

Tips & Tricks to Create a Mobile Responsive Application with SharePoint 2013

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Introduction

Enterprise mobility is fundamentally changing communication channels between the workforce, the IT function, and overall organization per-se. More and more enterprises are opting for a mobile-inclusive environment for the positives that it promises in terms of enabling out-of-office productivity; providing flexible access to channels for customer -partner interaction; ensuring 24/7 connectivity and so on. However, the challenge for SharePoint practitioners is related to the complexities involved in ensuring optimum user-experience across devices, when dealing with SharePoint's nuances.

Thankfully, SharePoint 2013 offers a multitude of options to ensure security, optimize content viewing and enhance usability. Whether it is a public facing or internet websites, SharePoint 2013 offers features and approaches that are necessary for risk governance, improving user experience on mobile devices, using responsive web designs or devices channels.

This white paper delves into key points to be remembered when optimizing SharePoint 2013 Application for mobile devices.

Pre-Requisites for Accessing SharePoint 2013 on Mobile Devices

Technology

SharePoint 2013 supports optimized experiences for different mobile device platforms and its rich set of components enhance productivity, usability and enriches the user experience. It supports optimized device browser experience with different views, but this purely depends on the smart phone browser. It supports the following mobile browsers and operating systems, provided they are rendered in HTML5.

Mobile Device Type	Mobile Browser Version
iOS Phone	iPhone iOS 5.0 (Safari version 4.0 or higher versions)
Android Phone	Android 4.0 or higher versions (Chrome)
Windows Phone	Windows Phone 7.5 (IE9.0 or higher versions)

Mobile optimized and responsive websites work well across various platforms: desktop PCs, laptops, smartphones, and tablets and so on. Content should be compatible with multiple mobile devices and also be flexible.

SharePoint 2013 provides necessary approaches for improving user experience on mobile devices by using Responsive Web Design (RWD) or device channels.

Authentication

While using devices outside the corporate network, several security concerns loom. For example, in the event of a device theft or loss, sensitive data is at risk and this can have devastating outcomes to an organization.

SharePoint 2013 offers the following features for authentication:

Secure Communication - Microsoft recommends that we enable SSL certificates which are small data files that digitally bind a cryptographic key to an organization's details. By enabling SSL, it allows to secure communication between mobile browsers and the computer that is running SharePoint Server 2013.

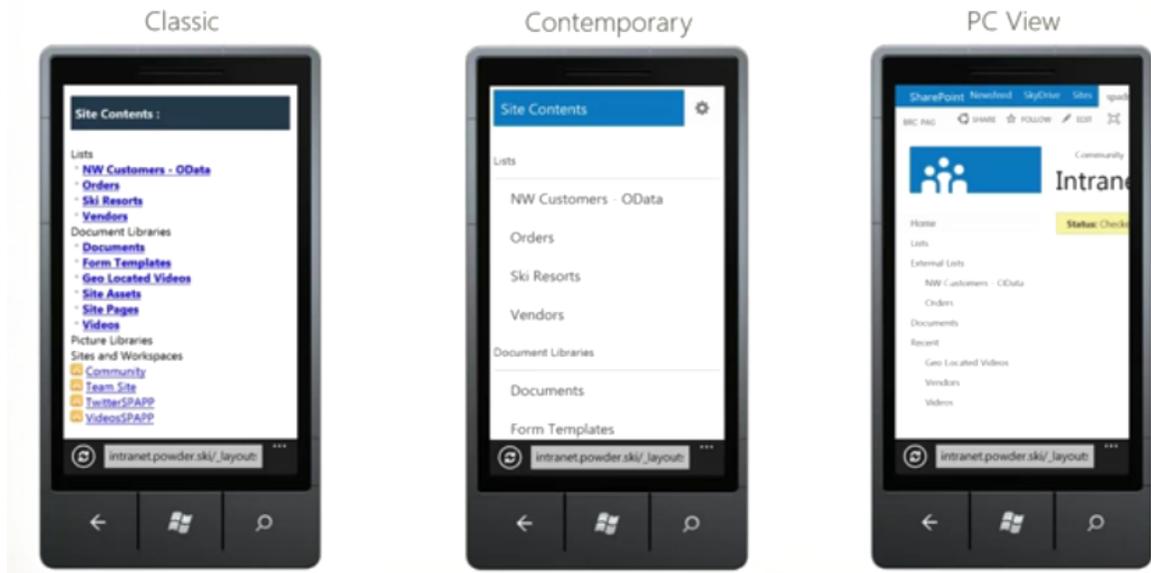
Authentication for mobile devices - While a broad security scope of SharePoint 2013 is outside the scope of this white paper, SharePoint 2013 does provide multiple authentication modes for mobile devices to tackle security issues. The following table gives you a fair idea of authentication features in SharePoint.

