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# *Aware IM*

*Version 8.2*

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## **Aware IM for Mobile Devices**



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## Introduction

This document contains guidelines on how to develop applications for mobile devices using *Aware IM*. It assumes that the reader is familiar with how to develop non-mobile *Aware IM* web applications.

Mobile devices are different from regular web applications driven by standard browsers in that the real estate available for the applications is strictly limited (unless you are using tablets) and there is no support for the mouse – the user operates an application using his fingers instead.

Starting from version 7.0 all *Aware IM* features available for desktop applications are also available for mobile applications and the other way around. However, because of the restrictions of mobile applications mentioned above the developer is more likely to use certain *Aware IM* features only on mobile devices and other features – only on desktop. This document contains guidelines on which features should be used on mobile devices.

Note that by mobile devices we primarily mean mobile phones. Tablets have sufficient real estate and quite often applications developed for desktops will work as is on tablets. However, you can also develop a tablet-specific variation of your application if you like.

Starting from version 5.9 *Aware IM* supports all popular mobile devices

- Apple iOS family of mobile devices – iPhone, iPad and iPod Touch
- Google Android family of mobile devices
- Windows phone
- Blackberry devices
- Symbian family devices

## General Approach

Most of the time your mobile web application is just a mobile version of the regular web application, so we recommend that you develop your regular web application first without worrying too much about its mobile incarnation. Once your regular *Aware IM* application is ready you should carefully think through which features of the application would be available on mobile devices.

Once you know which features of your regular application you are going to expose to mobile devices you should make changes to your *Aware IM* configuration elements to support mobile capabilities. Some of your configuration elements, such as business objects, business rules, notifications and access levels do not need to be changed as you would only need to change those elements that are presented to the user (such as visual perspectives, forms, queries and some processes that involve interaction with the user).

Some of these elements will work as is on your mobile devices, but for some you may want to provide a mobile-specific variation.

In the following sections we will describe how to create or change configuration elements, so that they look good on mobile devices.

## Login

The default *Aware IM* forms to login to desktop applications (logon.html and logonAdmin.html) are not very mobile-friendly because it is displayed in the centre of the screen. You can use a more mobile-friendly incarnation of the default login form called logonM.html or logonAdminM.html or you can develop your own custom HTML form.

You can also invoke the mobile part of your application on desktop browsers by using the special login parameter called “mobile\_platform”. For example, you can activate the “mobile” visual perspective of the CRM sample application by using the following URL inside the Chrome browser on a desktop:

[http://localhost:8080/AwareIM/logonOp.aw?domain=CRM&userName=admin&password=password&testingMode=false&mobile\\_platform=Phone](http://localhost:8080/AwareIM/logonOp.aw?domain=CRM&userName=admin&password=password&testingMode=false&mobile_platform=Phone)

(for tablets use mobile\_platform=Tablet)

See more details about Aware IM login options in the “Login” section of the *Aware IM* User Guide.

## Using Visual Perspectives

### Startup Perspective

User experience with an *Aware IM* application starts with a visual perspective. *Aware IM* displays some visual perspective when the user logs into the application. Which visual perspective will be displayed depends on the access level of the user who logs in. The configurator normally indicates that a particular visual perspective will be used when the user with a certain access level(s) logs in. This is done in the Access Levels dialog displayed when the user clicks on the “Use in login” property in the list of properties of the visual perspective.

This dialog has the “Platform Support” radio buttons. If you select the “Phones Only” or “Phones and Tablets” options *Aware IM* will use the visual perspective when the user with the specified access level(s) logs into the application on a mobile device. *Aware IM* will automatically detect the type of device used and will use the appropriate visual perspective. It is also possible to force *Aware IM* to use a particular platform by specifying the `mobile_platform` parameter during login – see the Login section.

Therefore, for any access level it should be possible to define a visual perspective for the regular web application and a separate visual perspective for the mobile application (it is also possible to have the same perspective for both).

This perspective essentially starts a mobile web application. All subsequent user operations are derived from this visual perspective because they are either derived from the application menu or from the operations available in the content panel(s) displayed by the perspective.

