CORTELCO

Auto-Provision Specification

C Series IP Phones

9/12/2013

Contents

1. Preface

1.1 Introduction

This document is written to explain the operation of the auto-provision system.

1.2 Definitions

Auto-Provision – The system which allows configuration information to be automatically loaded into VoIP phones

PnP – Plug and Play

DHCP Custom Option – Special configuration information passed from a DHCP server.

DHCP Option 66 – Option normally reserved for TFTP server address. Can be used to pass the auto-provision server address. Note that this is not restricted to TFTP servers.

DHCP Option 43 – Option for Vendor Specific Information. Can be used to pass the auto-provision server address.

Phone Flash – Configuration server address stored in the memory of the phone.

AES – Advanced Encryption Standard

TR069 – Technical Report 069 – A specification which defines an application layer protocol for remote management of end-user devices.

ACS – Auto Configuration Server – Also known as auto-provision server

CPE – Customer Premise Equipment – Telephones and other endpoints

1.3 Process Summary

The steps in auto provisioning are as follows:

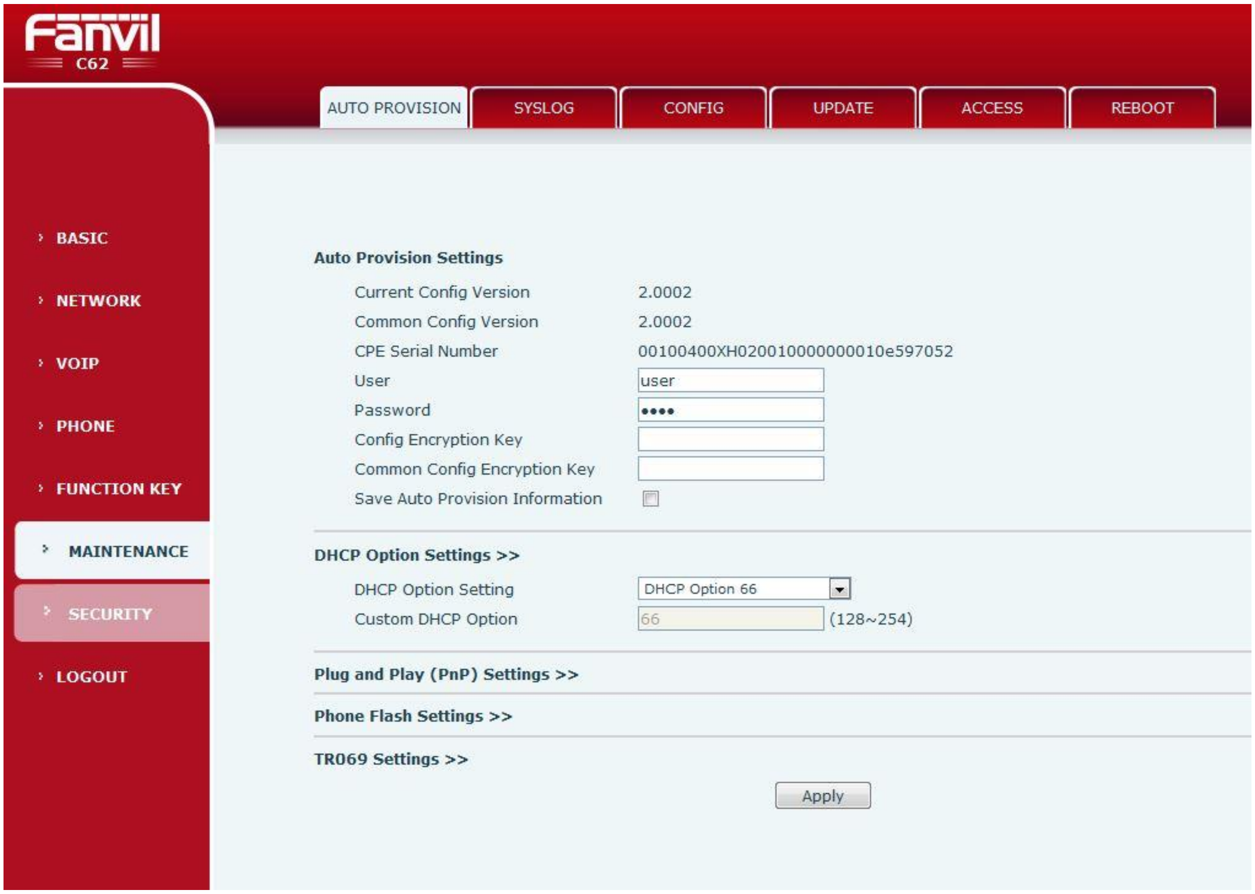
1. Obtain Server Address for storage of configuration files.
2. Download configuration files from server.
3. Apply the configuration file settings.
4. Perform any other updates (i.e. firmware)

