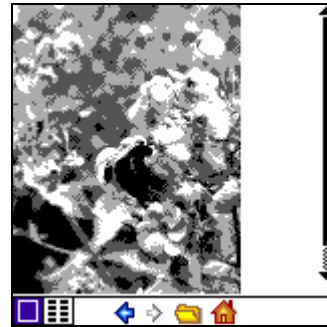
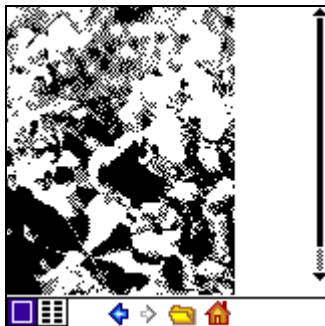


Figure 37 - Image at 1-bit color depth



### 3.4.7 Unsupported Content

While Blazer supports most of the HTML 3.2 specification, there are certain unsupported elements. Complete tables of supported elements are found in the appendix at the end of this reference guide. Some of the additional web technologies that are not supported in Blazer include:

- Java Applets
- JavaScript
- WMLScript
- ECMAScript
- Image Maps
- Background colors and images
- Animations (Flash, animated GIF)

- Audio
- Font colors and sizes
- Style sheets
- Browser Plug-Ins

When the proxy server encounters an unsupported element, it will strip out that code when sending the page to the mobile device. In most cases, the user will experience the web page with reduced functionality. If the web site requires the unsupported technologies to view the information, Blazer users will not be able to access the site.



## 4. Working with Blazer

This section talks about some Blazer and Palm OS specific areas. Web site designers and programmers should make note of these items when implementing their Blazer optimized pages.

### 4.1 Palm OS Integration Tags

Blazer supports a number of Palm OS integration tags that allow for easier data entry on the Palm OS device. This section will show the different UI that is presented for the special tags. For a complete list of Palm OS integration tags please refer to Section 7.3 - HTML Tags.

#### 4.1.1 Date Picker

The Date Picker tag provides a resource to easily enter a date onto a form. The user is presented with the standard Palm OS date picker dialog. The following example HTML code demonstrates how to use this method. For additional information please refer to the appendix.

```
<INPUT TYPE="DATEPICKER" NAME="DATE">
```

The system will return the date in YYYY-MM-DD format but will display the date based on the Palm OS date settings found in the Format Preference panel. The date picker dialog is shown in the following screenshot:

**Figure 38 - Web page with the Picker Tags**



**Figure 39 - Date Picker Dialog**



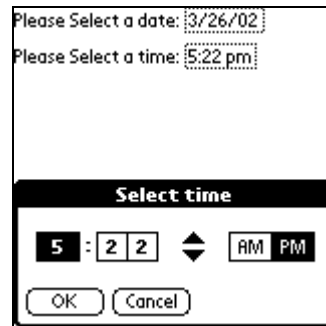
#### 4.1.2 Time Picker

The Time Picker tag provides a resource to easily enter a time onto a form. The user is presented with the standard Palm OS time picker dialog. The following example HTML code demonstrates how to use this method. For additional information please refer to the appendix.

```
<INPUT TYPE="TIMEPICKER" NAME="TIME">
```

The system will return the time in HH:MM 24 hour format but will display the date based on the Palm OS time settings found in the Format Preference panel. The date picker dialog is shown in the following screenshot:

**Figure 40 - Time Picker Dialog**



## 4.2 Browser Identification

As part of communication to the web server, a web browser will send out a string indicating what type of browser is accessing the server. This is referred to as the “User Agent”. The Blazer User Agent string is,

```
UPG1 UP/4.0 (compatible; Blazer 1.0)
```

Web developers can use this header to determine which type of page to deliver.

## 4.3 Cookies

The Blazer browser contains support for cookies. Typically, web site developers will use cookies to store some small information about the user’s ID or profile, web site personalization, etc. As with any web browser, the user can have Blazer not accept cookies or clear out the cookie cache (see section 2.4.2 - Advanced Preferences). Cookies are stored on the proxy server for fast access to the personalized web content. For security, the cookie information is encrypted before it is stored in the database on the proxy server.

