# Grandstream Networks, Inc.

## GXP2130/2140/2160/2135/2170 XML Application User Guide

# GXP2130/2140/2160/2135/2170 XML Application Guide

## Index

# Table of Tables
## GXP2130/GXP2140/GXP2160/GXP2135/GXP2170 XML Application User Guide

## Table of Figures
## GXP2130/GXP2140/GXP2160/GXP2135/GXP2170 XML Application User Guide

# INTRODUCTION

The Grandstream GXP2130/2140/2160/2135/2170 supports XML Application on firmware 1.0.5.29 (or higher) for GXP2130/2140/2160, or on firmware 1.0.6.9 (or higher) for GXP2135/2170. This XML API allows users to access service information in web server, and present the information in LCD as well as customize screen display. It's a custom application where the XML framework is interactive and dynamic, depending on the configured object. It could be easily developed with all the programming languages for web application development (e.g., PHP, ASP, and etc). Typical XML applications could be call center service, survey, reservations and much more.

## WHAT IS XML

XML (eXtensible Markup Language) is a markup language* for documents and applications containing structured information. This information contains both content (text, pictures, input box and etc.) and an indication of what role that content plays (e.g. content in a section header is different from content in a footnote, or content in a figure caption, or content in a database table, etc.). Almost all documents have certain kind of structure.

**Note**: A markup language is a mechanism to identify structures in a document. The XML specification defines a standard way to add markup to documents.

## WHY XML

What benefits does XML provide to SIP endpoints? XML enables our SIP phones to serve as output devices for web services and other online applications. The XML infrastructure allows the phones to interact with external applications in a flexible and programmable manner. Two specific XML API supported by GXP2130/2140/2160/2135/2170 are XML Phonebook and XML Application.

## XML API ARCHITECTURE

The XML application on GXP2130/2140/2160/2135/2170 is using TFTP/HTTP/HTTPS as the transport protocol. The following figure shows how it works. Basically, GXP2130/2140/2160/2135/2170 initiates the HTTP/HTTPS GET Request to the server and waits for the response. Once the phone receives the response with XML content in BODY, it displays the information.

Two types of XML API architecture are introduced below, depending on if the application is within LAN or accessed via Internet.

1. An application in LAN area may exchange information in the following manner. GXP2130/2140/2160/2135/2170 sends request and accepts XML contents via TFTP/HTTP/HTTPS, directly communicating with the server. The server will then handle the request and response via any protocols with the other application server to get the expected information for the XML service.

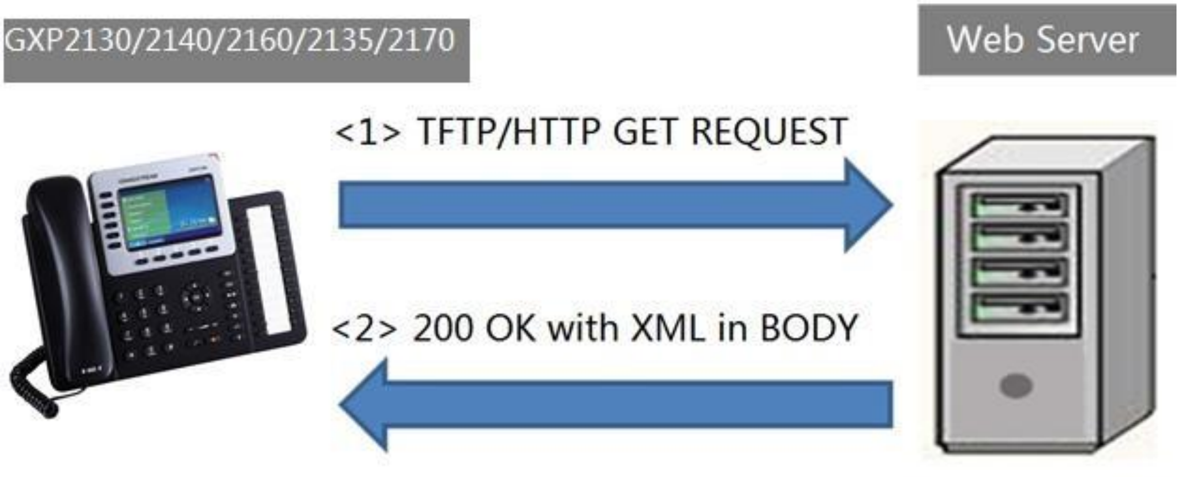

GXP2130/2140/2160/2135/2170
Web Server
<1> TFTP/HTTP GET REQUEST
<2> 200 OK with XML in BODY

**Figure 1: GXP2130/2140/2160/2135/2170 XML API via HTTP/TFTP**

2. If the above Web Server accesses Internet, it could interact with outside web server and respond real-time content to GXP2130/2140/2160/2135/2170.

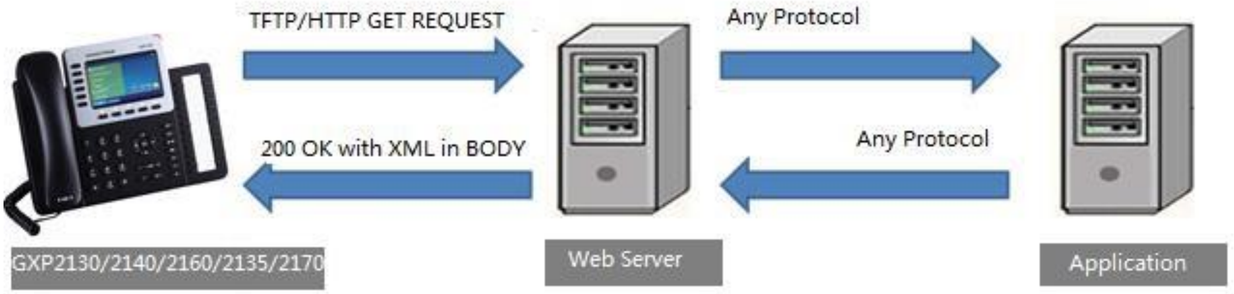


**Figure 2: GXP2130/2140/2160/2135/2170 XML API Structure**

As illustrated above, all of the application logic lies within the server side of the architecture. This allows faster applications development and minimal phone side maintenance.

# XML APPLICATION CONFIGURATION

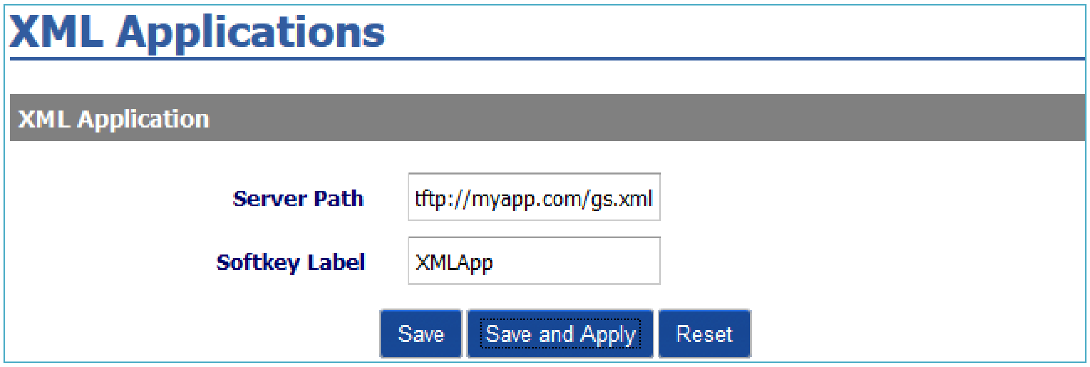
## FIRMWARE

Before the XML application is launched on GXP2130/2140/2160/2135/2170, the firmware on the phone must be upgraded to version 1.0.5.29 (or higher) for GXP2130/2140/2160, or version 1.0.6.9 (or higher) for GXP2135/2170. This document describes functions and features based on GXP2160 firmware version 1.0.5.29. Please refer to the following link for firmware upgrading information:

http://www.grandstream.com/support/firmware

## WEB GUI CONFIGURATION

To launch the XML application on GXP2130/2140/2160/2135/2170, firstly set the XML application server path and softkey label in web GUI->**Settings**->**XML Application** page.