## **Application Menu**

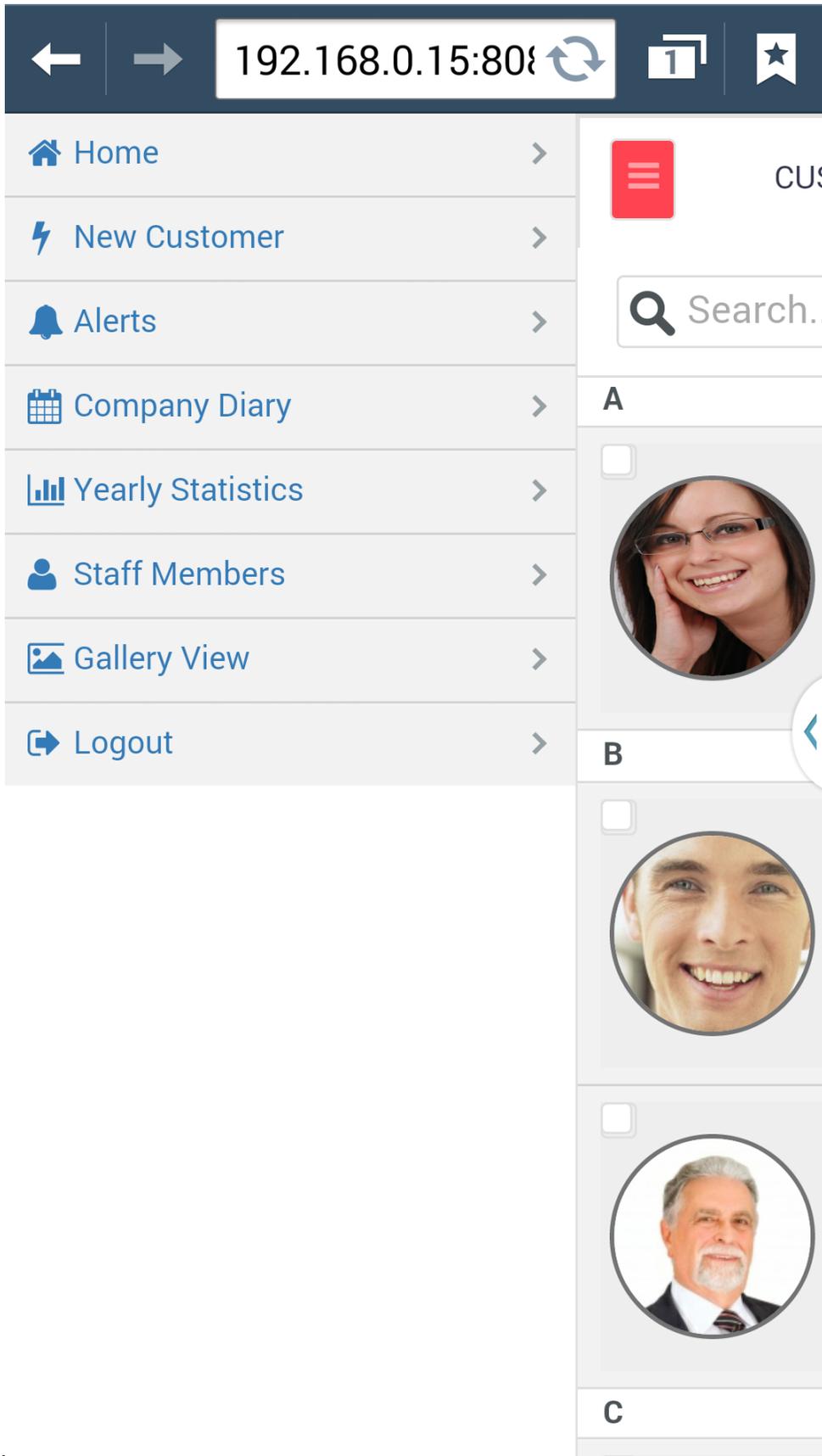
On mobile phones there is usually not enough real estate to permanently display the complete application menu. The following techniques could be used to deal with the problem:

1. You can define the menu of the Toolbar type in the Top Bar frame of your mobile visual perspective. You can put as many menu items into the toolbar as you like. At run time *Aware IM* will automatically display the “overflow” button to put all the menu items that do not fit on the screen there. When the user taps on this button *Aware IM* will display these items in a pop-down menu (see the picture below).

The screenshot shows a mobile application interface for managing customers. At the top, there is a dark blue header with navigation icons (back, forward), a search bar containing the IP address '192.168.0.15:80', and icons for refresh, a notification (1), and a star. Below the header, the main content area is titled 'CUSTOMERS' and includes a search bar with a magnifying glass icon and the text 'Search...'. A dropdown menu is open, displaying several options: 'NEW CUSTOMER' (highlighted with a red border), 'ALERTS', 'COMPANY DIARY', 'YEARLY STATISTICS', 'STAFF MEMBERS', and 'GALLERY VIEW'. The background shows a list of customer profiles, each with a circular profile picture, a name, an email address, and the number of contacts. The visible profiles are Jane A (janec@...), James Blake (jamesb@gmail.com), and Robert Broom (robb@gmail.com). The interface is organized into sections labeled 'A', 'B', and 'C'.