Blazer contains full support for the SET-COOKIE header. The only restriction is that the value attribute does not exceed 2000 bytes. Cookies with the value attribute larger than 2000 bytes will be rejected. Other cookie headers are not supported.

If the cookie has an expiration date, then it is a persistent cookie. If there is no expiration date, it is a session cookie and the cookie is purged when the session is terminated. For more information on session handling, please refer to the Session Handling section below.

## 4.4 Session Handling

On a desktop browser a session cookie will persist until the user quits the web browser. On a Palm OS device, only one application can be active at any given time. To take into account that a user may temporarily switch to another application while using Blazer, the system will end a session ten minutes after the application exits. If Blazer is active, the session will expire twenty minutes after the last page access.

## 4.5 Security

Blazer supports strong security for data encryption using SSL 2.0, SSL 3.0, or TLS 1.0, supports RSA key lengths up to 1024 bits, and supports symmetric encryption key lengths up to 128 bits, or 156 bits for triple-DES. Communications between the Blazer client and the proxy server are secured using TLS 1.0. Key exchange and authentication are provided by elliptical curve cryptography (ECC) with a license from Certicom, and traffic between the handheld and the proxy is protected using 128-bit encryption. As a result, the users can access secure (HTTPS) web sites using Blazer. Blazer supports certificates signed by the root authorities shown on Table 5.

**Table 5 - List of Root Certificates Supported by Blazer**

Root Certificate
VeriSign Class 1 Public Primary Certification Authority
VeriSign Class 2 Public Primary Certification Authority
VeriSign Class 3 Public Primary Certification Authority
VeriSign Class 1 Public Primary Certification Authority - G2
VeriSign Class 2 Public Primary Certification Authority - G2
VeriSign Class 3 Public Primary Certification Authority - G2
VeriSign Class 4 Public Primary Certification Authority - G2
VeriSign Class 1 Public Primary Certification Authority - G3
VeriSign Class 2 Public Primary Certification Authority - G3
VeriSign Class 3 Public Primary Certification Authority - G3
VeriSign Class 4 Public Primary Certification Authority - G3
VeriSign Secure Server Certification Authority
VeriSign Time Stamping Authority CA
Thawte Personal Basic CA
Thawte Timestamping CA
Thawte Premium Server CA
Thawte Personal Premium CA
Thawte Server CA
Certicom MobileTrust A
Microsoft Root Authority
GTE CyberTrust Global Root
GTE CyberTrust Root
GTE CyberTrust Root, expires 2006
Entrust.net Secure Server Certification Authority

## 4.6 Caching

Blazer includes a cache to improve performance. If a page requires a regular refresh, an expiration date should be included on the page. Blazer will automatically retrieve the latest version of the page if the expiration date has passed. The exception to this rule is when the user uses the “Back” and “Forward” buttons to navigate recently visited pages, where it will display the cached page if present on the device, even it expired. A page can also be specified not to be cached by using one of the following META tags:

```
<META HTTP-EQUIV="pragma" CONTENT="no-cache">  
<META HTTP-EQUIV="cache-control" CONTENT="no-cache">  
<META HTTP-EQUIV="cache-control" CONTENT="no-store">
```

The following tag will work uniformly across all Blazer versions:

```
<META HTTP-EQUIV="expires" content="0">
```

## 5. Testing your Site

---

Designing your web pages will most likely be an iterative process. We recommend that you test early and frequently during the development process to ensure that you are able to achieve the intended design and layout. The following sections contain a few pointers to help you successfully test your content.

### 5.1 Making Development Content Accessible

Since Blazer uses a proxy server to access the web sites, it can only access web sites that can be accessed publicly. The proxy server cannot access web servers that are behind a firewall. This applies even if you have your device dial directly up to your internal network. In order to develop and test your web site, you must place the web pages on a public web server. In order to protect your content, you can either place the pages at an obscure URL or use HTTP authentication.