XML Applications

XML Application

Server Path: tftp://myapp.com/gs.xml

Softkey Label: XMLApp

**Figure 3: Web GUI Configuration**

The Server Path must be set to the web server directory where the application is located. Currently HTTP, HTTPS and TFTP are supported. The accepted format are as below (content in [ ] is optional).

- **For TFTP**

***tftp://IP_address[:port]/dir/filename***
***tftp://Hostname[:port]/dir/filename***

- **For HTTP**

***http://IP_address[:port]/dir/filename***
***http://Hostname[:port]/dir/filename***

- **For HTTPS**

***https://IP_address[:port]/dir/filename***
***https://Hostname[:port]/dir/filename***
***https://username:password@IP_address[:port]/dir/filename***
***https://username:password@Hostname[:port]/dir/filename***

- **Examples:**

***tftp://192.168.40.10/XMLapp/welcome.xml***
***http://192.168.40.10/XMLapp/welcome.xml***
***tftp://myapp.com:8080/surveyapp.xml***
***https://service.myapp.com/XMLapp/reservation.xml***
***https://admin:adminpassword@192.168.40.123/GXP2130/API.xml***

---------------------------------------------------------------------------------------------------------------------------------------------

**Note:**

- If "http://" is not specified in the Server Path, the phone will use HTTP by default. Therefore, "http://" is not necessary to be included in the path if HTTP is used.
- For TFTP or HTTPS, users must specify "tftp://" or "https://" in the Server Path.
- If username and password are required by the HTTPS server, users could use "https://username:password@server_address/directory" to access.
- The content in [ ] is optional. If ":port" is not specified, by default port 80 will be used for HTTP and port 443 will be used for HTTPS.

---------------------------------------------------------------------------------------------------------------------------------------------

The default value for Softkey Label is "XMLApp". Users press this softkey to launch the XML application. Please make sure the label string does not exceed the softkey maximum length on each model.

After server path and label name are filled in, click on "Save and Apply" on the web GUI page to save the configuration. The GXP2130/2140/2160/2135/2170 will then display the XML Service softkey on LCD. Press the softkey with the configured label to launch the application.

Users may also use config file to provision the XML Application Server Path and Softkey Label to the phone. In this case, GXP2130/2140/2160/2135/2170 needs to be provisioned and rebooted. The corresponding P values are as below.

- P337: Server Path.
  This is a string that should contain the path to the XML application file.
- P352: Softkey Label.
  This is a string to display the softkey label on LCD.

## USING LCD AND KEYPAD

Without configuration, the default idle screen (use GXP2160 as example) is like below.

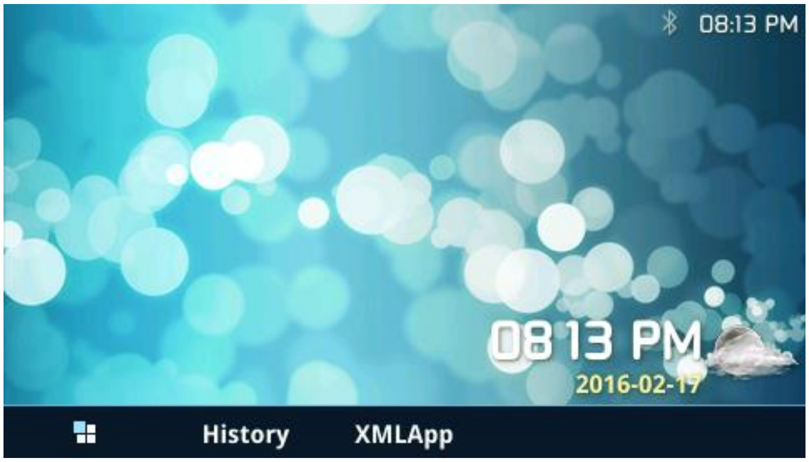


**Figure 4: Default Idle Screen**

Once the XML Application server path and softkey label are successfully configured, the label will be displayed as the right-most softkey. Press this key to load the application.

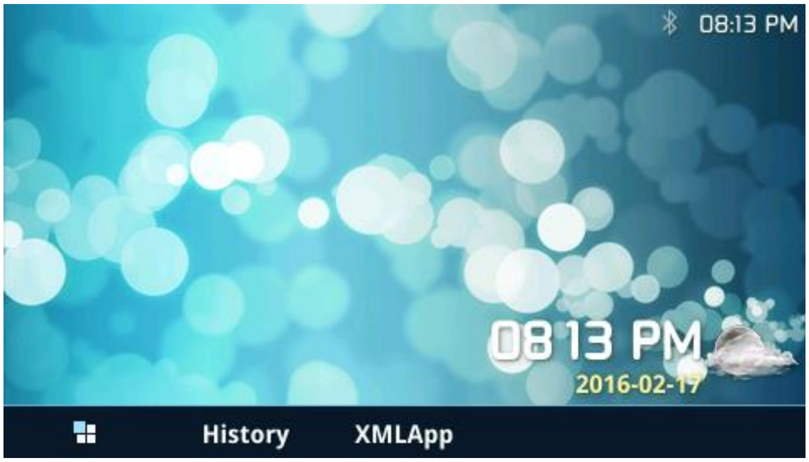
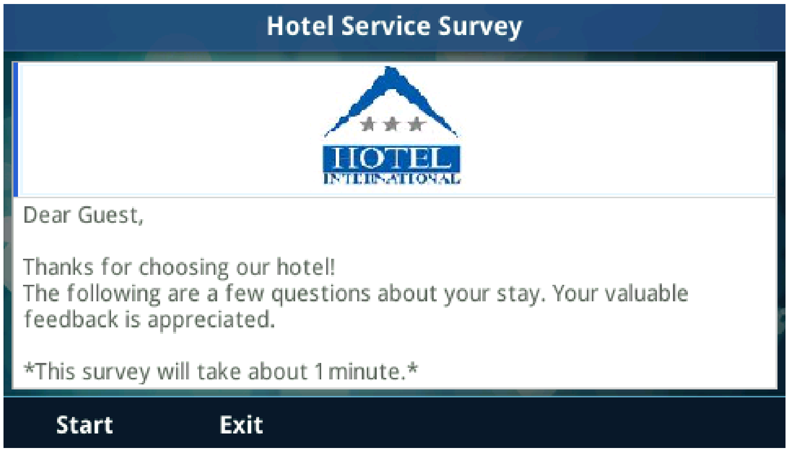


**Figure 5: XMLApp Softkey**

As you may know, it is also possible to enter the application server path into PC's web browser. In this way you'll be able to see the exact XML document on your PC that your phone is receiving.

