



Grandstream Networks, Inc.

XML Based Downloadable Phone Book Guide

GXP21xx/GXP14xx/GXP116x IP Phone

Version 2.0

XML Based Downloadable Phone Book Guide

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INTRODUCTION

The Grandstream GXP21xx/GXP14xx/GXP116x supports XML based downloadable phone book for users to share and maintain a phone book via the web easily. Besides LDAP support and manually editing from LCD or Web GUI, the GXP21xx/GXP14xx/GXP116x offers this XML API as a user-friendly download/upload method via the phone's web GUI.

For the ease of efficient deployment and management, the XML phone book file could be stored on a web server for the phones to download. There are also applications that require a centralized directory server and have all phones synchronized with the server periodically.

This document specifies the Grandstream XML based downloadable phone book configuration that will be applied to GXP21xx/GXP14xx/GXP116x firmware version 1.0.5.15. An example XML phone book file is provided at the end of this guide. Users could start a phone book by adding contacts to the example file or by exporting the existing phone book file from phone's Web GUI.

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. contents in a section header is different from contents in a footnote). Almost all documents are structured.

*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 and allows the phones to interact with external applications in a flexible and programmable manner. The GXP21xx/GXP14xx/GXP116x supports three specific XML API: XML Custom Screen, XML Phone Book, and XML Application (GXP21xx only).

XML API ARCHITECTURE

The XML based phone book downloading for the GXP21xx/GXP14xx/GXP116x could use HTTP/HTTPS

or TFTP as the transport protocol. The following figure shows how it works via HTTP as an example. First, the GXP21xx/GXP14xx/GXP116x initiates the HTTP GET Request to the HTTP server and waits for the response. Once the phone receives the response with XML content in BODY, it displays the information.

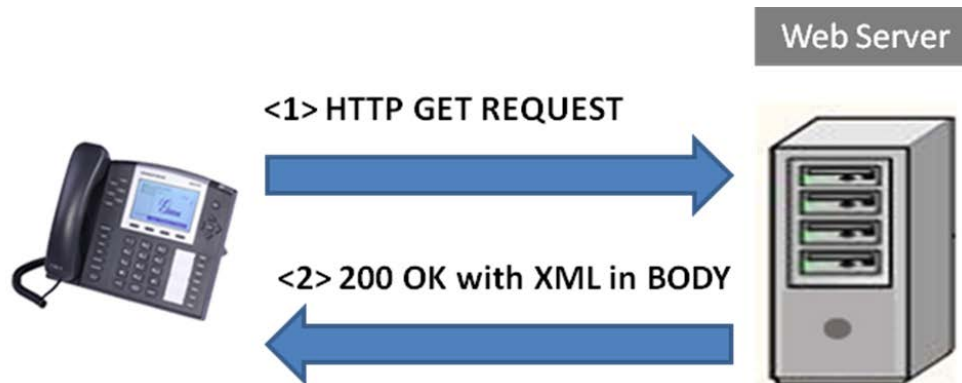


Figure 1: GXP21xx/GXP14xx/GXP116x XML API via HTTP

Two types of XML API architecture are introduced below, depending on whether the transaction is via LAN or Internet.

1. A transaction in the LAN may exchange information in the following manner. The GXP21xx/GXP14xx/GXP116x sends a request to the web server via HTTP/HTTPS/TFTP and waits for a response with the XML contents. The web server will handle the request and communicate with the application server to get the information for the XML phone book content display. The following figure shows downloading XML phone book file via HTTP within a LAN.

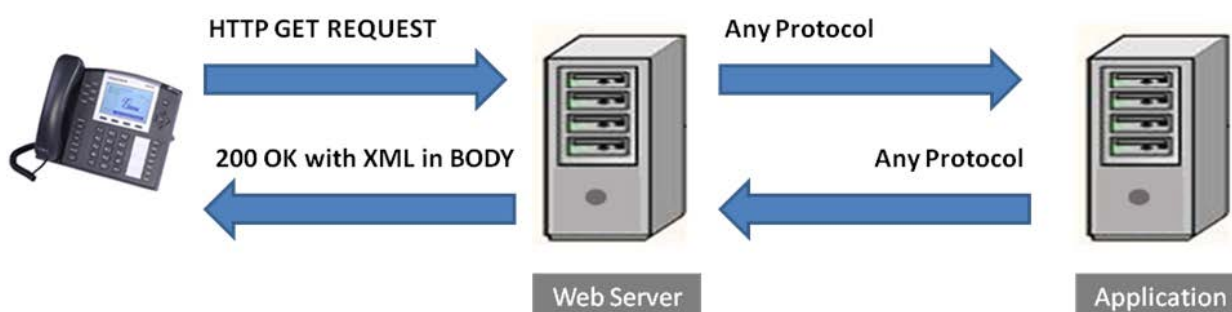


Figure 2: GXP21xx/GXP14xx/GXP116x XML API Structure 1

2. If the above Web Server accesses Internet, it could interact with outside web server and respond with real-time content to the GXP21xx/GXP14xx/GXP116x.