### 5.2 Multiple Devices

If you intend your content to be accessible through a variety of devices, be sure to test with as many of those devices as possible during the development process. Areas to look at are device memory, color and grayscale screens. For example, an image that looks great on an 8 MB Handspring Prism may not be as good on a grayscale device. Also, large pages may have a problem loading on a device with little free memory.

### 5.3 Refreshing Content

Because Blazer caches pages on the device to provide quick access to frequently viewed content, the constant updates to a web page during development may not appear on the device. It is recommended that during testing the cache size be set to zero (see Figure 16 - Preference Dialog: Advanced). Keep in mind that while Blazer is running, it uses more memory than specified in the cache size setting. The cache will only be cleared out when the application quits. During development, one should use the “Clear” button in the Preference Dialog to clear out the cache and use the “Page->Refresh” menu item to make sure the current page is loaded. Images are typically refreshed when the page is refreshed. If the images are not updated in Blazer, the cache should be cleared out or the image filename should be changed.

### 5.4 Using POSE

The Palm OS Emulator (POSE) is a virtual Palm OS device that can run on your desktop computer. POSE is a great way to test on a variety of devices with different memory conditions without purchasing a large number of devices and modems. POSE allows the user to re-route all the network library calls through the PC's TCP/IP stack. Since this connection is typically many times faster than a mobile connection, it is not a good way to test the loading speed of the web page.

POSE and the appropriate ROM files are available for free from both the Palm OS and Handspring developer web sites. For information on how to download POSE from the Handspring web site, please visit the following page:

<http://www.handspring.com/developers/>

After setting up POSE, you must install the Blazer application. Simply drag the Blazer.prc file to the POSE window and it will copy the application into the emulator memory. You may need to switch applications to refresh the launcher display.

In order to configure POSE to use the PC's TCP/IP stack for network connections, you need to follow these steps:

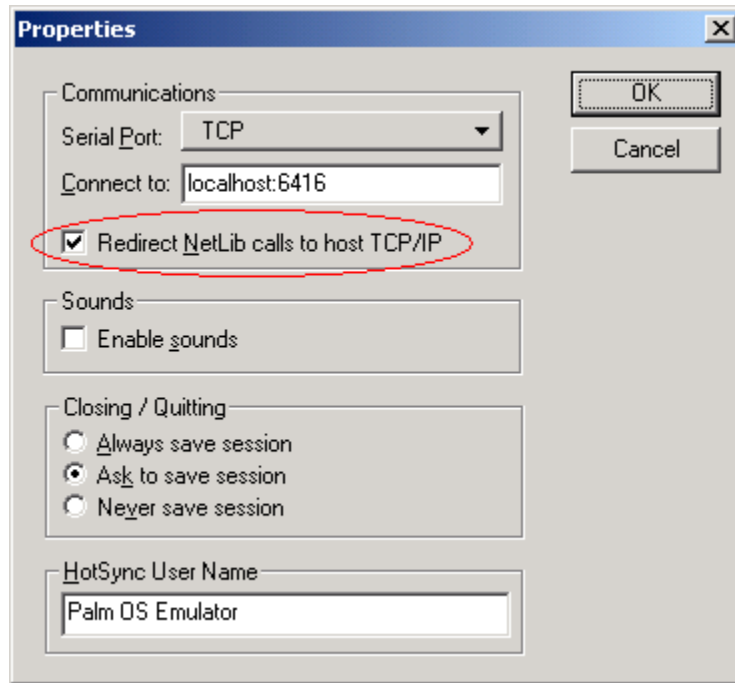
1. Right-click on the POSE window.

2. From the pop-up menu, select Settings -> Properties... (Figure 41).
3. In the Settings dialog, make sure the “Redirect NetLib calls to TCP/IP” is selected (Figure 42).
4. Click OK. POSE is now configured to use the PC’s TCP/IP stack to connect to the Internet
5. Launch Blazer and open the desired URL.