SharePoint Infrastructure	Authentication mode	Authentication provider	Windows Phone 7.5 or later versions (Internet Explorer Mobile)	iOS 5.0 or later versions (iPad, iPhone using Safari)
SharePoint on-premises	NTLM	Active Directory	Supported	Supported
SharePoint on-premises	Basic authentication	Active Directory	Supported	Supported
SharePoint on-premises	SAML	WS-Federation 1.1 compatible Identity Provider	Supported	Supported
SharePoint Online	Forms-based authentication	Org-ID	Supported	Supported

Features of SharePoint Mobile View

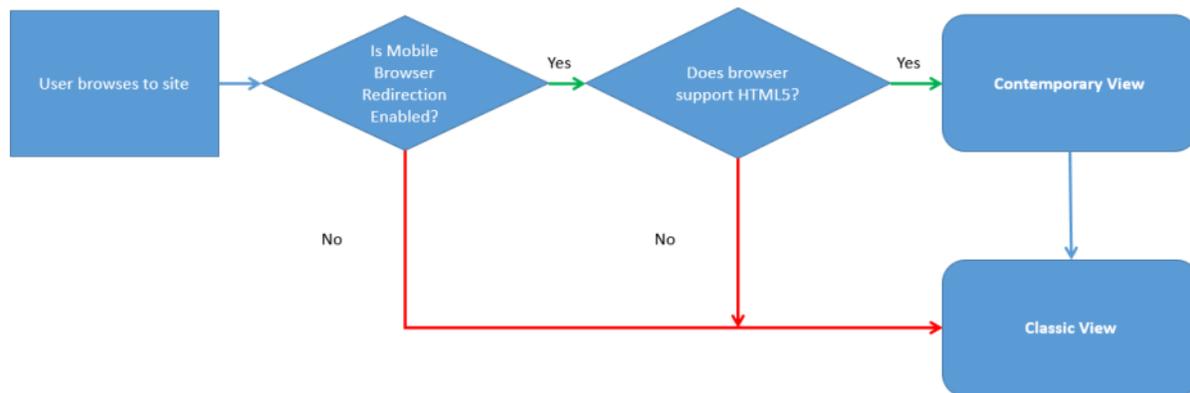
SharePoint server 2013 supports optimized device browser experience with different views depending on the smart phone browser. For example, Mobile Browser View feature checks a device's browser to check whether it supports HTML5. If it supports, the site is displayed using a Mobile view. If it does not, the site is displayed using a Classic view that resembles what users would see on a computer.

Mobile Views - At A Glance



Mobile View	Collaboration	Publishing	Touch	Navigation	Customizable
Classic View	Yes	N/A	No	Links	No
Contemporary View	Yes	N/A	Yes	Navigation Window	No
Full Screen UI	Yes	Yes	No*	Same as Desktop	No*
Device Channels	N/A	Yes	Yes	Up to You	Yes

It is possible to add or delete entries to the 'Browser Definition File' which has the list of browsers and mobile devices that it supports. Mobile browser redirection takes place, as shown below



