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**April 2009 Edition**

## Wireless Collaboration with .NET

Integration of Microsoft Exchange Server &amp; Mobile Devices

With the advancement of technology, every cell phone device is becoming faster and faster with smaller size, yet very powerful. This article provides an overview of how ennovate technology (www.ennovatetech.com) used .NET technology to provide a medium to access useful information like accessing and modifying meetings/appointments from Microsoft Exchange Server using mobile devices such as cell phone.

### Viewing/booking of meetings can be done in two ways:

- 1) Through a website, by using desktop/laptop over the Internet.
- 2) Through a mobile website (WAP), which can be accessed using cell phone.

### Advantages of accessing the meetings through cell phone:

- a) Accessibility: Most of the people carry cell phone.
- b) Ease and Convenience: Book or access meetings/appointments on the go with utmost ease and convenience.
- c) Call/Save Number: Call or save phone numbers of Invitee/Host directly from Mobile Web Site can be done.

### Disadvantages:

- a) Screen Size: Viewing long page on smaller screen may be difficult.
- b) Keypad: Typing long text without QWERTY keypad or with smaller keypad may be difficult.

### Implementation: Connector

Connector is developed using .NET technology which communicates with Exchange Server for various meeting operations like view, add, edit and delete and returns retrieved data in the form of XML. The communication between Connector and Exchange Server is done using WebDAV Protocol.

The .NET code forms a SQL query as per requirement using meeting operations methods supported by WebDAV which is fired as http request to Exchange server.

### Key Features supported by Connector

Connector supports "Get", "Add", "Edit" and "Delete" meetings in Exchange server database using WebDAV protocol by:

- a) Support for Exchange server clustered environment
- b) Remote connector support – Connector and Exchange server can be on a different machine in a different country.



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- c) Security support through SSL
  - d) Exchange Server 2000/2003/2007 support
  - e) Caching – Connector will use data from cache. Also capable of fetching data from exchange server, if required – for example, if any meeting data gets changed.
  - f) Works with Form-Based-Authentication on Exchange Server
- Example: If one wants to add a meeting on 3rd September, 2008 from 10AM to 11AM with subject as "Test", then HTTP request contains XML query as shown below and uses WebDAV method "PROPPATCH" in HTTP request.

```
<?xml version=\1.0?>
<g:propertyupdate
xmlns:g='DAV:'
xmlns:e='http://schemas.microsoft.com/exchange/'
xmlns:mapi='http://schemas.microsoft.com/mapi/'
xmlns:cal='urn:schemas:calendar:'
xmlns:mail='urn:schemas:httpmail:'>
<g:set><g:prop>
<g:contentclass>urn:content-classes:appointment</g:contentclass>
<e:outlookmessageclass>IPM.Appointment</e:outlookmessageclass>
<mail:subject>Test</mail:subject>" +
<cal:dtstart dt:dt='dateTime.tz'>3rd September 08, 10 AM in UTC</cal:dtstart>
<cal:dtend dt:dt='dateTime.tz'>3rd September 08, 11 AM in UTC</cal:dtend>
<cal:alldayevent dt:dt='boolean'>0</cal:alldayevent>
<cal:responserequested dt:dt='boolean'>1</cal:responserequested>
<cal:reminderoffset dt:dt='int'>900</cal:reminderoffset>
<cal:instancetype dt:dt='int'>0</cal:instancetype>
<cal:bustatus>BUSY</cal:bustatus>
<cal:meetingstatus>CONFIRMED</cal:meetingstatus>
<mapi:finvited dt:dt='boolean'>1</mapi:finvited>
</g:prop></g:set>
</g:propertyupdate>
```

Connector is developed in such a way that any third-party application can communicate using HTTP request for retrieving meetings/appointments along with invitees and their details. The details like phone numbers, display names, email id, etc. are retrieved using LDAP (Lightweight Directory Access Protocol).

### Mobile Website

Mobile website refers to the access of wireless data services using mobile devices such as cell phone, PDA, and other portable gadget connected to a mobile telecom network. A mobile website can be browsed by enabling WAP (website is made using ASP.NET as backend and XHTML as front-end), this mobile website connects to the exchange server via Connector to show/add/edit/delete meetings.

Mobile website can be accessed by Internet, WAP/Blackberry services, GPRS (General Packet Radio Service) enabled Cell Phone/Cell Phone connected to Internet over Wi-Fi (Wireless Fidelity).

While conventional thinking is that mobile web or mobile Internet means access to traditional Internet using a mobile phone or device, and that is not true. The mobile web differs from traditional Internet by offering advantages of MMS, Text Messaging and Ringtones, etc.

### Challenges

- a) Integration: Integration of Exchange and WebDAV is challenging as help is not available on practical examples with WebDAV and .NET. One has to do detailed study of how Exchange explorer works (which is a tool provided by Microsoft) and uses WebDAV
- b) Time Zone Support with Day Light Saving – Ready-made day light saving class is not available for offset calculations, so development is required to convert date and time from one time zone to another time zone with day light saving support.
- c) Optimization – Displaying 4,000 meetings in 20 seconds time frame even with multiple HTTP requests can be achieved by optimizing code with caching functionality.

Advantages of using .NET/XHTML for WAP sites

- a) Scalability – .NET technology renders the mobile page in runtime, i.e. it displays

the page as per the device's screen size. A page from a WAP-enabled site will automatically fit to the screen size of a cell phone.

b) Adaptability – WAP-enabled site runs successfully on any browser, including browser not supporting advanced features. For example, some browsers support JavaScript and others support Mobile AJAX, so the page can dynamically decide when to execute JavaScript and when not to.

**Conclusion:**

Mobile web is more useful and convenient, given cell/mobile phone consumption worldwide. WAP-enabled website provides more flexibility and ease of use to access/view/book meeting/appointments through mobile devices.