Furthermore, you will be able to control which menu items will be put on the overflow button of the toolbar. For example, you may want to display a couple of buttons permanently on the screen (such as, for example, the Go Back button). For these menu items you can select the “Put on the overflow button” property of the menu item and select “No” to make sure that the buttons representing the menu items are always displayed on the screen

2. Rather than using the “overflow” button of the toolbar you can use a special menu command to display a “slide-out” menu. You will still use the toolbar at the top but you will just add a few items to this toolbar, which will always be displayed and there will be no need for the overflow button. One of these buttons will represent the “slide-out” menu. When the user taps on this button *Aware IM* will slide-out the application menu. The user will select the menu item and the menu will disappear – see the picture below.



To implement this button you first need to define your application menu in the Left or Right frame of your mobile visual perspective (depending on which side of the screen you want your menu to appear). The menu must be of the Plain List type. Then you need to define a menu item for your toolbar in the Top Bar frame of the “Slide-In Left Frame” or “Slide-In Right Frame” types.

Note that both left and right frames are available for the slide-out menu. So you can use two buttons in the toolbar for two different menus – one will slide out from the left and one will slide out from the right. Or you can use the other button to slide out not the menu, but some other information (for example, application help screen). In this case the corresponding frame should contain not a menu but a content panel with HTML or some other content.

3. You can also use a combination of the overflow button in the toolbar and the slide-out menu
4. What about “context” menu, i.e operations specific to queries and forms? In desktop applications these are usually displayed in the toolbars automatically created around the corresponding query or form. You can still use the toolbars, of course, but the better technique is to utilise the toolbar in the Top Bar frame that you would normally use anyway for your menu. In order to do this you should define the location of the panel operations as “Top Application Menu”. Alternatively you can define the location as “Bottom Application Menu”. In this case *Aware IM* will dynamically popup the bottom toolbar and display operations there.

## Using Queries

Using queries to display data results should be one of the main vehicles of a mobile application.

### Standard Presentation

Query results for standard presentation are displayed as a list of rows and columns with column headings – feel free to use them in your mobile applications. Obviously make sure that the columns fit on the mobile screen. You can even use the same queries as for desktop applications and turn visibility of certain columns off for mobile screens. In order to do this click on the “Display as” property in the list of query properties to bring up the “Display Query Results” dialog, select the column you want to turn off in the “Attributes to Display” dialog. Then click on the “More...” button above the attributes table and then click on the “Responsiveness...” button. Then define that the column should be invisible for small screen sizes.

If you query uses inline editing or filters make sure that you tick the “Mobile style rendering” checkbox available when you click on the More button in the “Other Settings”

section of the Display Query Results dialog. This will make sure that *Aware IM* uses a special mobile-friendly user interface for inline editing and filters.

← → 192.168.0.15:8080 ↻ 1 ★

☰ < ALERTS ?

!	Subject		
	Reminder to pay subsc...		
	Reminder to pay subsc...		
	Reminder to pay subsc...		
	Reminder to pay subsc...		
	Reminder to pay subsc...		
	Reminder to pay subsc...		
	Reminder to pay subsc...		

⏪ ⏩  ⏪ ↻

## **Custom Presentation**

This form of query presentation can be very useful for mobile applications – especially, the data template that allows display query results as thumbnails – see the picture below:

← → 192.168.0.15:8080 ↻ 1 ★

☰ CUSTOMERS ✕ ?

🔍 Search...

**A**

 Jane Allison  
janec@hotmail.com  
12 contacts ☰

**B**

 James Blake  
jamesbad@gmail.com  
8 contacts ☰

 Robert Broom  
robb@gmail.com  
8 contacts ☰

**C**

There are two options that you can choose in the Query editor when you define a custom query for mobile applications:

1. Use Custom Data Template
2. Use Mobile Data Template

The two types of templates above are implemented by different widgets and support different functionality.