An example application screen will be like below.



Hotel Service Survey

Dear Guest,

Thanks for choosing our hotel!
The following are a few questions about your stay. Your valuable feedback is appreciated.

*This survey will take about 1 minute.*

**Figure 6: Application Screen Example**

## NAVIGATION IN XML APPLICATION

Now the XML application is launched on the phone. To navigate and proceed in the application, use the keypad and softkeys to complete the following different actions.

- Keypad digit input
  - Enter the digits on the phone's keypad if the application requires input.
  - To delete an input digit, press "BackSpace" softkey.
  - If there are multiple input fields, press "UP" or "DOWN" arrow to toggle among the input fields.

- Selection list
  - Press "UP" or "DOWN" arrow to move the selection cursor to the desired list field.
  - Press "LEFT" or "RIGHT" arrow to toggle among different selections defined in the list.

- Checkbox selection
  - Press "UP" or "DOWN" arrow to move the selection cursor to the desired checkbox.
  - Press "LEFT" or "RIGHT" arrow to toggle among different selections defined in the list
  - Press "Check"/"Uncheck" sotkey to select/deselect the option.

- Softkey navigation
  - Press the corresponding softkeys to navigate. The softkeys are defined in the XML code. Each softkey could contain label for display, action and URL to trigger the phone to display another page. In the

above example, "Start" will navigate you to the next step of the screening process and "Exit" will allow you to quit the application.

- In the case where there are more than 3 or 4 softkeys (depending on the GXP2130/2140/2160/2135/2170 model) used in the XML application, a "MORE" softkey will automatically show at the rightmost place. Click on it to view more softkeys.

- Quit application.
  - If Softkey with “QuitApp” action configured, user may press the softkey to exit.
  - By default, users can quit and return to normal idle screen by holding the "CONF" button on phone's keypad for about 3 seconds.

- Make/Answer call during application.
  - When the phone is running the application, users could make or answer call without exit.
  - Make call by offhook the handset, or press the speaker button.
  - Answer incoming call by offhook the handset, or press the speaker button, or press the softkey "AnswerCall".
  - Once the call screen is triggered, the softkey with ≋ icon will display. Press this key to continue the application.

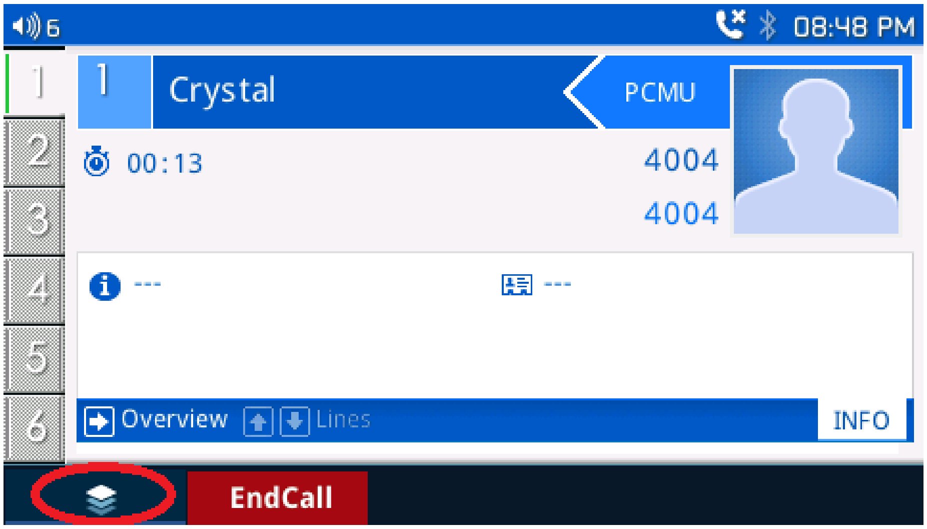


**Figure 7: Continue the Application during a Call**

--------------------------------------------------------------------------------

**Note:**
The above example and screenshots are taken on GXP2160. The configurations and operation are the same for GXP2130/2140/2135/2170, but the screen size and softkey layout may vary.

--------------------------------------------------------------------------------

# XML APPLICATION FORMAT

## HEADER

In the first line of the XML document, the following header can be set as XML declaration. It defines the XML version and encoding. On GXP2130/2140/2160/2135/2170, UTF-8 is used as encoding method for correct display.

```
<?xml version="1.0" encoding="UTF-8"?>
```

## SPECIAL CHARACTERS

As followed by the standard XML recommendation, some characters need to be escaped. The following table lists the characters with their escape sequence.

**Table 1: Special Characters**

| Characters | Name | Escape Sequence |
|---|---|---|
| & | Ampersand | &amp |
| “ | Quote | &quot |
| ‘ | Apostrophe | &apos |
| < | Left Angle Bracket | &lt; |
| > | Right Angle Bracket | &gt; |
|  | Enter Space | &#xA; |

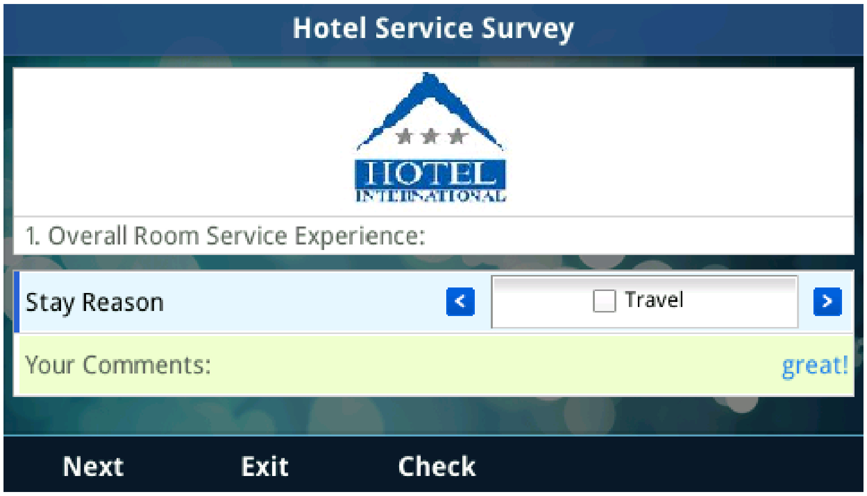
## GXP2130/2140/2160/2135/2170 SCREEN XML STRUCTURE

The XML application template could be represented like below. <view> section (mandatory), <Softkeys> section (optional) and <Events> section (optional) are the main customization area for the XML application. Please refer to the template.xml included in the package for more comments.

```
<xmlapp>
    <view>
        <section>
          <!-- ADD DISPLAY AND INPUT ELEMENTS FOR XML APPLICATION CONTENTS-->
        </section>
    </view>
    <Softkeys>
           <!-- ADD SOFTKEY ELEMENTS FOR XML APPLICATION CONTENTS-->
    </Softkeys>
    <Events>
           <!--ADD EVENT HERE-->
    </Events>
</xmlapp>
```

Example – An easy sample

```
<?xml version="1.0" encoding="UTF-8"?>
<xmlapp title="Hotel Service Survey">
    <view>
        <section>
            <image path="http://mypath.com/hotel.jpg"></image>
            <text label = "1. Overall Room Service Experience:"></text>
        </section>
        <section>
            <select label="Stay Reason" type="multiple" name=":survey_personal_reason">
                <option text="Business" value="business" />
                <option text="Travel" value="travel"    />
                <option text="Pleasure/Leisure " value="pleasure"    />
            </select>
            <input label="Your Comments:" name=":survey_comment"></input>
        </section>
    </view>
    <Softkeys>
        <Softkey action="UseURL" label="Next" commandArgs="http://mypath.com/page3.xml"/>
        <Softkey action="QuitApp" label="Exit"/>
    </Softkeys>
    <Events>
        <Event state="callStateEnded">
            <Action action="UseURL" commandArgs="http://mypath.com/page7.xml"></Action>
        </Event>
    </Events>
</xmlapp>
```



Hotel Service Survey

1. Overall Room Service Experience:

Stay Reason ☐ Travel

Your Comments: great!