2. Provisioning Methods

The Fanvil VoIP endpoints support 4 methods of obtaining the server address: Plug and Play (PnP), DHCP, Phone Flash and TR069. If the first three methods are enabled, the phone will proceed in the following order on boot-up: DHCP -> PnP Server -> Phone Flash. If TR069 is enabled, the phone will use this method even if the other methods are enabled.

2.1 DHCP

The phone can be configured via DHCP Custom Option, DHCP Option 43 or DHCP Option 66.   Note that DHCP options must also be configured in the DHCP server. This option is disabled by default.



Auto Provision Settings

Current Config Version 2.0002
Common Config Version 2.0002
CPE Serial Number 00100400XH020010000000010e597052
User user
Password ••••
Config Encryption Key
Common Config Encryption Key
Save Auto Provision Information ☐

DHCP Option Settings >>

DHCP Option Setting DHCP Option 66
Custom DHCP Option 66 (128~254)

Plug and Play (PnP) Settings >>

Phone Flash Settings >>

TR069 Settings >>

2.1.1 DHCP Custom Option

This must be configured by the web interface. The value must be from 128 to 254. If the phone does not get any information from the custom option, it will try the PnP Server and then the phone flash. If it gets information from the custom option, it will not try the PnP server or the phone flash.

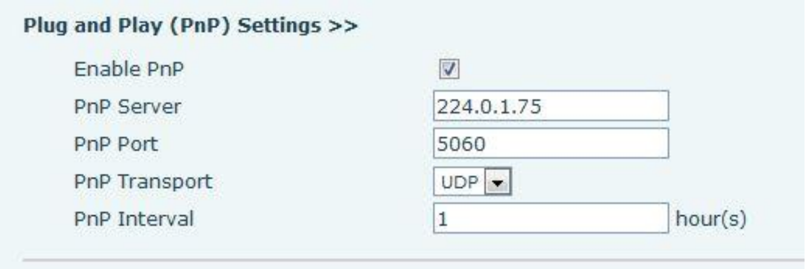
2.1.2 DHCP Option 66

This is the option normally reserved for the TFTP Server Address.   If the phone does not get any information from Option 66, it will try the PnP Server and then the phone flash. If it gets information from the custom option, it will not try the PnP server or the phone flash.

2.1.3 DHCP Option 43

This is the option reserved for Vendor Specific Information.   If the phone does not get any information from Option 43, it will try the PnP Server and then the phone flash. If it gets information from the custom option, it will not try the PnP server or the phone flash.

2.2 PnP Server

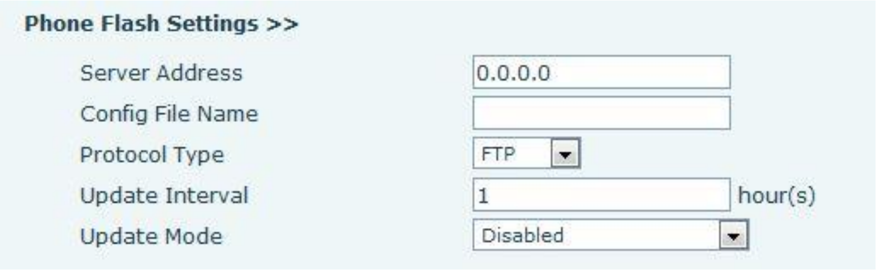


Plug and Play (PnP) Settings >>

Enable PnP	☑
PnP Server	224.0.1.75
PnP Port	5060
PnP Transport	UDP
PnP Interval	1 hour(s)

Plug and Play (PnP) is a proprietary method of auto provisioning. When this is Enabled, the phone will send SIP SUBSCRIBE messages to a multicast address when it boots up. Any SIP server understanding that message will reply with a SIP NOTIFY message containing the Auto Provisioning Server URL. This type of auto provisioning is mainly used when the phones have no default provisioning server set and are not able to detect DHCP options (i.e. static IP address). The PnP config has the highest priority. If a PnP server is detected, the phone will not go to the other processes.