Push notifications

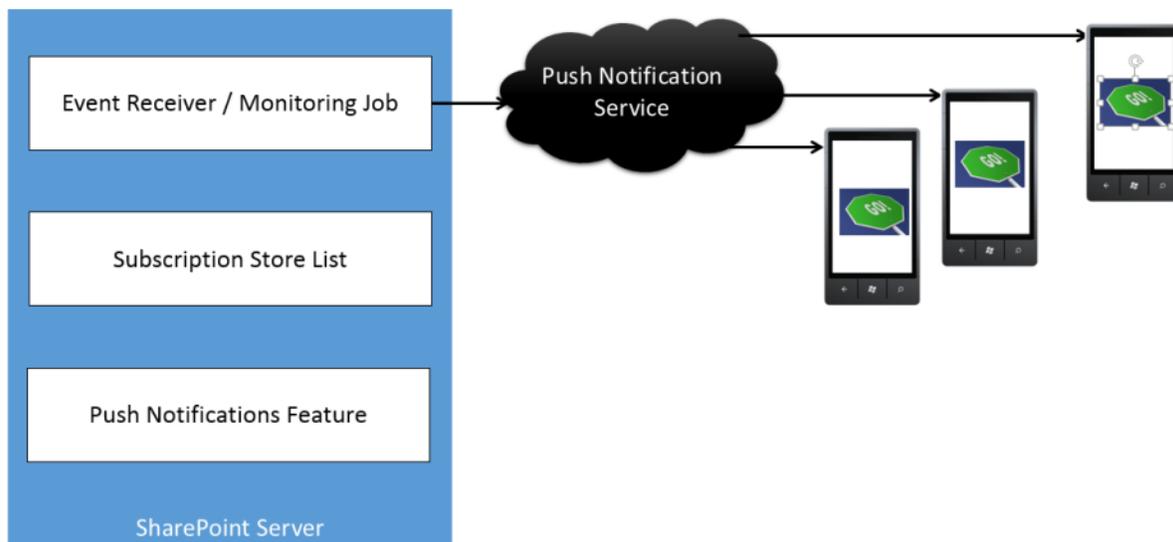
A push notification service is the same as updating, i.e. after site, a tile on a Windows mobile device. Push notification consists of events which occur in SharePoint site, a user adding an item to a list or updating list item.

Mobile device applications should register with the site to receive push notifications from SharePoint site. Using visual studio custom code to communicate with Microsoft Push Notification Service (MPNS) or different platforms mobile devices it is possible to write event receiver or handler notifications which will be sent from the server where the application is hosted to the registered mobile device application.

Limitations

- ⇒ Push notifications per website are limited to 2,000 device registrations. No registrations can be performed unless existing entries are cleared from store.
- ⇒ Push notifications currently work only for Windows phones.
- ⇒ No push notifications for iOS devices.

A subscription store will be created at the website level to store information from mobile devices that are registered. Prior to that, the Push Notification feature needs to be activated in SharePoint site. Subscription store will create a hidden list that cannot be viewed by any one directly accessing the SharePoint site.



Location or Geolocation

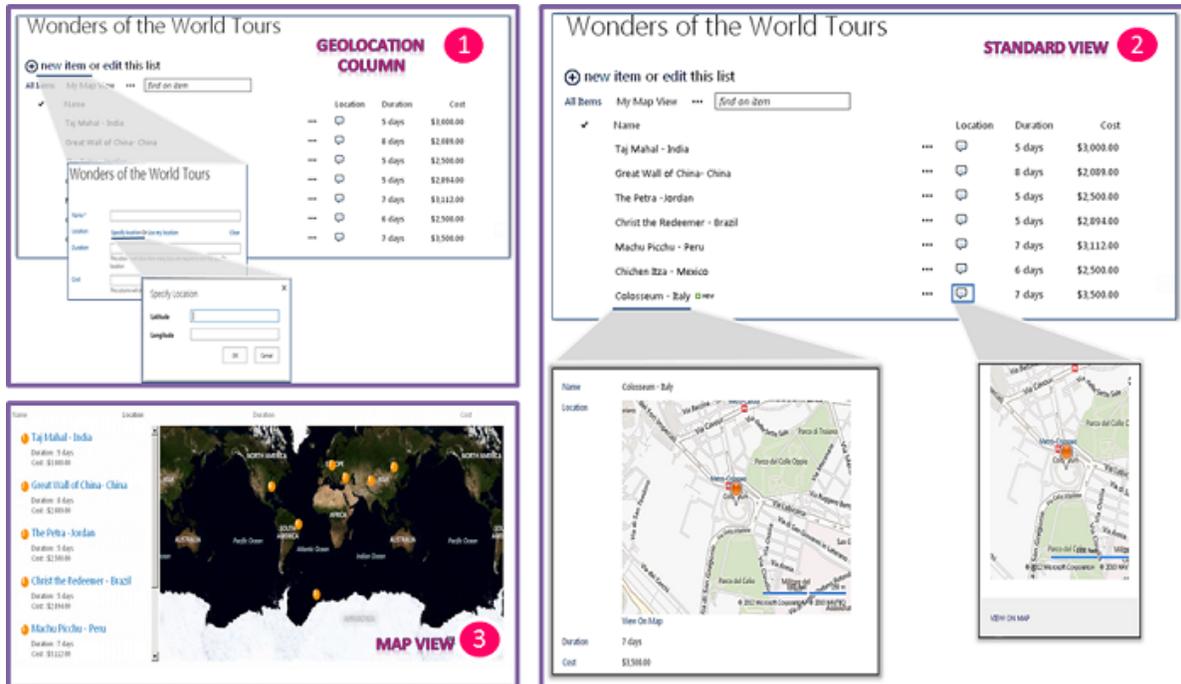
SharePoint 2013 supports new geolocation field type for lists. Geolocation field enables one to annotate SharePoint lists with location information. This will be used for mobile device application development and optimizing mobile device site lists to make “location-aware”, display latitude and longitude coordinates powered by Bing Maps.