Figure 8: An Easy Sample

The XML document structure can be presented in the following diagram. This provides users an overview of the XML element. For the element attribute and text information, please refer to the details in the next section ***[GXP2130/2140/2160/2135/2170 XML ELEMENT]***.

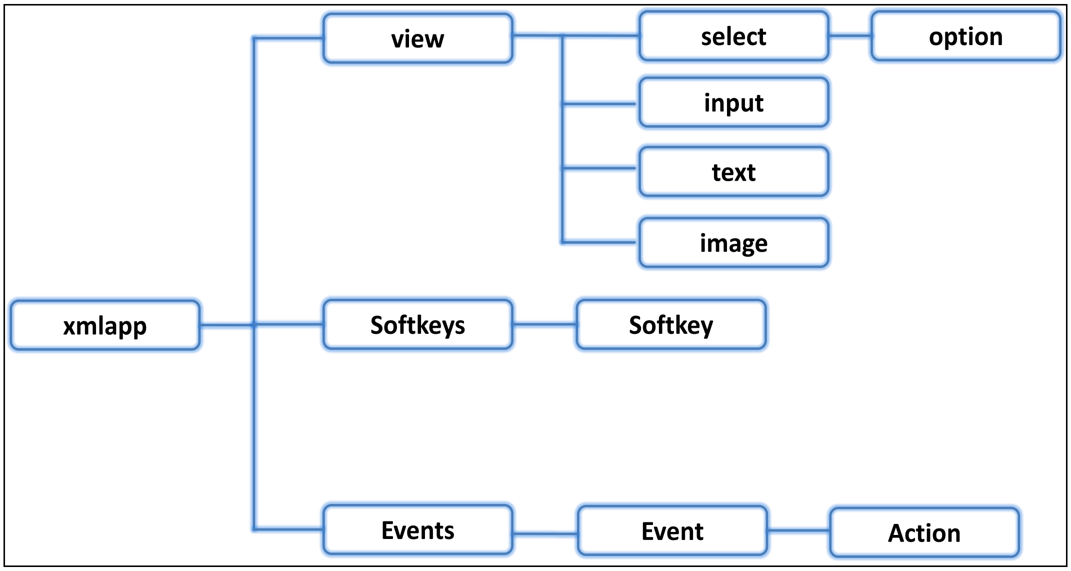


Figure 9: XML Document Structure

# GXP2130/2140/2160/2135/2170 XML ELEMENT

This section describes details of the XML element used in GXP2130/2140/2160/2135/2170 XML application. Please note that the element name is case-sensitive when being used in XML document.

## ROOT ELEMENT <xmlapp>

<xmlapp> is the root element of the XML document used for GXP2130/2140/2160/2135/2170 XML application. This element is mandatory.

```
<xmlapp title ="XML App display name" >
All the information for screen display is here
</xmlapp>
```

### <xmlapp> ELEMENT DETAILS

The following table shows child elements and attributes for <xmlapp> element.

**Table 2: Child Elements and Attributes for <xmlapp> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **xmlapp** | **Root element** | **Mandatory** | **-** | **Root element of the XML document** |
| title | Attribute | Optional | | Defines the title of XML application |
| view | Child element | Mandatory | - | Defines text input and text/image display |
| softkeys | Child element | Optional | - | Defines softkey display |
| Events | Child element | Optional | - | Used when certain event is triggered |

## <view> ELEMENT

This is the main customization section for the XML application.

```
<xmlapp title ="XML App display name">
All the information for screen display is here
</xmlapp>
```

### <view> ELEMENT DETAILS

**Table 3: Child Elements for <view> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **view** | **Element** | **Mandatory** | **-** | **Defines screen display** |
| section | Child element | Mandatory | - | Divides screen into horizontal sections; At least one <section> element should be defined under <view>. |

## <section> ELEMENT

The <section> element is the container of all displaying widgets.

```
<section>
Display all widgets here
</section>
```

### <section> ELEMENT DETAILS

**Table 4: Child Elements for <section> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **section** | **Element** | **Mandatory** | **-** | **Divides screen into horizontal sections** |
| select | Child element | Optional | - | Defines selections widget. |
| input | Child element | Optional | string | Defines text input widget. |
| text | Child element | Optional | string | Display text contents. |
| image | Child element | Optional | - | Display image contents. |

## <select> ELEMENT

This element is to render selection list fields on screen so that users could choose the answer to submit or proceed. "name=value" will be passed to the query.

```
<select label="display name" name="filed id" type="single">
        <option text="display text" value="option value"/>
</select>
```

### <select> ELEMENT DETAILS

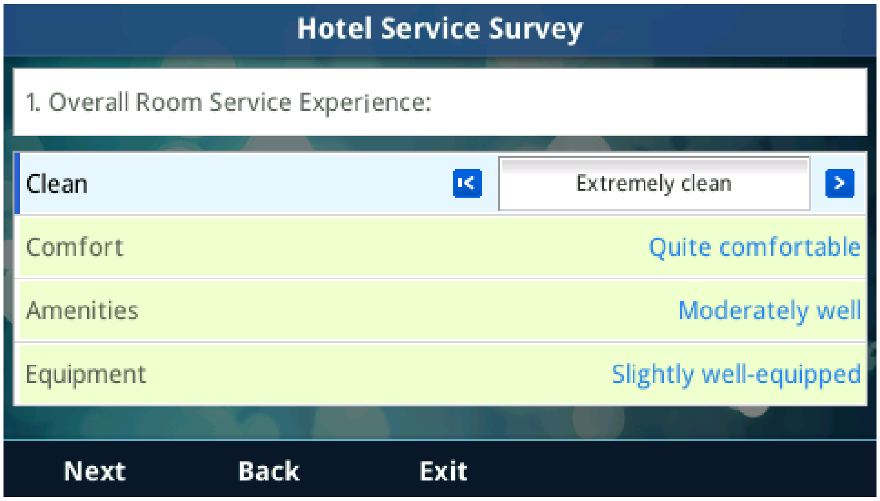
**Table 5: Child Elements and Attributes for <select> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **select** | **Element** | **Optional** | **-** | |
| label | <select> Attribute | Mandatory | string | Defines the display name of the selection field. |
| name | <select> Attribute | Mandatory | string | Defines a unique id of the select field. It pairs with the selected value. |
| type | <select> Attribute | Optional | single or multiple | Specifies selection list style:<br>single – single selection only;<br>multiple – checkbox style. |
| option | Child element | Optional | - | Defines selection list options. |
| text | <option> Attribute | Mandatory | string | Defines the display text of the option. |
| value | <option> Attribute | Mandatory | string | Defines the value will be sent to server when the option is chosen. |