2.3 Phone Flash

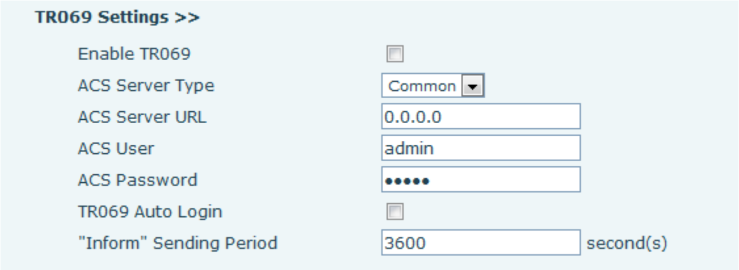


Phone Flash Settings >>

Server Address	0.0.0.0
Config File Name	
Protocol Type	FTP
Update Interval	1 hour(s)
Update Mode	Disabled

This is the server address read from the phone web page. The Protocol Type may be TFTP, FTP, HTTP, or HTTPS. If the file name is left blank, the phone will attempt to download the default files. See Section 3 for file naming convention. If the phone fails to get any information from the server or this option is Disabled, the Auto-provision process will stop.

2.4 TR069



TR069 Settings >>

Enable TR069	□
ACS Server Type	Common
ACS Server URL	0.0.0.0
ACS User	admin
ACS Password	●●●●●
TR069 Auto Login	□
"Inform" Sending Period	3600 second(s)

TR069 is a protocol which provides communication between CPE and the ACS. Before deploying TR069, there must be a valid ACS. Fanvil endpoints support two types of ACS: CTC and common. Different functions are supported for the different types of ACS. For CTC, the endpoints support downloading XML configuration format. For common they support SIP information, configuration and firmware.

3. Configuration Files

There are 4 different types of configuration files which may be downloaded during provisioning. These are Common, MAC-Oriented, ID-Oriented file and Custom. Normally the phone will download one common configuration file and one device specific configuration file – either MAC-Oriented or ID-Oriented. Parameters may be divided between these files as the user desires. If a custom file name is specified, only this file will be downloaded.

3.1 Common

The Common CFG file will be effective for all the phones of the same model. A common CFG file has a fixed name for each model. The names of the Common CFG file for each model are:

C62	f0C006200000.cfg
C60	f0C006000000.cfg
C58	f0C005800000.cfg
C56	f0C005600000.cfg

The second and third characters are the Series name (in this case – C). The fourth to the seventh characters are the model number and the last 5 characters are “00000.” In the future, the last 5 characters will become the hardware version.

3.2 MAC-Oriented

A MAC-Oriented CFG file only applies to one phone determined by the MAC address. For example, a phone with a MAC address of 00:15:65:11:3a:f8 will have a MAC-Oriented configuration file named 001565113af8.cfg.

3.3 ID-Oriented

The ID-Oriented CFG file only applies to one phone. It is used in conjunction with a file name request from the DHCP Server. See Section 5.2 for information about DHCP file name request. In this case, the phone will prompt the user for a file name. After the file name is entered, it will be downloaded from the server.

3.4 Custom

This file name is entered in the web interface. It is also specific to one phone. If a custom file name is specified in the web interface, it will be downloaded and other files will be ignored.

3.5 Encryption

If the configuration files have been AES encrypted, the AES Keys are required. The Common AES Key is for decrypting the Common CFG file. The Config Encrypt Key is for decrypting the MAC-Oriented CFG file. The keys must be 64 characters and the supported characters are: 0 - 9, A – F, and a - f.