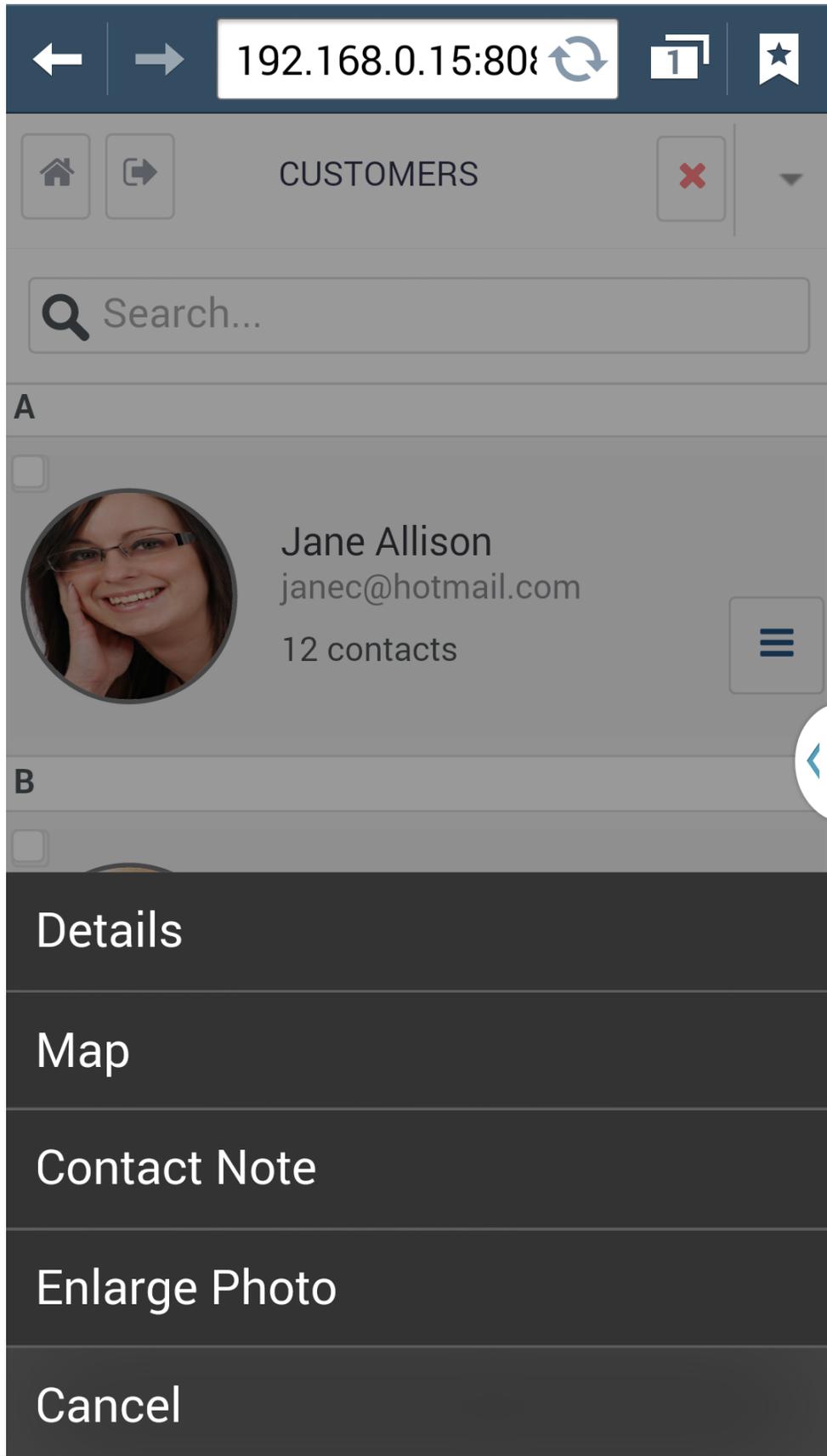
The first template (Custom Data Template) supports the following features which are not supported by the “Mobile Data Template”:

- Paging
- Horizontal layout
- Scroll View (this is a popular feature on mobile devices where the user can view one image at a time and swipe back and forth between images)

We recommend that you use this template only if you need to display a horizontal layout of thumbnails or if you want to implement a “scroll view”.

In other cases you are better off using the “Mobile Data Template” (as shown on the picture above) which supports more mobile-friendly features, such as:

- Infinite scrolling without the need to page explicitly
- Group headings (you can group your data – for example, by the first letter and *Aware IM* will show the letter as the heading for the group. Moreover, it can keep displaying the group header while you are scrolling – “fixed headers”)
- Checkbox selection of items
- Simple filtering
- The operations button. When the user taps on this button Aware IM pops down the list of operation applicable to the selected data item – see the picture below.



## **Calendar Presentation**

Calendars/schedulers are fully supported on mobile devices. Some views, though, such as timeline and agenda views may not look good due to limited real estate, however, daily, weekly and monthly views should look quite good.

Make sure that you tick the “Mobile rendering” option available through the More button in the “Other Settings” section of the “Display Query Results” dialog. This will make sure that the calendar appointments are created using mobile-friendly interface.

← → 192.168.0.15:8080 ↻ 1 ★

☰ < DIARY ?