**Example 1 - Select type "single":**

The selection list for “Clean” is defined.

```
<select label="Clean" type="single" name=":survey_clean">
            <option text="Extremely clean" value="5" selected="true"/>
            <option text="Quite clean" value="4"    />
            <option text="Moderately clean" value="3"    />
            <option text="Slightly clean" value="2"    />
            <option text="Not at all clean" value="1"    />
</select>
```



Hotel Service Survey

1. Overall Room Service Experience:

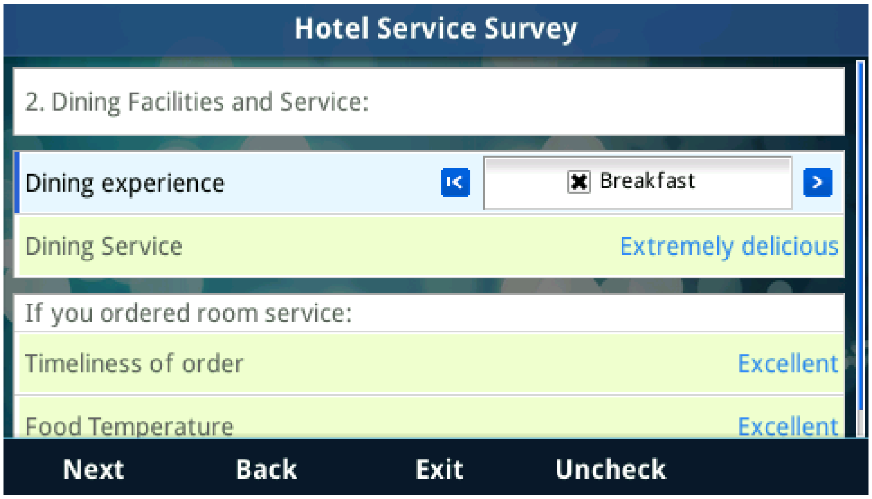
| | |
|---|---|
| Clean | Extremely clean |
| Comfort | Quite comfortable |
| Amenities | Moderately well |
| Equipment | Slightly well-equipped |

**Figure 10: Single Selection Example**

**Example 2 – Select type “multiple”:**

Checkbox style is defined for multiple choices.

```
<select label="Dining experience" type="multiple" name=":survey_dining_experience">
            <option text="Breakfast" value="breakfast" />
            <option text="Dinner" value="dinner"    />
            <option text="Room Service" value="roomService"    />
</select>
```



Hotel Service Survey

2. Dining Facilities and Service:

Dining experience ☒ Breakfast

Dining Service Extremely delicious

If you ordered room service:

Timeliness of order Excellent

Food Temperature Excellent

**Figure 11: Multiple Selection Example**

## <input> ELEMENT

This element is to render input fields on screen so that users could enter necessary information to submit or proceed.

```
<input label="Input Display Name" name="field id" ></input>
```

### <input> ELEMENT DETAILS

**Table 6: Attributes for <input> Element**

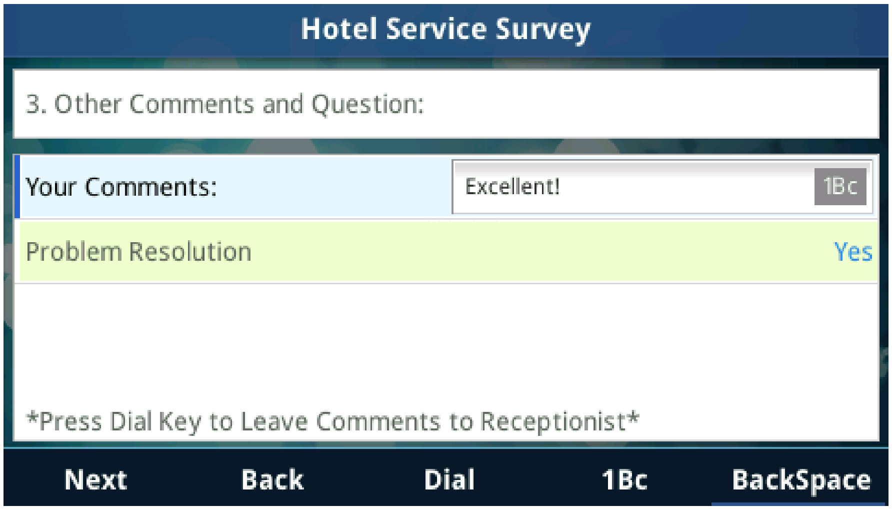
| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **input** | **Element** | **Optional** | **-** | |
| label | Attribute | Mandatory | string | Defines the display name of the input field. |
| name | Attribute | Mandatory | string | Defines a unique id for the input field. It pairs with the input text. |

| | | | | |
|---|---|---|---|---|
| maxLength | Attribute | Optional | string | Defines the maximum length of the input content. |
| type | Attribute | Optional | password ; number | If “password” type is defined, the input field will accept password; if “number” type is defined, the input field will only accept number input; otherwise, the field will display inputs as clear text, by default. |

**Example 1 - Input type "text":**

The entered digit entered in “Your Comments” will display as follows.

```
<input label="Your Comments:" name=" :survey_comment " />
```



Hotel Service Survey

3. Other Comments and Question:

Your Comments: Excellent!

Problem Resolution Yes

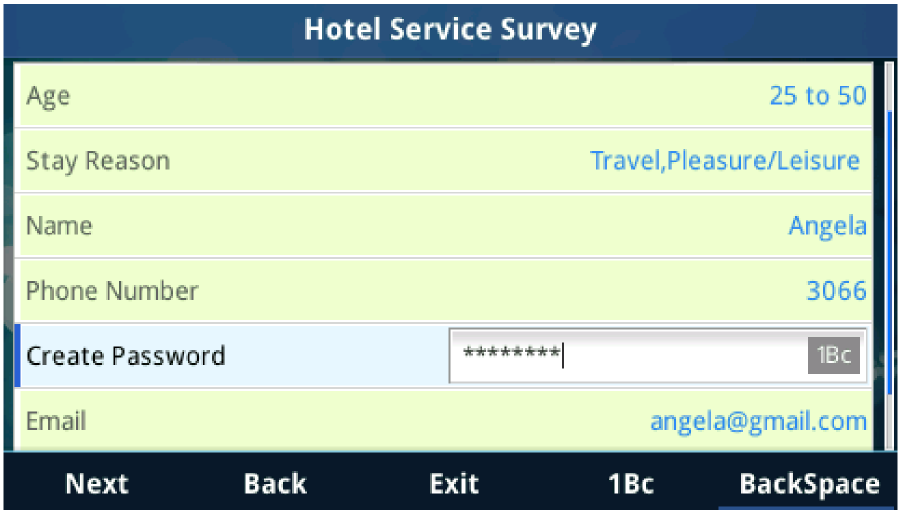
*Press Dial Key to Leave Comments to Receptionist*

Figure 12: Input Text Example

**Example 2 - Input type "password":**

If he input field type defines as password, “*” will be displayed rather than entered digits.

```
<input label="Create Password" name=":survery_personal_password" type="password"></input>
```