An entry will be viewed as a pushpin on the map view, give spatial context to any information by integrating data from SharePoint into a mapping experience in sites and mobile devices.

Limitations

- ⇒ The geolocation field can be added to list using code and scripts only.

Users can track or log location-specific data while they work remotely from the corporate office. Alternatively, the application can help them locate points of interest when it performs offsite functions. One can find the summarized view of the location and map features in the screen below:

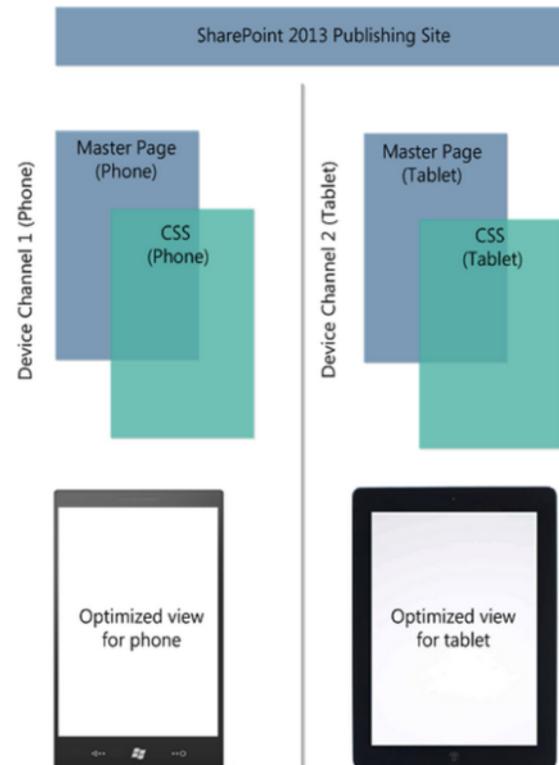


Development Strategies for Enhancing Usability

Device channels

SharePoint 2013 supports customizable mobile viewing experiences via device channels of publishing sites only. Device channels, will render a single publishing site in multiple ways by using different designs that target different mobile devices. It is possible to design content and images while maintaining the same URL across a pool of different mobile devices. Device channels' flexibility and optimization provide varying touch target sizes, unique navigation models, content exclusions, and so on, across tablets and phones.

A vibrant SharePoint site must be optimized for experience, readability and ease of use on smartphones and other mobile devices such as



tablets. It is, therefore, important to render a single publishing site in multiple ways by using different designs that target different mobile devices based on their user agent or user agent string.

To achieve this, one should create a single site and map the site and content to different master pages and style sheets for a specific device or a group of mobile devices. One can also easily show different content to different device channels using the same page and layout. Apart from the default master page, one can create another page that suits an organization's design layout or branding, which would be mapped to the device channel.

It is also possible to create and configure a device channel from the Design Manager option in the Site Settings menu under the 'Look and Feel' section.

Limitations

- ⇒ Only available for publishing sites.
- ⇒ Multiple Master pages needs to be created, since every channel needs to be associated with a Master page.
- ⇒ Custom Vary-By User Agent response header required.
- ⇒ It is only possible to have a maximum of 10 device channels including the default, configured on a specific site for an on-premises installation and a total of two device channels for SharePoint Online.
- ⇒ There are 150 inclusion rules per device channel.
- ⇒ Using Device Channels for security purposes is a bad idea and could lead to disclosing confidential information to general public.
- ⇒ Overhead: Additional configuration is required.

