



## Grandstream Networks, Inc.

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Grandstream TR-069 information.

## WHAT IS TR069?

It is a protocol for communication between CPE (Customer Premise Equipment) and an ACS (Auto Configuration Server) that provides secure auto-configuration as well as other CPE management functions within a common framework.

TR-069 stands for a technical report defined by the Broadband Forum that specifies the CWMP “CPE WAN Management Protocol”. It commonly uses HTTP or HTTPS as transport for communication between CPE and the ACS. The message exchange is using SOAP (XML\_RPC) for configuration and management of the device.

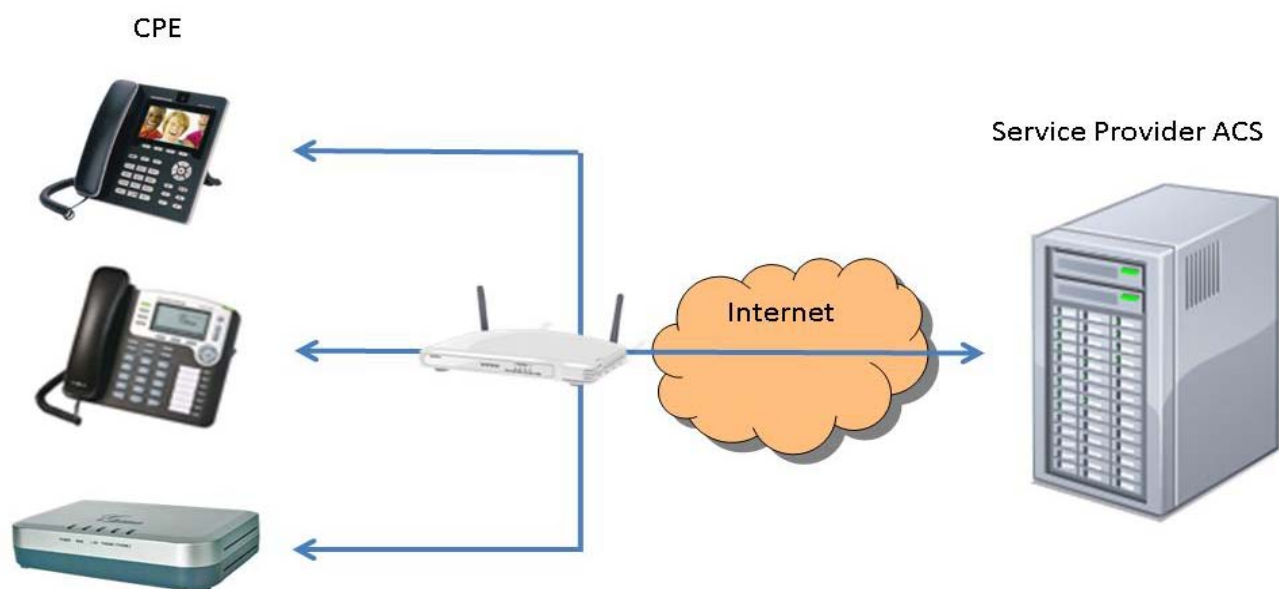
Last published version of the standard is amendment 2 (CWMP1.1). The core defines the protocol, session establishment, message exchange structure, and Remote Procedure Calls.

## WHY USE TR069?

Service Providers, using TR-069, can have one common platform to manage all Grandstream devices and other CPEs, no matter neither the device type nor the manufacturer.

This common application was not easily achieved before due to CPE vendor’s proprietary mechanisms for provisioning/management.

## TYPICAL SCENARIO:



Previous graph shows a common customer installation. Where CPEs (Grandstream devices) are behind a router/gateway and they connect to the ACS via TR-069 so they can get manage remotely.

Normally TR069 provisioning/management will be used by service providers in large scale deployments. Therefore, units need to be initially provision with the ACS connection parameters before being able to connect with the server. There are several ways to work this initial configuration as per-provisioning before sending unit to end user. However, Grandstream provides a redirection/provisioning service called GAPS that can take care of initial ACS parameters setup.