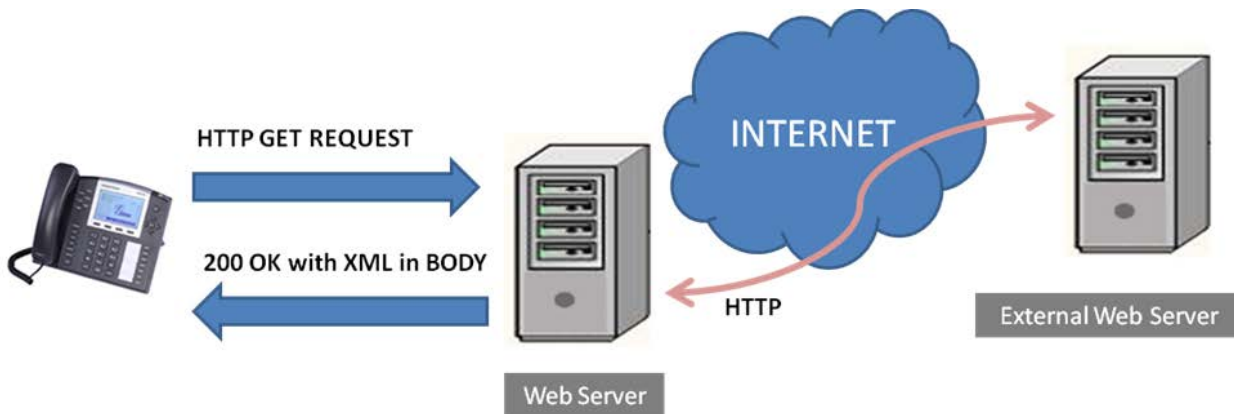


Figure 3: GXP21xx/GXP14xx/GXP116x XML API Structure 2

As illustrated above, all the logic lies within the server side of the architecture. The GXP21xx/GXP14xx/GXP116x phone just receives the XML documents and displays it accordingly.

XML PHONEBOOK CONFIGURATION

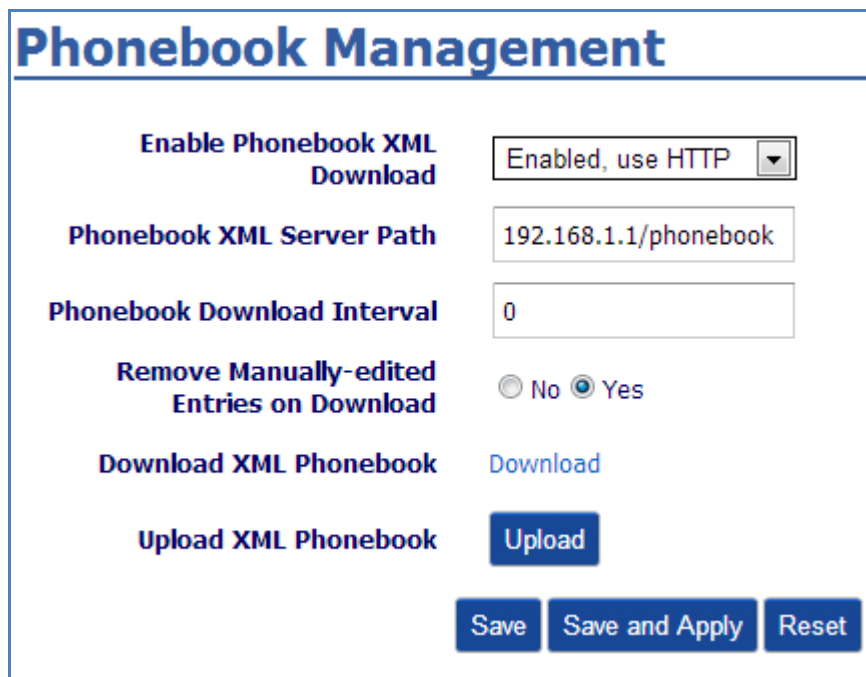
FIRMWARE

Before the XML phone book is used on GXP21xx/GXP14xx/GXP116x, please make sure the firmware on the phone is upgraded to the latest version. Please refer to the following link for firmware upgrading information:

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

WEB GUI CONFIGURATION

To download the XML phone book file to GXP21xx/GXP14xx/GXP116x, first enable the XML Phone Book Download and configure the Server Path under Web GUI->Phone Book->Phone Book Management page.