How to create a device channel?

On the **Settings** menu, choose **Design Manager** Option.

Select **Manage Device Channels** from the numbered list.

Choose create a channel option, on the **Design Manager:** displayed from **Manage Device Channels** page.

New Item page with fields pop up:

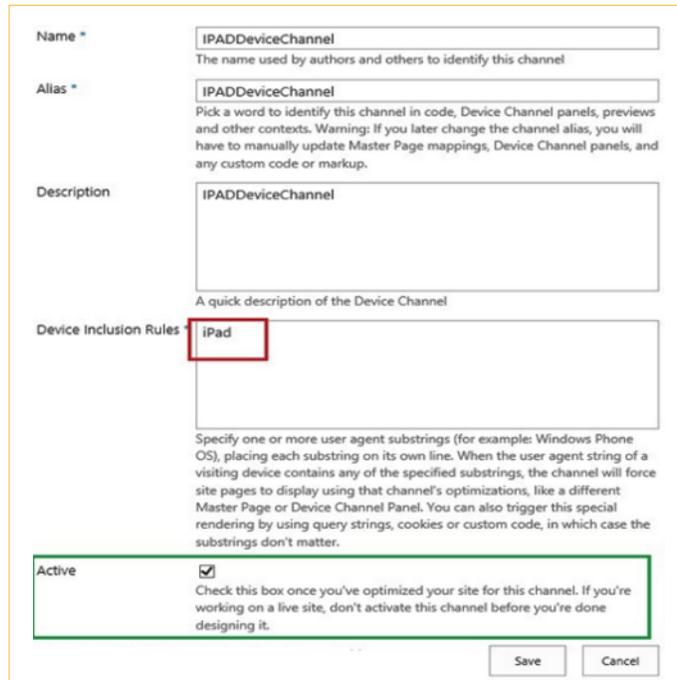
Name text box- provide a name for the device channel.

Alias text box - provide an alias for the device channel.

Provide a brief description of the devices or browsers that the channel will capture in the Description text box.

In the Device Inclusion Rules text box, provide the user agent substrings for the channel.

Select the **Active** check box to make the channel available to render pages.



Name * IPADDeviceChannel
The name used by authors and others to identify this channel

Alias * IPADDeviceChannel
Pick a word to identify this channel in code, Device Channel panels, previews and other contexts. Warning: If you later change the channel alias, you will have to manually update Master Page mappings, Device Channel panels, and any custom code or markup.

Description IPADDeviceChannel
A quick description of the Device Channel

Device Inclusion Rules iPad
Specify one or more user agent substrings (for example: Windows Phone OS), placing each substring on its own line. When the user agent string of a visiting device contains any of the specified substrings, the channel will force site pages to display using that channel's optimizations, like a different Master Page or Device Channel Panel. You can also trigger this special rendering by using query strings, cookies or custom code, in which case the substrings don't matter.

Active
Check this box once you've optimized your site for this channel. If you're working on a live site, don't activate this channel before you're done designing it.

Save Cancel

Responsive Web Design (RWD)

Responsive Web Design is the practice of building a compatible site which can work on all devices irrespective of screen resolution. RWD comprises flexible grids, layouts, images and intelligent use of CSS to adjust screen resolution and automatically resize images. RWD is focused around providing an intuitive, gratifying experience and device-independent sites for desktop, tablets and mobile device users.

The responsiveness of a design is governed by the following three fundamental factors: Fluid Grid, Flexible Media and Media Queries.

- Grid systems are used by designers to align and organize elements in a visually pleasing manner on a page. The grid system uses a combination of margins, rows, and columns. While early designs had pixel-based layouts using fixed grids with the 960 pixel, later layouts were designed to be more adaptive by using different pixel sizes for different screen resolution. The current practice is to create fluid designs. A fluid grid-based layout is one of the cornerstones of responsive design.