TODAY DAY ▾

< 1/19/2016 >

Tue 1/19

all day

12:00 AM

1:00 AM

2:00 AM

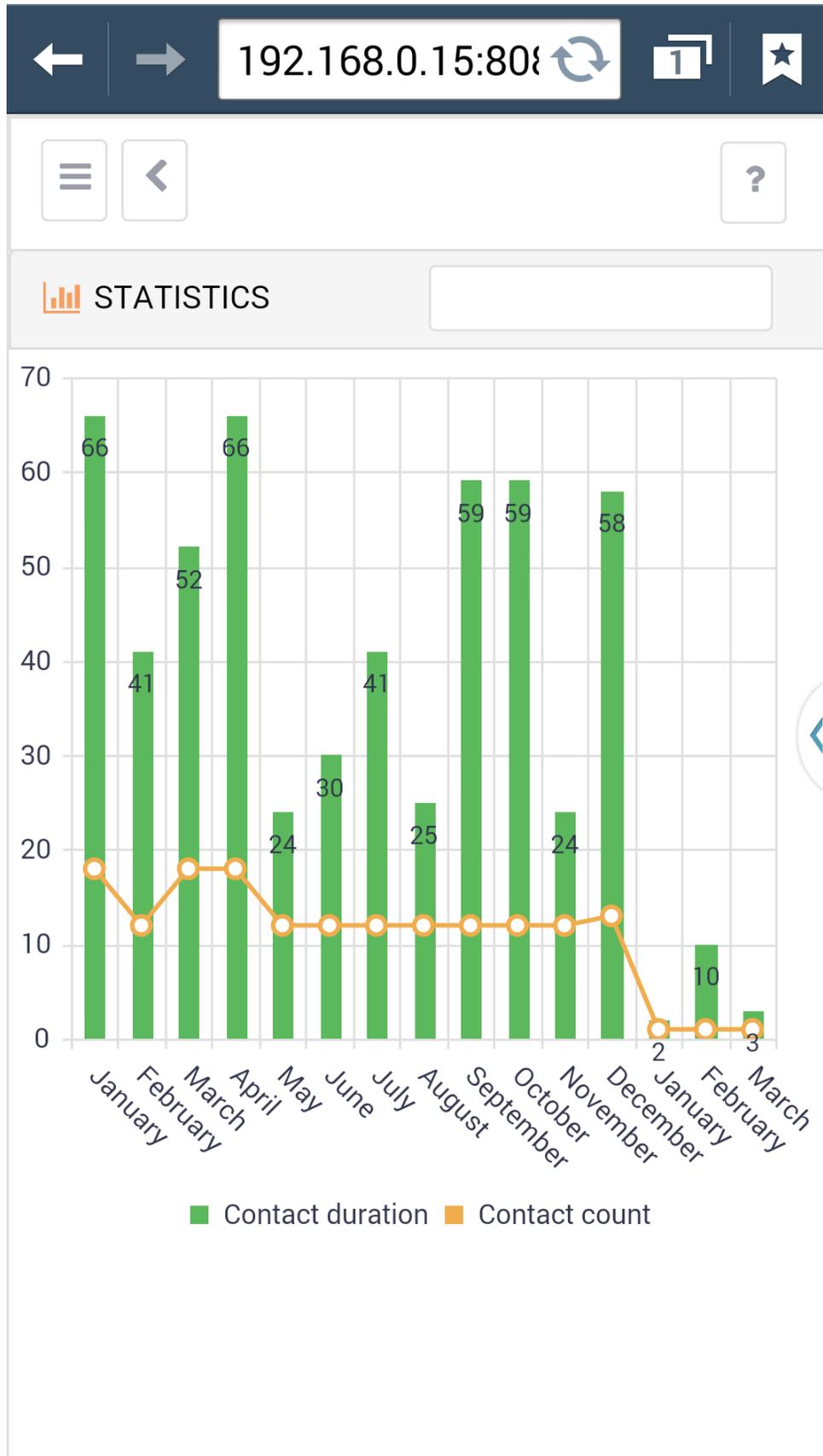
3:00 AM

4:00 AM

[SHOW BUSINESS HOURS](#)

## **Chart Presentation**

This form of query presentation can be used as is in mobile applications.