Hotel Service Survey

Age 25 to 50

Stay Reason Travel,Pleasure/Leisure

Name Angela

Phone Number 3066

Create Password ********

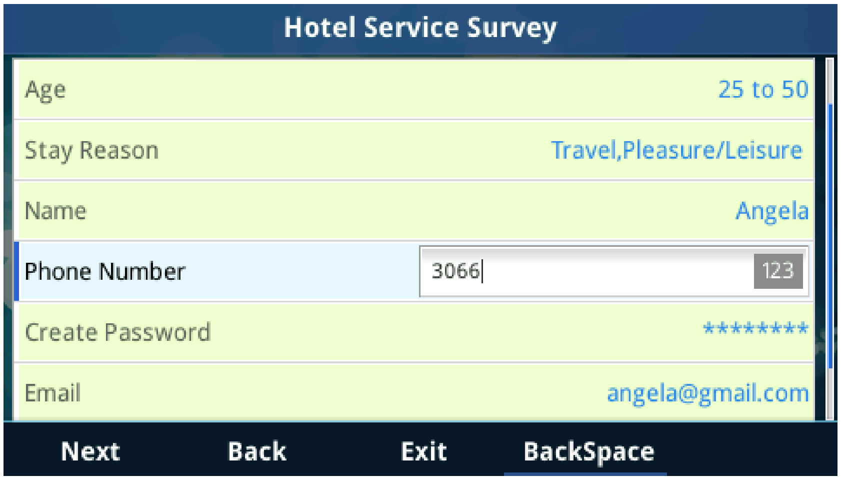
Email angela@gmail.com

**Figure 13: Input Password Example**

**Example 3 - Input type "number":**

The input field requires maximum 11-digit number. The entered digit will display as it is.

```
<input label="Phone Number" name=":survery_personal_phone" type="number" maxLength="11">
</input>
```



Hotel Service Survey

Age 25 to 50

Stay Reason Travel,Pleasure/Leisure

Name Angela

Phone Number 3066

Create Password ********

Email angela@gmail.com

**Figure 14: Input Number Example**

## <text> ELEMENT

This element is for text display.

```
<text label="input text for display here"></text>
```

### <text> ELEMENT DETAILS

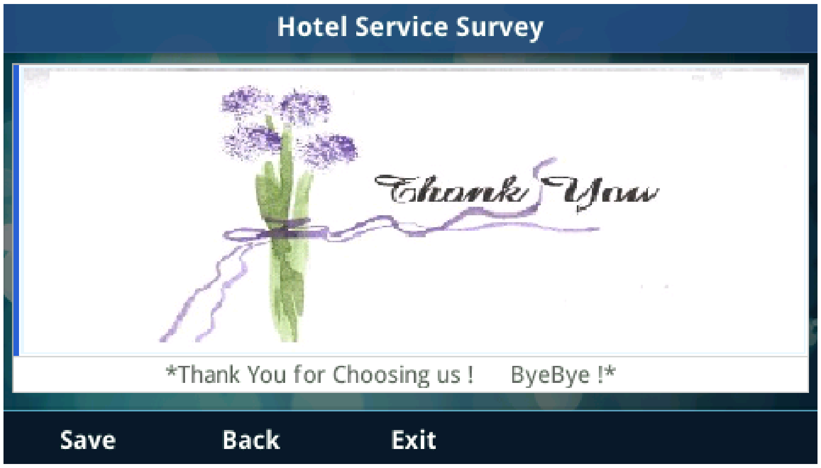
**Table 7: Attributes for <text> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **text** | **Element** | **Optional** | **-** | |
| label | Attribute | Mandatory | string | Defines the display text of the field. |

**Example 1 – text:**

Display the content of label on screen.

```
<text label="        *Thank You for Choosing us !    ByeBye !*"></text>
```



Hotel Service Survey

*Thank You for Choosing us !     ByeBye !*

**Figure 15: Text and Image Element Example**

## <image> ELEMENT

This element is for text display.

```
<image path="input image URL here"></image>
```

### <image> ELEMENT DETAILS

<image> element supports common image format, like png, jpeg and etc.

**Table 8: Attributes for <image> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **image** | **Element** | **Optional** | **-** | |
| path | Attribute | Mandatory | URL | Defines the display image of the field. |

**Example 1 – Image:**

Display the path linked image on screen. It will be displayed as Figure 14.

```
<image path="http://mypath.com/thankyou.png"></image>
```

## <Softkeys> ELEMENT

This element is the parent element of <Softkey>. The purpose is to set up the softkey display and action. This element is optional.

```
<Softkeys>
    <Softkey>
    Softkey information here
    </Softkey>
 </Softkeys>
```

### <Softkeys> ELEMENT DETAILS

**Table 9: Child Elements for <Softkeys> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **Softkeys** | **Element** | **Mandatory** | **-** | |
| Softkey | Child element | Mandatory | - | Defines each softkey' s display and action |

## <Softkey> ELEMENT

This element defines each softkey's label and action. This element is mandatory. If there are more than 3 or 4 softkeys set up here (depending on the softkey number of different models), a "MORE" softkey will be displayed automatically to access all the active softkeys.

```
<Softkey action="Softkey action" label="Softkey label" commandArgs="Argument" />
```

### <Softkey> ELEMENT DETAILS

Table 10: Attributes for <Softkey> Element

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **Softkey** | **Element** | **Mandatory** | **-** | |
| action | <Softkey> Attribute | Mandatory | string | "Dial", "UseURL", "AppendInputURL", "QuitApp" |
| label | <Softkey> Attribute | Mandatory | string | Displays the softkey name |
| commandArgs | <Softkey> Attribute | Optional | string | URL information, or number |
| commandId | <Softkey> Attribute | Optional | int | Only for action=Dial. This specifies the account index to dial out the call from, starting from 0 for account 1 |

------------------------------------------------------------------------------------------------------------------------

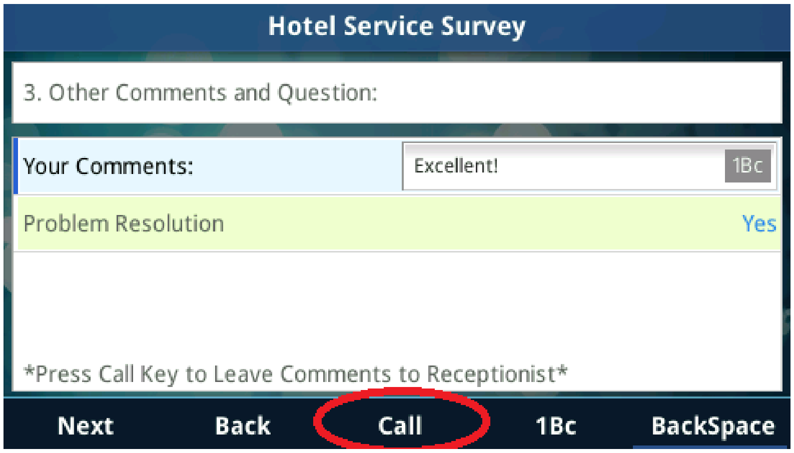
**Note**: The action “Dial” is only applicable under <Softkey> element.