**Figure 41 - POSE Settings Menu**



**Figure 42 - POSE Settings Dialog**



## 6. International Support

---

The Blazer client supports the Palm OS character set. This character set is similar to the ISO-8859-1 character set. This character set allows support for most Western European characters. The Blazer application has also been localized to the following European languages:

- English UK
- French
- German
- Italian
- Spanish

### 6.1 HTML Encoding

Blazer will support web pages that are encoding using the ISO-8859-1 character encoding. This will allow the Western European languages to display properly on the Blazer client. Web pages may also be encoded in UTF-8 however, only the first 255 characters are supported. The proxy server will convert a web page that is encoded in UTF-8 to ISO-8859-1. Web pages that are encoded in UTF-8 must indicate so by one of the methods shown below:

Content-type HTTP Header:

```
Content-Type: text/html; charset=utf-8
```

HTTP-equiv META Tag:

```
<META http-equiv="content-type" content="text/html; charset=utf-8">
```

Other character sets are not supported by Blazer or the proxy server and will not be displayed on the client.

### 6.2 WML Encoding

WML content is typically encoded in UTF-8 format. However, Blazer will only display the first 255 characters. WML pages that are encoded in the ISO-8859-1 format must indicate so by one of the methods shown below:

Content-type HTTP Header:

```
Content-Type: text/vnd.wap.wml; charset=iso-8859-1
```

HTTP-equiv META Tag:

```
<META http-equiv="content-type" content="text/vnd.wap.wml; charset=iso-8859-1">
```

XML Tag

```
<?xml version="1.0" encoding="iso-8859-1">
```

### 6.3 Accept-Language Header

Blazer client supports the Accept-Language HTTP header. The client will send this header to the web server based on the language the client supports. Web developers can use this header to determine what type of content to deliver to the device. Table 6 shows the different language codes that Blazer can send out.







**Table 6 - Supported Accept-Language Headers**

Blazer Language Version	Accept-Language Header
English (US and UK)	Accept-Language: en
French	Accept-Language: fr
Italian	Accept-Language: it
German	Accept-Language: de
Spanish	Accept-Language: es

## 6.4 Sample Screen Shots

The screen shots below show how some non-English pages will look when rendered on Blazer. These screen shots were captured with the English version of Blazer running on an English device.

**Table 7 - Non-English Web Pages in Blazer**

<p><b>Figure 43 - French Page</b></p> 	<p><b>Figure 44 - German Page</b></p> 
<p><b>Figure 45 - Italian Page</b></p> 	<p><b>Figure 46 - Spanish Page</b></p> 

## 7. Appendix

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### 7.1 List of Acronyms

cHTML	Compact HTML – A subset of HTML for mobile devices. Primarily used in i-Mode devices
ECMA	European Computer Manufacturers Association
GIF	Graphics Interchange Format
HDML	Handheld Device Markup Language – An old format used for Web enabled phones. This is no longer used.
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
ISO	International Organization for Standards – The name is derived from the Greek word <i>iso</i> meaning “equal.”
JPEG	Joint Photographic Experts Group
PNG	Portable Network Graphics
TCP/IP	Transmission Control Protocol/Internet Protocol
UCS	Universal Character Set
UTF	UCS Transformation Format
WAP	Wireless Application Protocol
WBMP	Wireless BitMap – A graphic format optimized for wireless devices
WML	Wireless Markup Language
XHTML	Extensible HTML – A cross between HTML and XML
XML	Extensible Markup Language

## 7.2 Palm OS Integration Tags

Blazer supports several tag attributes that extend HTML support for Palm OS devices as shown below.