## Using Forms of Business Objects

You can use the same forms as you use for your desktops applications for your mobile applications. Some of the features of object forms that you may find especially useful in mobile applications are listed below:

- Specify label width as percentage rather than absolute value
- Display Yes/No attributes as “on/off switches”
- Use native browser controls for dates and times – some mobile browsers have very rich and good looking mobile-specific in-built controls for entering dates and timestamps. You can use them in your forms instead of the more desktop oriented *Aware IM* in-built controls.
- Mobile style tabs – if the form has several form sections the tabs are displayed. You can select the “mobile style tabs” option to display tabs using mobile-friendly style – with larger font and top icon alignment. The option is available under the Navigation category of the property list of the form
- Mobile style of the form caption – most of the time you won’t display the default panel header for your mobile forms, because it uses too much real estate. You will either display no header at all or you will display a caption of the form in the middle of the screen. Selecting the “mobile style header” option in the Panel Header dialog will achieve that
- Mobile style choices for dropdowns – in desktop applications combo-boxes include an icon that drop down a list of choices. You can still use this style in mobile application or you can use a more mobile-friendly variation that is similar to choices of the operation button displayed by a mobile template (see picture of the mobile data template above)

← → 192.168.0.15:8080 ↻ 1 ★

☰ < Jane Allison → ← ? ▾

**MAIN**   **CORRESPONDENCE**   **SIGNATURE**

**Number:** 000001

**First Name:\*** Jane

**Last Name:\*** Allison

**Phone** (555) 555-5555 (tap to call)

**DOB:\*** 10/12/1973

**Email:** janec@hotmail.com

**Address:** 321 Ninth Street Gadsden AL 35903-1618

**SAVE**    **CLOSE**

## Displaying and Uploading Pictures from Camera and/or Photo Library

One approach is to define an attribute of the Picture type for one of your forms. *Aware IM* will automatically generate controls to upload the image from a camera or photo library. This approach will work in both browser-based mobile applications and native mobile applications.

Another approach is to use the `MOBILE CAMERA SNAP INTO` action in some process (or `MOBILE CAMERA GET INTO` action to get access to photo library). When *Aware IM* executes this action the user will be able to upload a photo from camera or a photo library. The image will be written into the picture attribute specified in the action. For example:

```
MOBILE CAMERA SNAP INTO MyObject.MyPictureAttribute
```

Note that these actions will only work for native mobile applications – they will not work inside the mobile browser. Please see the [User Guide](#) and [Rule Language Guide](#) for more details about these actions.

## Sending Push Notifications to Mobile Phones

This feature is explained in detail in the [How To Guide](#).

## Getting Location of the Current User

It may be necessary for your application to determine the location of the current user – for example, if it needs to calculate users or places of interest closest to the current user.

The location of the current user can be determined by using the `MOBILE GET LOCATION INTO` action of the Rule Language. Before you can use this action, though, you need to add a special `MGeoLocation` object into your business space version. To do this right click on the Business Objects in the Configuration Elements Tree and select the “Add GeoLocation” object from the popup menu. Then you can use the `MOBILE GET LOCATION INTO` action that will write the current longitude and latitude (and some other values) of the current user into the attributes of the `MGeoLocation` object. For example:

```
CREATE MGeoLocation
MOBILE GET LOCATION INTO MGeoLocation
DISPLAY MESSAGE 'Longitude is ' +
MobileGeoLocation.Longitude
```

You can use this instance of the `MobileGeoLocation` object to display the location on a GoogleMap, for example. Or you can provide rules that calculate the distance between geo locations using the `DISTANCE` function.

You can also record changes to the user location. This can be done by using the `MOBILE START LOCATION WATCH INTO` action. This action will automatically track changes to the user location and write them into the provided instance of the `MobileGeoLocation` object. For example:

```
MOBILE START LOCATION WATCH INTO MGeoLocation
```

Tracking changes can be stopped using the `MOBILE STOP LOCATION WATCH FROM` action. For example:

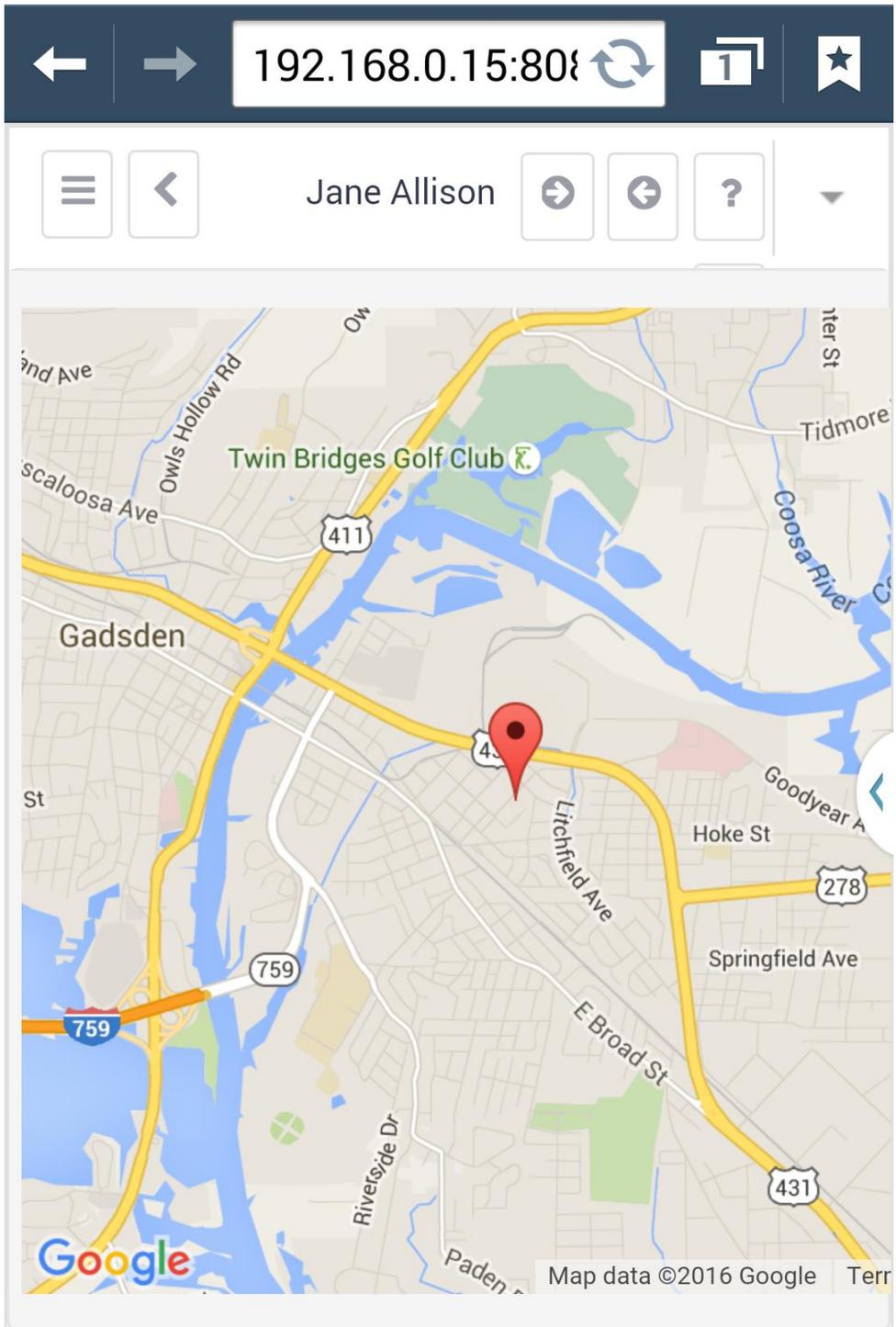
```
MOBILE STOP LOCATION WATCH FROM MGeoLocation
```

Note that all geo location actions can be used in both browser-based mobile and non-mobile applications as well as in native mobile applications.

## Displaying Google Maps

This is no different from displaying Google Maps in desktop applications – you can embed Google Maps into object forms, object presentations or display standalone Google Maps as part of the static HTML for a content panel of a visual perspective. See the User Guide for more details.





## Embedding Video

The process is the same as for a desktop application. You will need to define an attribute of the Document type in some object and then add an HTML cell to your form with the following contents:

```
<div
style="width:400px;height:400px"><<MyObject.DocumentAttribute>></div>
```

The div element is just to give width and height to the video. The actual video is embedded by a reference to the document attribute (MyObject.DocumentAttribute)

## Using Processes

You can use any processes in your mobile applications just as you use them for mobile applications. The only feature that you may use differently for mobile applications is when a process displays user interface for intermediate actions (see the explanation of the Single Tab Mode property in the User Guide). By default all intermediate actions are displayed in a popup window. You can still use popup windows in your mobile applications, provided that they are small. Otherwise, you are better off replacing the current screen with the new one without any popup windows. The list of properties for a process has a special property for this called “Single tab mode”.

There are also some specific actions of the Rule Language that you can use inside a process – these actions are listed in the table below.

## List of Mobile-friendly Features

The following table lists all the *Aware IM* features that can be useful in mobile applications – most of them have been already explained.