------------------------------------------------------------------------------------------------------------------------

**Example 1 - Dial:**

A softkey “Call" will be displayed. When pressing on it, number 622 will be dialed out using account 1.

```
<Softkey action="Dial" label="Call" commandArgs="622" commandId="0" />
```



Hotel Service Survey

3. Other Comments and Question:

Your Comments: Excellent! 1Bc

Problem Resolution Yes

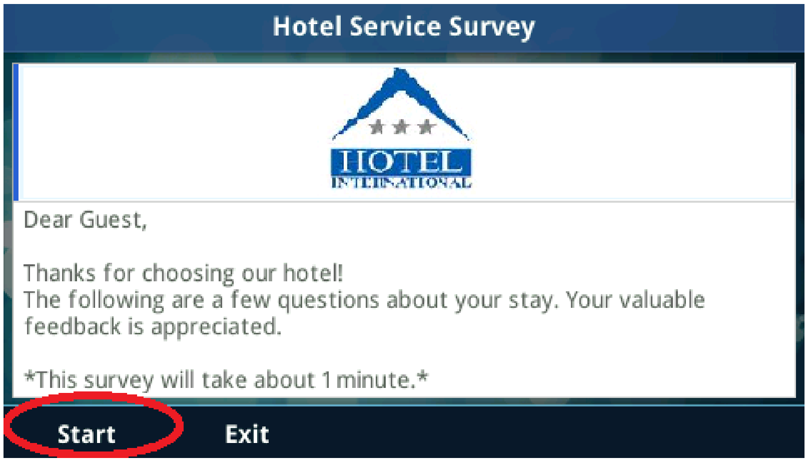
*Press Call Key to Leave Comments to Receptionist*

Figure 16: Softkey Dial Example

**Example 2 - UseURL:**

A softkey "Start" will be displayed. When pressing it, phone will send out HTTP request to the link specified in commandArgs. The XML document in link "*http://mypath.com/page2.xml* " will be displayed. This could be used for directing to Next page, or back to Previous page in the XML application.

```
<Softkey action="UseURL" label="Start" commandArgs=" http://mypath.com/page2.xml "/>
```



Hotel Service Survey

Dear Guest,

Thanks for choosing our hotel!
The following are a few questions about your stay. Your valuable feedback is appreciated.

*This survey will take about 1 minute.*

**Figure 17: Softkey UseURL Example**

The URL in commandArgs could also have variables directly appended to reflect user's response in XML application. The following "Yes" softkey pressing will trigger request for link with answer=yes at the end.

```
<Softkey action="UseURL" label="Yes"
commandArgs="http:// mypath.com /question1.php?answer=yes" />
```

**Example 3 - AppendInputURL:**

A softkey "Login" will be displayed. When pressing it, phone will send out HTTP request to the link with "name=value" formatted appendix, which specified in <input> element field. For example, if the <input> element has an attribute: name="id", and the user enters "1234" in this input field, the requested link will be "http://mypath.com/login.php?id=1234". Finally, the output result could be passed to the next XML application page.

```
<Softkey action="AppendInputURL" label="Login" commandArgs="http:// mypath.com /start.php" />
```

If there are many input fields defined in one page, please make sure every input element has unique name. All of them will be appended to the commandArgs in sequence. For example, final url would be "*http://mypath.com/page2.php?id=1234&password=abcd*" where two input elements with name=”id” and name=”password” are defined respectively,

Only one value from a specific input field, rather than all of them, could be added as an appendix. For example, user could refer to an url “*http://mypath.com/page2.php?id=<?php echo $questionID;?>*” by retrieving the entered value from ‘name=”id”’ input field.

```
<Softkey action="AppendInputURL" label="Next"
  commandArgs="http://mypath.com/page2.php?id=<?php echo $questionID;?>” />
```

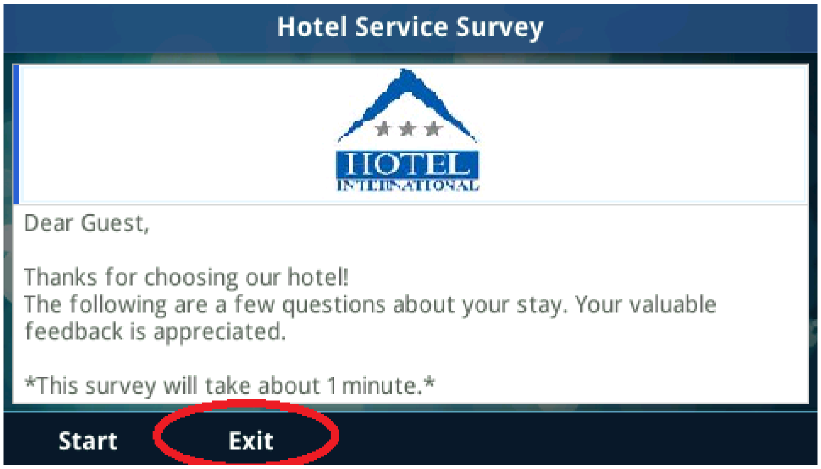
Also, HTTPS URL can be used.

```
<Softkey action="AppendInputURL" label="Login" commandArgs=" http://mypath.com/start.php" />
```

**Example 4 - QuitApp:**

A softkey "Exit" will be displayed. When pressing it, phone will quit the XML application and go back to idle screen.

```
<Softkey action="QuitApp" label="Exit" />
```



Hotel Service Survey

Dear Guest,

Thanks for choosing our hotel!
The following are a few questions about your stay. Your valuable feedback is appreciated.

*This survey will take about 1 minute.*

**Figure 18: Softkey Exit Example**

## <Events> ELEMENT

This element enables the phone to respond to certain pre-defined event.

```
  <Events>
     <Event>
            Event
     </Event>
</Events>
```

### <Events> ELEMENT DETAILS

**Table 11: Child Element for <Events> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **Events** | **Element** | **Optional** | **-** | |
| Event | Child element | Mandatory | - | Defines each event |

## <Event> ELEMENT

In one XML document, multiple <Event> elements could be used. However, the state for each event must be unique for action to handle.

```
<Event state="Event state">
        <Action action="Action name" commandArgs="Action argument"></Action>
</Event>
```

### <Event> ELEMENT DETAILS

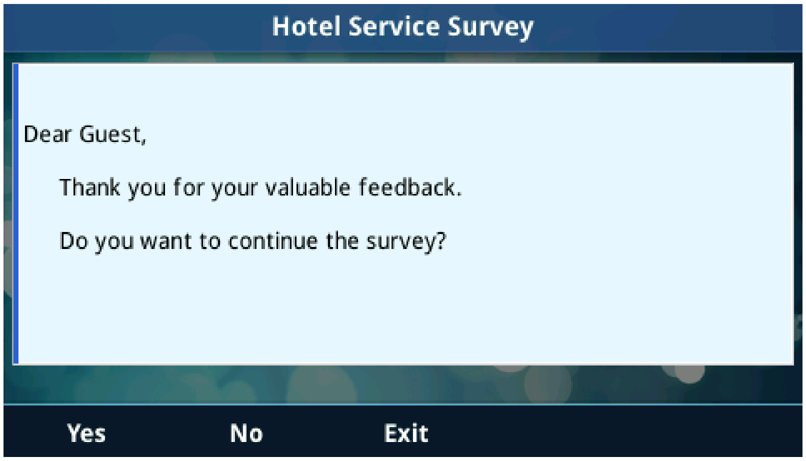
**Table 12: Child Elements and Attributes for <Event> Element**

| Object | Position | Type | Values | Comments |
|---|---|---|---|---|
| **Event** | **Element** | **Mandatory** | **-** | |
| state | <Event> Attribute | Mandatory | string | Please refer to "ATTRIBUTE state" section for values and meaning |
| Action | Child element | Mandatory | - | |
| action | <Action> Attribute | Mandatory | string | |
| commandArgs | <Action> Attribute | Optional | string | |

**Example:**

When event "callStateEnded" is triggered during the XML application, a HTTP request to the specified <URL> will be sent out while action defines as”UseURL”. Then the screen will display the XML document in that link.

```
<Events>
    <Event state="callStateEnded">
        <Action action="UseURL" commandArgs="http://mypath.com/page7.xml"></Action>
    </Event>
</Events>
```



Hotel Service Survey

Dear Guest,

Thank you for your valuable feedback.