- Typically, when adding a media file to a web page, its width and height are set using absolute measurements usually in pixels. However, this fixes the image size, making it completely inflexible and either too small or too large for different resolutions. To solve this challenge, flexible media - image, video, and audio files that can grow and shrink to fit within a flexible grid column - are used.
- Media queries, a feature added in CSS3, modifies the presentation of content to suit a specific range of output devices without needing to change the content itself. One can make an existing website both mobile and tablet compliant with very little change.

The main tools for RWD are Hyper Text Markup Language (HTML5), jQuery, JavaScript and Cascading Style Sheet (CSS3). HTML5 is the most recent version of Hyper Text Markup Language (HTML), which provides device independence and better error handling and reduces the need for external plug-ins. It is a development framework with CSS3 and JavaScript, along with a number of new elements and attributes support.

CSS3 is the latest version of the Cascading Style Sheet (CSS) standard and is completely compatible with earlier versions. New CSS3 features such as orientation (portrait versus landscape), device-width, min-device-width, border-radius, opacity, box-shadow, and text-shadow, help create beautiful web pages which improve the user experience.

JavaScript and JQuery are client-side programming languages used in the web development.

Development Strategies for Enhancing Usability

SharePoint 2013 has been enriched with new technologies, including client-side APIs, using standards such as REST and JSON, JavaScript, CSS, and HTML5. It also introduces the concepts of HTML master pages and HTML page layouts. In order to create a responsive SharePoint site we need to adhere to the following sequence of steps:

- ❑ Create an HTML prototype of the application.
- ❑ Create an HTML master page using any design tool.
- ❑ Build the SharePoint master page out of the HTML master page.
- ❑ Make the master page responsive using any popular responsive framework.
- ❑ Test and fix any problems.

Limitations

- ⇒ Old browsers might not work.
- ⇒ Cannot target for particular device groups (old field mobiles).
- ⇒ Cannot minimize content for low-bandwidth devices.

We can make use of the bootstrap and responsive Frameworks for SharePoint 2013 on CodePlex <https://responsivesharepoint.codeplex.com/>

Advantages

- ⇒ The same URL for all devices.
- ⇒ The same HTML is rendered for all devices.
- ⇒ The Device View Port is the key factor (resolution).
- ⇒ Overhead: Browser should support CSS3.

Summary

There is an option available which provides the best of both worlds and is particularly appropriate when hosting public sites on Office 365 – the hybrid approach. This will utilize device channels to target specific devices. However, ensuring that the designs are responsive to different browser widths cannot be predicted. It may not be the most cost-effective approach available, however, it would definitely be the most effective from a user-experience point of view.

Given below is an example of the hybrid model which requires both Responsive Web Design and Device Channels.

- ⇒ A company has a public website targeted for all devices - Responsive Web Design can be implemented for all devices (Desktop, Tablet, Mobile and so on).
- ⇒ Field Workers using a BlackBerry with incompatible browsers must login into the website (Device Channels can be configured for BlackBerry devices with custom master pages).
- ⇒ Field Workers using an iPhone/S4 with low-bandwidth connections needs to login into the website (Device Channels can be configured for an iPhone/S4 with a stripped-down version of pages).

To ensure that the hybrid model works and is optimized to get the best results within the shortest span of time requires skilled technology experts who understand SharePoint 2013 really well. Trigent, ranked among the Top 3 SharePoint Consulting Companies in the U.S., provides a full range of well-structured services to help our clients plan, develop and deploy SharePoint-based solutions. Trigent has years of experience delivering successful SharePoint solutions - starting from WSS 2.0 to current Office 365. Trigent specializes in building complete solutions such as intranet, extranet portals, document management and workflow systems. Trigent can also provide specialist skills and jointly work to augment development/implementation team. We work with clients at various stages of their SharePoint initiatives: assessment and planning, enterprise level deployment, upgrades from previous versions and maintenance.

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- ⇒ <https://msdn.microsoft.com/en-us/library/jj862343>

Abbreviations:

Abbreviation/Acronym	Expansion
CSS	Cascading Style Sheet
HTML	Hyper Text Markup Language
WML	Wireless Markup Language
CHTML	Compact Hyper Text Markup Language
iOS	iPhone OS
HTTP	Hypertext Transfer Protocol
HTTP GET	Requests data from a specified resource
SEO	Search Engine Optimized
RWD	Responsive Web Design
MPNS	Microsoft Push Notification Service
UI	User Interface
IE	Internet Explorer

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