The screenshot shows the 'Phonebook Management' web GUI configuration page. It includes the following fields and controls:

- Enable Phonebook XML Download:** A dropdown menu set to 'Enabled, use HTTP'.
- Phonebook XML Server Path:** A text input field containing '192.168.1.1/phonebook'.
- Phonebook Download Interval:** A text input field containing '0'.
- Remove Manually-edited Entries on Download:** Radio buttons for 'No' and 'Yes', with 'Yes' selected.
- Download XML Phonebook:** A blue 'Download' button.
- Upload XML Phonebook:** A blue 'Upload' button.
- Save/Action Buttons:** Three blue buttons at the bottom: 'Save', 'Save and Apply', and 'Reset'.

Figure 4: Web GUI Configuration

- **Enable Phone Book XML Download**

The phone book XML file could be downloaded via HTTP, HTTPS or TFTP. By default it's "Disabled".

- **Phone Book XML Server Path**

This specifies the path where the phone is going to download the XML phone book file. The maximum length is 256 characters. Since download method is already specified in the previous selection, users do not have to provide this information in the server path. The accepted format are as follows:

IP_address[:port]/dir

Hostname[:port]/dir

Examples:

192.168.40.10/XMLphone bookdir

192.168.40.10:443/XMLphone bookdir

service.mycompany.com/XML/phone book

mycompany.com:8080/phone book

Note:

1. If "[:port]" is not specified, port 80 will be used as default for HTTP. Port 443 will be used as default for HTTPS and Port 69 will be used as default for TFTP;
2. The GXP21xx/GXP14xx/GXP116x will always look for the phone book file **phonebook.xml** for downloading. There is no need to specify the file name in the phone book XML server path. Users only need specify the directory path where the **phonebook.xml** file is located.

- **Phone Book Download Interval**

This specifies the phone book automatic download interval (in minutes). The valid range is 0, and 5 to 720. If it's set to 0, automatic download will be disabled.

- **Remove Manually-edited Entries on Download**

If this option is set to "Yes", all the entries manually added from LCD or Web GUI will be automatically removed when the XML phone book is downloaded to the phone. The default value is "Yes".

After the above configuration, click on "Save and Apply" in the web GUI page. The phone will download, parse and display the XML phone book upon pressing the keypad MENU->Phone Book->Download Phone Book XML.

PROVISIONING

Users may also use the config file to provision the phone with the above XML phone book downloading options. In this case, the GXP21xx/GXP14xx/GXP116x needs to be rebooted and provisioned. The corresponding P values are as shown below.

- **P330:** Enable Phone Book XML Download. Possible values: 0 (Disabled) / 1 (HTTP) / 2 (TFTP) / 3 (HTTPS); other values are ignored. The default value is 0.
- **P331:** Phone Book XML Server Path. This is a string up to 256 characters that should contain a path to the phonebook.xml file. It MUST be in the host/path format.
- **P332:** Phone Book Download Interval (in minutes). Possible values: 0, 5 to 720; other values are ignored. The default value is 0 (automatic download disabled).
- **P333:** Remove Manually-edited entries on Download. Possible values: 0 (No) / 1 (Yes); other values are ignored. The default value is 1.

When the device boots up and the provisioning routine is completed, it will attempt to download the **phonebook.xml** file specified in "Phone Book XML Path" and process it. Please note that the phone book file name is fixed, so you can not alter the phone book file name based on your preference. If the "Phone Book Download Interval" is set to a non-zero value, a recurring timer will be activated periodically to check the phone book file in the server and the phone will repeat this process automatically.

Note:

1. As you may know, it is also possible to enter the XML phone book file server path into a web browser. In this way you'll be able to see the exact XML document on your PC that your phone will be receiving.
2. The downloaded XML phone book file can be displayed but it won't be saved internally on the phone. It is recommended to save the XML phone book file externally on your PC or server for your reference and future use.

IMPORT/EXPORT PHONEBOOK

Besides downloading phone book file from remote server, users could also directly import phonebook.xml to the web GUI from local PC. If there is an existing phone book in the phone, users may export the file to local PC as well. The options are under Web GUI->Phone Book->Phone Book Management page.

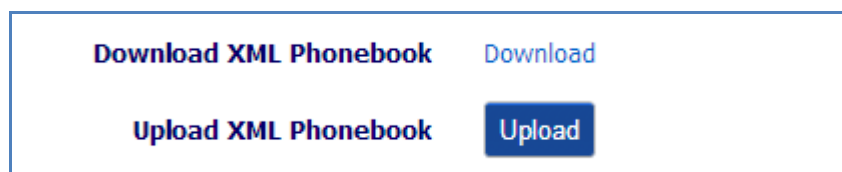


Figure 5: Import and Export Phone Book XML File

- **Download XML Phone Book**

Click on the "Download" button to download the *phonebook.xml* file to your PC locally.