Do you want to continue the survey?

**Figure 19: CallStateEnded Event Example**

# XML APPLICATION ELEMENT ATTRIBUTE

## ATTRIBUTE STATE

Attribute state is used for <Event> element. This attribute is mandatory.

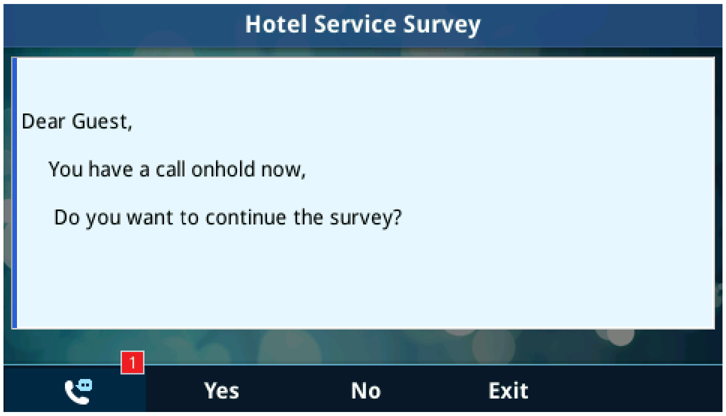
**Table 13: Attribute State**

| state | Details |
|---|---|
| callStateStarted | When phone is switching to call state (e.g., offhook to dialing state, or an incoming phone call) from idle |
| callStateEnded | When phone is switching to idle from call state |
| resumeFromCallConnected | Resume XML application from Call Connected state |
| resumeFromCallFailed | Resume XML application from Call Failed state |
| resumeFromCallOnhold | Resume XML application from Call On Hold state |
| resumeFromCallRinging | Resume XML application from Call Ringing state |
| onhook | When phone is onhook |
| offhook | When phone is offhook |

**Example:**

When event " resumeFromCallOnhold " is triggered during the XML application, for example, press to resume XML from call on hold state, Then the screen will display the XML document in that link.

```
<Events>
        <Event state=" resumeFromCallOnhold ">
                <Action action="UseURL" commandArgs="http://mypath.com/page8.xml"></Action>
        </Event>
</Events>
```



Hotel Service Survey

Dear Guest,

You have a call onhold now,

Do you want to continue the survey?

**Figure 20: ResumeFromCallOnhold Event Example**

# USE LANGUAGE STRING IN XML APP

To use the default language string in XML App, without copying and pasting the whole string into the XML file, the users can simply take advantage of the string ID instead. Inside the language file, each string is paired with a unique index number for identification. The string should be well formatted as **{L[*string_number*]}**, in which ***string_number*** is the index of the desired string.

Here is how the language string file look like. Users could find each string text has an index number associated with it at the beginning in the format of {index, length, “text”}.

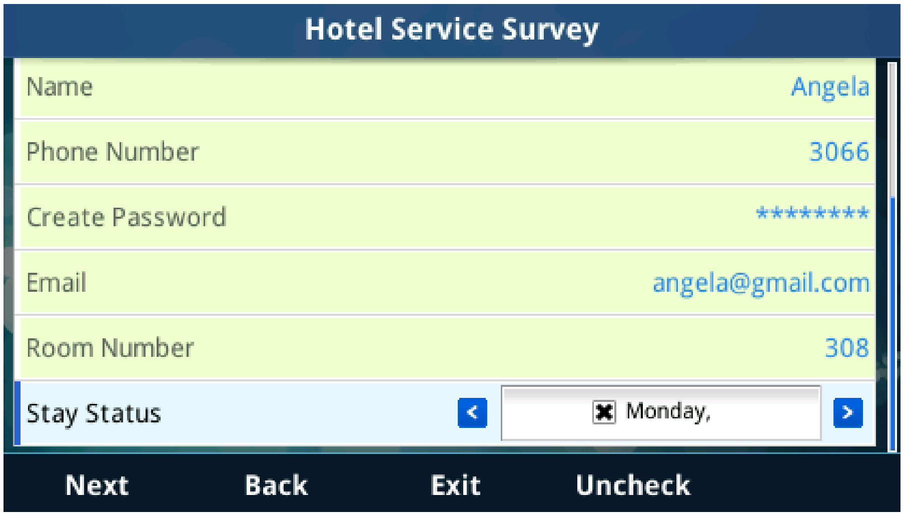
```
…
 {14,18, "Status"},
…
 {128,18, "Sunday, "},
 {129,18, "Monday, "},
 {130,18, "Tuesday, "},
 {131,18, "Wednesday, "},
 {132,18, "Thursday, "},
 {133,18, "Friday, "},
 {134,18, "Saturday, "}
…
```

The language string can be used in two elements: the <text> attribute of <option> element and the <label> element.

**Example: Use language string in <text> element and <label> element.**
A selection field requires selecting a language for displaying.

```
<?xml version="1.0" encoding="UTF-8"?>
<xmlapp title="Hotel Service Survey">
        <view>
                <section>
                        <select label="Stay {L[14]}" name=":survery_personal_date" type="multiple">
                                <option text="{L[128]}" value="7" />
                                <option text="{L[129]}" value="1" />
                                <option text="{L[130]}" value="2" />
                                <option text="{L[131]}" value="3" />
                                <option text="{L[132]}" value="4" />
                                <option text="{L[133]}" value="5" />
                                <option text="{L[134]}" value="6" />
                        </select>
```

```
            </section>
        </view>
        <Softkeys>
               <Softkey action="UseURL" label="Next" commandArgs="http://192.168.40.179/page6.xml"/>
                <Softkey action="UseURL" label="Back" commandArgs="http://192.168.40.179/page4.xml"/>
                <Softkey action="QuitApp" label="Exit"/>
        </Softkeys>
        <Events>
                <Event state="callStateEnded">
                        <Action action="UseURL" commandArgs="http://192.168.40.179/page7.xml"></Action>
                </Event>
        </Events>
</xmlapp>
```



Hotel Service Survey

| | |
|---|---|
| Name | Angela |
| Phone Number | 3066 |
| Create Password | ******** |
| Email | angela@gmail.com |
| Room Number | 308 |
| Stay Status | ☒ Monday, |

**Figure 21: Language String Example**

--------------------------------------------------------------------------------------------------------------------------------

**Note:**

Please contact Grandstream technical support to obtain the default language string file that has index listed for each string for the latest firmware.

--------------------------------------------------------------------------------------------------------------------------------