3.6 Summary

The common file/specific file system is helpful in doing mass auto provision. For example, updating the firmware in 1000 C62s only requires the creation of one f00C006200000.cfg which defines the firmware update request.

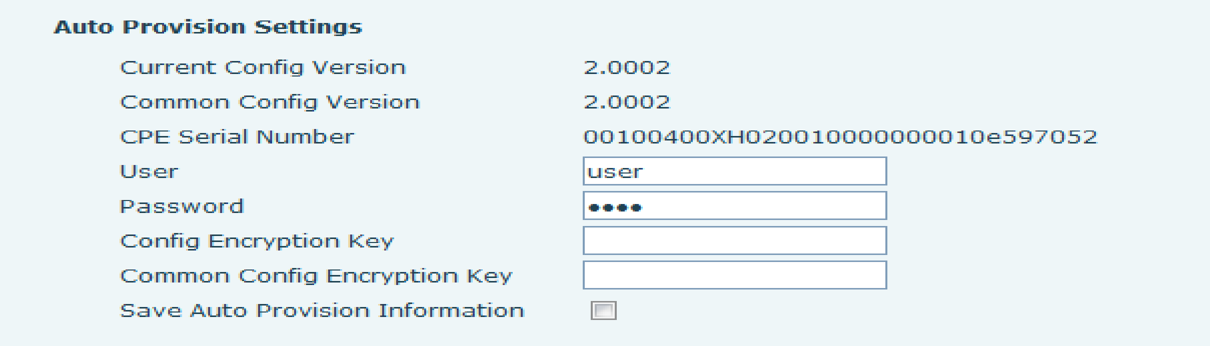
The endpoints compare the version of the current configuration and the version of the downloaded configuration. If the versions are the same, auto provision will stop.

The endpoints support three configuration formats. They are XML, CFG, and TXT.

Note: PnP and DHCP support Common CFG file, MAC-Oriented file and ID-Oriented file auto provision. The endpoints first download the Common CFG file, and then download the MAC-Oriented file or ID-Oriented file. The Phone Flash supports Common CFG file and MAC-Oriented file or Custom file. If a Custom file name is entered in the web page, the endpoint will download Custom file. If no Custom file name is entered, the endpoint will download the MAC-Oriented file.

4. Parameters

4.1 Auto Provision Settings



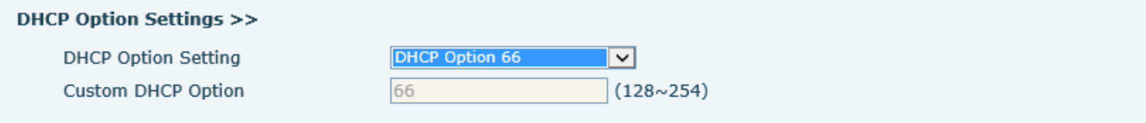
Auto Provision Settings

Current Config Version	2.0002
Common Config Version	2.0002
CPE Serial Number	00100400XH020010000000010e597052
User	user
Password	••••
Config Encryption Key	
Common Config Encryption Key	
Save Auto Provision Information	□

Field Name	Explanation
Current Config Version	The current phone specific config file version.
Common Config Version	The current common config file version.
CPE Serial Number	Serial number of the phone
User	Username for configuration server. Used for FTP/HTTP/HTTPS. If this is blank the phone will use anonymous.
Password	Password for configuration server. Used for FTP/HTTP/HTTPS.
Config Encryption Key	Encryption key for the configuration file
Common Config Encryption Key	Encryption key for common configuration file
Save Autoprovision Information	Save the Autoprovision username and password in the phone until the server url changes

4.2 DHCP Option Parameters

The phone supports configuration via DHCP Option 66, Option 43 or a Custom Option. The default is Option 66.