Keyword	Description
HandheldFriendly	<p>This attribute for the META tag tells the proxy server that this web page has been specifically designed for small screens. The proxy server will try to render the tables as close to specification as possible. Example:</p> <pre>&lt;META name="HandheldFriendly" content="True"&gt;</pre>
TimePicker	<p>This attribute for the INPUT tag can be used as an easy way to enter a time. When this is used on a web page, tapping on this field will cause the Palm OS Time Picker dialog to appear. Example:</p> <pre>&lt;INPUT TYPE="TIMEPICKER" NAME="time"&gt;</pre>
DatePicker	<p>This attribute for the INPUT tag can be used as an easy way to enter a date. When this is used on a web page, tapping on this field will cause the Palm OS Date Picker dialog to appear. Example:</p> <pre>&lt;INPUT TYPE="DATEPICKER" NAME="date"&gt;</pre>
Palm	<p>This keyword is used in the HREF attribute to launch a specific application on the device. Blazer will exit and the specified application will become the active application. Example:</p> <pre>&lt;A HREF="palm:memo.appl"&gt;Memo Pad&lt;/A&gt;</pre>
Palmcall	<p>This keyword is similar to the Palm keyword except that Blazer will sub-launch the specified application. Once the application exits, the user will return to Blazer. Example:</p> <pre>&lt;A HREF="palmcall:flip.appl"&gt;Flipper&lt;/A&gt;</pre> <p>Parameters can also be passed into the application using the <code>sysAppLaunchCmdURLParams</code> launch code. For more information on this and the <code>palm</code> and <code>palmcall</code> tags, please refer to the following tutorial on the Palm OS developer web site:</p> <p><a href="http://www.palmos.com/dev/tech/webclipping/tutorials/tutorial_palm.html">http://www.palmos.com/dev/tech/webclipping/tutorials/tutorial_palm.html</a></p>

## 7.3 HTML Tags

Below is the table of HTML 3.2 tags supported in Blazer. Elements that are not listed here are not supported and will be stripped out by the proxy server. See also 7.5 - XHTML Tags.

Element Name	Attribute Name	Comments
A		
	NAME	
	HREF	
ADDRESS		The contents of the ADDRESS tag will be rendered as italic text but does not trigger a new paragraph.
BASE		If multiple BASE elements occur in a document, the first one is used.
	HREF	
BLOCKQUOTE		Converts the content to a paragraph
BODY		
DIV		
	ALIGN	
DL		Converted to paragraph
FORM		
	ACTION	
	METHOD	
H1 H2 H3 H4 H5 H6		
	ALIGN	
HEAD		
HR		Rendered by default as a one pixel black line spanning the entire width of the screen. Size is supported, but width is not. Shading is not supported.
	SIZE	
LI		For unordered lists, LI triggers a newline and a bullet. For ordered lists, LI triggers a newline and an Arabic sequence number. No attributes are supported.
META		

Element Name	Attribute Name	Comments
	HTTP-EQUIV	
	NAME	
	CONTENT	
OL		Only Arabic numbering style supported. Nested lists not indented properly. START attribute not supported.
P		Paragraphs do not inherit the alignment of enclosing DIV elements. The ALIGN attribute of paragraphs nested inside table cells is ignored.
P	ALIGN	
PRE		Spaces and newlines are preserved in a PRE block. The text is rendered in the standard font.
	WIDTH	
TITLE		The TITLE will be recognized anywhere in the document, provided it comes before the first visible element (text, image, etc). If multiple TITLES are included, the last one is displayed.
UL		TYPE is not supported and nested lists are not indented properly.
XMP LISING PLAINTEXT		Obsolete tags. Treated same as PRE.

## 7.4 WML Tags

Below is the table of WML 1.2 tags supported in Blazer. Elements that are not listed here are not supported and will be stripped out by the proxy server.

Element Name	Attribute Name	Comments
A		Short form of the ANCHOR element
ANCHOR		
	TITLE	
FIELDSET		
	TITLE	
INPUT		
	NAME VALUE	Issues where the name is the name of an already defined and set variable.
	TYPE	<i>type_value</i> can be either TEXT or PASSWORD
	SIZE	
	MAXLENGTH	
OPTGROUP		
	TITLE	
OPTION		
	VALUE	
	TITLE	
	ONPICK	
SELECT		
	NAME VALUE	Issues where the name is the name of an already defined and initialized variable.
	INAME IVALUE	Issues where the name is the name of an already defined and initialized variable.
	MULTIPLE	
	TITLE	
TIMER		
	NAME	
	VALUE	
HEAD		
META		
	FORUA	