- **Upload XML Phone Book**

Click on the "Upload" button and then select the *phonebook.xml* file from your PC to upload to the phone directly.

PHONEBOOK XML SYNTAX

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 the GXP21xx/GXP14xx/GXP116x, UTF-8 is used as encoding method for correct display.

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

PHONEBOOK XML STRUCTURE

The XML phone book example for GXP21xx/GXP14xx/GXP116x can be found in the last section of this document. The main structure is represented as below.

```
<AddressBook>

  <Contact>
    <LastName>Enter last name here</LastName>
    <FirstName>Enter first name here</FirstName>
    <Phone>
      <phonenumber>Enter phone number here</phonenumber>
      <accountindex>Enter account index here</accountindex>
    </Phone>
    <Groups>
      <groupid>Enter group ID here</groupid>
    </Groups>
  </Contact>

  <Contact>
    <!-- Enter another contact information here, same format as above -->
  </Contact>

</AddressBook>
```

PHONEBOOK XML ELEMENT

This section describes details of the XML element used in GXP21xx/GXP14xx/GXP116x XML phone book file. Please note that the element name is case-sensitive when being used in XML document.

ROOT ELEMENT <AddressBook>

<AddressBook> is the root element of the XML document. This element is mandatory.

```
<AddressBook>
  <!-- Enter phone book information here -->
</AddressBook>
```

Table 1: <AddressBook> Element

Object	Position	Type	Values	Comments
AddressBook	Root element	Mandatory	-	Root element of the XML document
Contact	Child element	Mandatory	-	Each contact is a phone book entry

<Contact> ELEMENT

```
<Contact>
  <LastName>Enter last name here</LastName>
  <FirstName>Enter first name here</FirstName>
  <Phone>
    <phonenumber>Enter phone number here</phonenumber>
    <accountindex>Enter account index here</accountindex>
  </Phone>
  <Groups>
    <groupid>Enter group ID here</groupid>
  </Groups>
</Contact>
```

Table 2: <Contact> Element

Object	Position	Type	Values	Comments
Contact	Element	Mandatory	-	Each contact is an entry
LastName	Child element	At least one of them is present	String	Last name of the contact
FirstName	Child element		String	First name of the contact
Phone	Child element	Mandatory	-	Number and account index
Groups	Child element	Optional	-	Group ID

<Phone> ELEMENT

<pre> <Phone> <phonenumber>Enter phone number here</phonenumber> <accountindex>Enter account index here</accountindex> </Phone> </pre>
--

Table 3: <Phone> Element

Object	Position	Type	Values	Comments
Phone	Element	Mandatory	-	
phonenumber	Child element	Mandatory	int	Phone number
accountindex	Child element	Mandatory	int	From 1 to 6 to account 1 to 6

<Groups> ELEMENT

<pre> <Groups> <groupid>Enter group ID here</groupid> </Groups> </pre>
--

Table 4: <Groups> Element

Object	Position	Type	Values	Comments
Groups	Element	Optional	-	
groupid	Child element	Mandatory	Int. Valid value from 0 to 9.	0: Family 1: Friends 2: Work 3 to 9: Manually added groups from LCD.

XML PHONEBOOK EXAMPLE

```
<?xml version="1.0" encoding="UTF-8"?>
<AddressBook>
  <Contact>
    <LastName>Doe</LastName>
    <FirstName>John</FirstName>
    <Phone>
      <phonenumber>8000</phonenumber>
      <accountindex>1</accountindex>
    </Phone>
    <Groups>
      <groupid>0</groupid>
    </Groups>
  </Contact>
  <Contact>
    <LastName>Smith</LastName>
    <FirstName>Alan</FirstName>
    <Phone>
      <phonenumber>8001</phonenumber>
      <accountindex>1</accountindex>
    </Phone>
    <Groups>
      <groupid>1</groupid>
    </Groups>
  </Contact>
  <Contact>
    <LastName>Lee</LastName>
    <FirstName>Lily</FirstName>
    <Phone>
      <phonenumber>6000</phonenumber>
      <accountindex>2</accountindex>
    </Phone>
    <Groups>
      <groupid>2</groupid>
    </Groups>
  </Contact>
</AddressBook>
```

The maximum number of contacts supported on GXP21xx/GXP14xx/GXP116x is shown in the table below. Please make sure the contact entry in your XML file does not exceed the max number supported on the corresponding model.

Table 5: GXP21xx Max Number of Contacts

Model	Max. Number of Contacts	Max. Number of Groups
GXP21xx	2000	10
GXP14xx	500	10
GXP116x	500	10

Note:

When the *phonebook.xml* is exported from the GXP21xx/GXP14xx/GXP116x, users might see <downloaded>0</downloaded> in the xml file. This indicates whether the existing entry is manually added or previously downloaded. When users create their own xml file, this element does not need to be included.