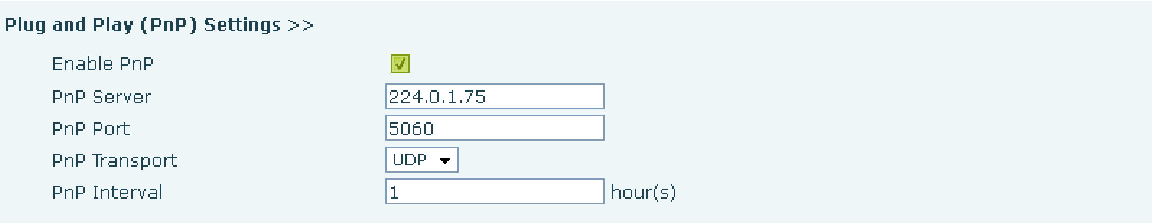


DHCP Option Settings >>

DHCP Option Setting	DHCP Option 66	
Custom DHCP Option	66	(128~254)

4.3 PnP Parameters

If this is enabled, the phone will send SIP SUBSCRIBE messages to a multicast address when it boots up. Any SIP server understanding that message will reply with a SIP NOTIFY message containing the Auto Provisioning Server URL where the phones can request their configuration.



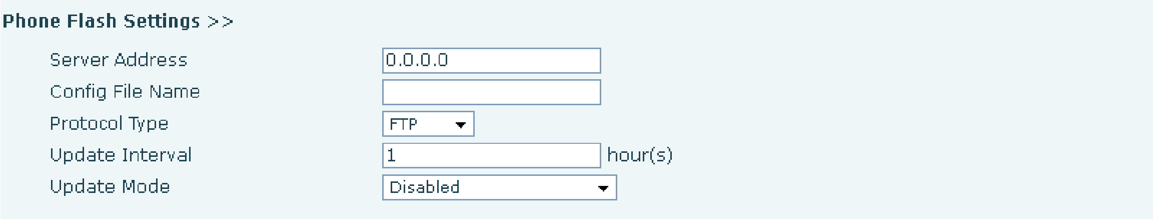
Plug and Play (PnP) Settings >>

Enable PnP	☑	
PnP Server	224.0.1.75	
PnP Port	5060	
PnP Transport	UDP	
PnP Interval	1	hour(s)

PnP supports $mac and $input URL format as well as username and password authentication.

4.4 Phone Flash Parameters

To configure via Phone Flash, the parameters must be entered in the phone web page.



Phone Flash Settings >>

Server Address	0.0.0.0	
Config File Name		
Protocol Type	FTP	
Update Interval	1	hour(s)
Update Mode	Disabled	

If Config File Name is left blank, the phone will process the standard common file name and MAC Oriented file name. If there is an entry in the Config File Name box, the phone will download configuration information from that file.

5. Do Other Updates

Other updates may be performed in conjunction with Auto-Provisioning.

5.1 Firmware Update

The following section of the CFG file specifies Firmware Update parameters. Two formats are supported.

5.1.1 Format 1

<AUTOUPDATE CONFIG MODULE>

```
Auto Image URL: xxx/yyy
Auto Image Version:
Auto Image User     :
Auto Image Password:
```

Auto Image URL is the URL of the firmware. For example: http://ip/firmware

Auto Image Version is the firmware version

Auto Image User is the username if necessary for the firmware server.

Auto Image Password is the password if necessary for the firmware server.

5.1.2 Format 2

```
<AUTOUPDATE CONFIG MODULE>
Auto Image Server: xxx/yyy
Auto Image Name     : xxx
Auto Image Version:
Auto Image User     :
Auto Image Password:
Auto Image Protocol: 2
```

Auto Image Server is the URL of the firmware. For example: http://ip/firmware

Auto Image Name is the name of the firmware file

Auto Image Version is the firmware version

Auto Image User is the username if necessary for the firmware server.

Auto Image Password is the password if necessary for the firmware server.

Auto Image Protocol specifies the download protocol to be used. (1 = FTP, 2=TFTP, 4=HTTP)

5.2 Phonebook Update

The following line in the CFG file specifies Phonebook Update parameters.

```
<AUTOUPDATE CONFIG MODULE>

Auto Pbook   Url     :
```

Auto Pbook   Url is the URL for the phonebook update. For example: http://ip/phonebook .

5.3 Authentication Certificate Update

The following line in the CFG file specifies Authentication Certificate Update parameters.

```
<AUTOUPDATE CONFIG MODULE>

Auto ect    Url       :
```

Auto ect   Url is the URL for the Certificate update. For example: http://ip/ect