Feature	Where Used	Description
Mobile list view	Query in custom form (Mobile Data Template option)	Displays custom HTML template for each data row. Only supports vertical layouts. Supports group headings, filtering, operations drop down, infinite scrolling
Scroll View	Query in custom form/Custom Data Template/Use Scroll View	Displays an HTML template one data record at a time. The user can swipe back and forth to the next and previous record
Mobile style transitions	Visual	Uses animation when Aware IM

between pages	Perspective/Themes and Other Settings	moves between different pages of a mobile application
Mobile style tabs	Tabs used in visual perspectives and/or forms	Displays tabs using “mobile style” – with larger font and with top icon alignment
Mobile style choices for drop downs	Business Object Forms/Presentation of attributes with choices	Displays a special popup at the bottom of the screen with the available choices
Mobile switches for Yes/No attributes	Business Object Forms/Presentation of Yes/No attributes	Displays Yes/No attributes as On/Off switch rather than a checkbox
Native browser controls for dates and timestamps	Business Object Forms/Presentation of Date and Timestamp attributes	Some mobile browsers use in-built native controls to represent dates and times. You can use these controls or you can use Aware IM-specific controls
Mobile style header for forms and queries	Editing of Panel Header in forms and queries	Form caption displayed in bold in the middle of the screen
Mobile style rendering	Queries in the Standard and Calendar forms	Use mobile-friendly interface for inline editing and filters in standard queries and creation/editing of appointments in calendars
Go Back menu command	Menu in visual perspective editor	Goes back to the previous screen
Slide-In Left Frame and Slide-In Right Frame menu commands	Menu in visual perspective editor	Slides in menu or content panel. Can be used to implement a slide-out menu or help screens.
Mobile Specific Actions of the Rule Language	Processes	The following actions of the rule language can be used specifically for mobile phones (for more details please see the User Guide and the Rule Language Guide): <ul style="list-style-type: none"> <li>• MOBILE CAMERA SNAP INTO</li> <li>• MOBILE CAMERA GET INTO</li> <li>• MOBILE GET LOCATION INTO</li> <li>• MOBILE START LOCATION WATCH INTO</li> <li>• MOBILE STOP LOCATION WATCH FROM</li> </ul>

		<ul style="list-style-type: none"><li>• MOBILE SUBSCRIBE</li><li>• MOBILE PUSH</li></ul>
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## Building native mobile applications

When you create your mobile applications they are accessed through a mobile browser such as Safari – just like non-mobile applications. Starting from *Aware IM* version 5.9 *Aware IM* supports the capability of building *native* mobile applications that can be uploaded to a mobile device and run without having to start the mobile browser and specify the URL of the application.

There are 5 steps involved in creation of native mobile application for mobile phones or tablets:

1. Create your browser-based mobile application as usual
2. Use the “Build native mobile application” feature in Aware IM to create a zip file containing all the artefacts of your mobile application
3. Create free account with Adobe PhoneGap (<https://build.phonegap.com>)
4. Create an application in PhoneGap and upload the zip file. This will create a binary file(s) for your selected mobile platforms that you can download from PhoneGap
5. Upload the binary file into the phone or tablet

You should create your native mobile application when your standard browser-based *Aware IM* application has been developed and tested. The first step is then to create a zip file that can be uploaded into your PhoneGap application. To do this select the business space version and then select the “Build native mobile application” command from the Version menu of the Configuration Tool. Then provide the following information:

- Output folder where the zip file will be written
- Server URL and port. Your mobile application will be communicating with your server where *Aware IM* should be running. You need to make sure that this server has valid Internet address and then specify this address and port where *Aware IM* Tomcat is running (unless it’s a standard port 80)
- Web application folder name. Only if you have renamed the standard *Aware IM* directory to something else
- You need to decide whether users of your mobile application will be logging into your system or not. If they are the login screen will be the first they will see when the application is launched. Otherwise, they will go directly into your mobile application as guest users.
- Mobile platform. You can select one or more mobile platforms for which the application will be built. If you select more than one platform you will be getting one binary file for each platform from PhoneGap.
- You then need to provide the application name, version and other details – these details will be registered for your native mobile application
- Finally you may provide icons for your mobile application. These icons will be displayed on your phone or tablet. If you don’t default icons will be used.

When the zip file has been generated in the output directory you can log into your PhoneGap account and upload the zip file from there. At the end of this process you will be able to download binary files for each of the mobile platforms you have specified. These binary files can then be uploaded into the phone or table itself.

Note that in order to upload the binary into the phone or tablet you may need to perform additional steps required from you by a particular platform. For example, you may need to obtain a digital certificate for your application and/or register your application in an application store (for example, Apple Store). Your PhoneGap application should include all the necessary operations to do this. Please refer to the documentation of a particular platform.

Note also that advanced users may modify the zip file created by **Aware IM** and override or add some of the more advanced settings. To do this they need to unzip the file into some folder and then modify the config.xml and/or index.html files automatically generated by **Aware IM**. Then zip up the changes and upload them to PhoneGap. The index.html file is the starting page of your application – you can provide your customized logon page here if you like. The config.xml file contains PhoneGap build configuration parameters. Please refer to the PhoneGap documentation for details.

See also a video tutorial at <https://youtu.be/Gte6vbvAYsg>