Element Name	Attribute Name	Comments
	SCHEME	
	NAME	
	HTTP-EQUIV	
	CONTENT	
TEMPLATE		
CARD		
	TITLE	
	NEWCONTENT	
	ORDERED	
WML		
GO		
	HREF	
	SENDREFERER	
	METHOD	Values are, POST and GET
	ACCEPT-CHARSET	
ONEVENT		
	TYPE	
IMAGE		
	VSPACE HSPACE	
	HEIGHT WIDTH	
	ALT	
	SRC	
	LOCALSRC	
	ALIGN	Values are, TOP, MIDDLE, and BOTTOM
POSTFIELD		
	NAME	
	VALUE	
TABLE		Align not supported
	COLUMNS	
TD		
TR		

Element Name	Attribute Name	Comments
GO		
	SENDREFERER	
	ACCEPT-CHARSET	
	HREF	
	METHOD	Values are, POST and GET
NOOP		
PREV		
REFRESH		
B		Bold
BIG		Use large font
EM		Render with emphasis
I		Italics
P		
	ALIGN	Values are, LEFT, RIGHT, and CENTER
	MODE	Values are WRAP and NOWRAP
SMALL		Render with a small font
STRONG		Render with strong emphasis
U		Underline
SETVAR		
	NAME	
	VALUE	



## 7.5 XHTML Tags

Below is the table of XHTML Basic tags supported in Blazer. Elements that are not listed here are not supported and will be stripped out by the proxy server.

Element Name	Attribute Name	Comments
BASE		
	HREF	Used to determine actual paths of relative references.
FORM		Supports all attributes except for ENCTYPE
	ACCEPT-CHARSET	
	ACCEPT	
	NAME	
	ACTION	
	METHOD	Values are, POST and GET
INPUT		
	TYPE	Supports: <ul style="list-style-type: none"> <li>• Text</li> <li>• Password</li> <li>• Checkbox</li> <li>• Radio</li> <li>• Submit</li> <li>• Reset</li> <li>• Hidden</li> </ul>
	NAME	
	VALUE	
	SIZE	
	MAXLENGTH	
	CHECKED	
LABEL		
	FOR	
OPTION		
	SELECTED	
	VALUE	
SELECT		
	NAME	
	SIZE	

Element Name	Attribute Name	Comments
	MULTIPLE	
TEXTAREA		Rows and columns are not supported. Blazer will only render one row
	NAME	
CAPTION		
	ALIGN	Values are TOP (caption is rendered above table) and BOTTOM (caption is rendered below table). Values LEFT and RIGHT are not supported.
TABLE		
	SUMMARY	
TD		
TH		
	HEADERS	
	AXIS	
	COLSPAN	
	ALIGN	Values are, CENTER, LEFT, and RIGHT
	WIDTH	
TR		
A		
	HREFLANG	
	TYPE	
	REL	
	REV	
	NAME	
	HREF	
IMG		
	LONGDESC	
	SRC	
	NAME	
DL		Not fully supported. Need to place line breaks after terms and definitions.
LI		
	VALUE	All ordered lists use the next in line value
OL		

Element Name	Attribute Name	Comments
	TYPE	Currently all items in an ordered list are marked with Arabic numerals while items in an unordered list are marked with a solid, square bullet.
	COMPACT	
UL		
	COMPACT	
META		
	CONTENT	
	NAME	
	SCHEME	
	HTTP-EQUIV	
PARAM		
	NAME	
HEAD		
	PROFILE	
HTML		
	VERSION	
TITLE		
ABBR		
ACRONYM		
ADDRESS		
BLOCKQUOTE		
BR		
CITE		
CODE		
DFN		
DIV		
EM		
H1 H2 H3 H4 H5 H6		

Element Name	Attribute Name	Comments
KBD		
P		
PRE		
Q		Does not insert leading and trailing quotes or does it do smart quoting.
SAMP		
SPAN		
STRONG		
VAR		