## RPC METHODS:

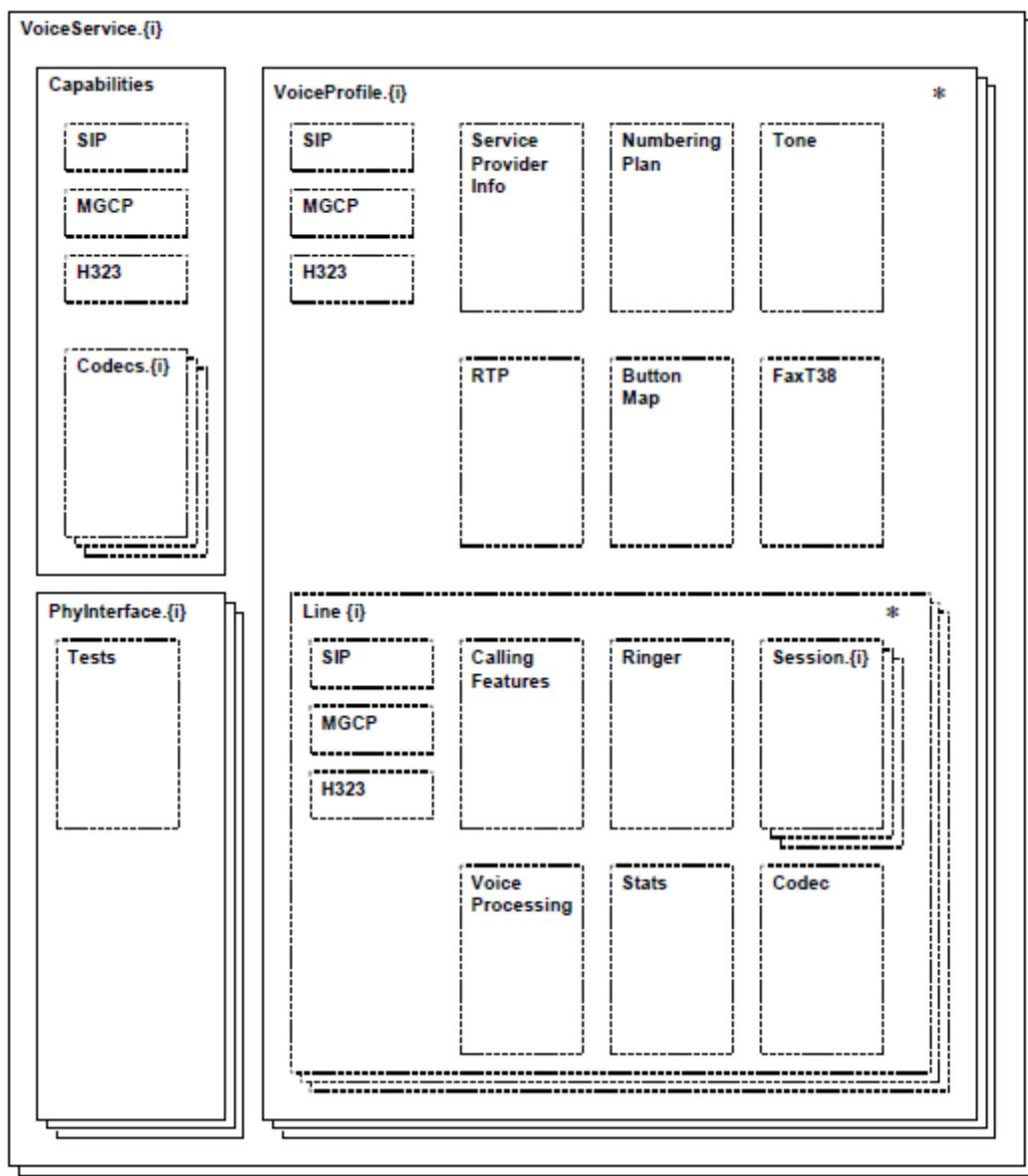
The following table provides a description of supported TR-069 RPC methods by Grandstream devices. Some models may have some extra methods (vendor-specific methods) that are not shown in the table below. Please contact Grandstream for more information.

Methods	Description
<b>GetRPCMethods</b>	Sent by the ACS to find out about the methods supported by the device.
<b>GetParameterNames</b>	This method is used by an ACS to discover the device supported parameters. When called this method return a list of parameter names on the device. Depending on the method parameters this can be called for complete and partial parameter paths on the device.
<b>GetParameterValues</b>	This method is used by an ACS to obtain the value of one or more CPE Parameters.
<b>GetAttributeValues</b>	This method is used by an ACS to read the attributes associated with one or more CPE Parameter.
<b>SetParameterValues</b>	This method is used by an ACS to modify the value of one or more of the device's Parameters.
<b>SetAttributeValues</b>	Changes the attributes (modifiers) of the specified path. The path can be complete or partial.
<b>AddObject</b>	Adds a new instance of an object defined on the device.
<b>DeleteObject</b>	Deletes an instance of an object defined on the device.
<b>Reboot</b>	Reboots the device.
<b>Download</b>	This method is used by the ACS to cause the CPE to download a specified file from the designated location. Filetype supported by Grandstream devices are: <ul style="list-style-type: none"> <li>• 1 Firmware Upgrade Image</li> <li>• 3 Vendor Configuration File</li> </ul>

## TR104 DATA MODEL:

This technical report defines the data model for provisioning of VoIP devices by an ACS using the mechanism defined in TR-069.

All Grandstream devices are only SIP compatible, for this reason, only objects and parameters related to SIP are implemented from the Datamodel.



## WHAT IS THE SCOPE OF THE REMOTE MANAGEMENT?

- Auto-Configuration: This mechanism allows the Grandstream device auto-provisioning at the time of initial connection, and the ability to re-provision at any subsequent time. For initial ACS parameters provisioning please refer to the GAPS redirection service.
- Firmware Management: TR-069 provides tools to manage downloading of CPE software/firmware image files. The protocol provides mechanisms for version identification, file download initiation (ACS initiated downloads and optional CPE initiated downloads), and notification of the ACS of the success or failure of a file download.
- Configuration or environment variables changes notification: TR-069 provides support for a CPE to make available information that the ACS may use to monitor the CPE's status and performance statistics. This is done by defining the conditions under which a CPE should actively/passively notify the ACS of changes.
- Enabling / disabling features remotely: For example, VoIP accounts can be easily activated by sending a TR-069 RPC. Additionally other more advance applications as pushing contents or customizing the GUI can be done by using vendor parameters.
- Reboot: Grandstream devices can be rebooted by using the mechanisms established by TR-069.

## SUPPORTED PHONES AND FIRMWARE VERSIONS:

- HT50X, GXW40XX (1.0.3.10 or higher)
- GXV3140 (1.0.6.12 or higher)
- GXP21XX (1.0.1.26 or higher)

## INTEROPERABILITY AND DEPLOYMENT:

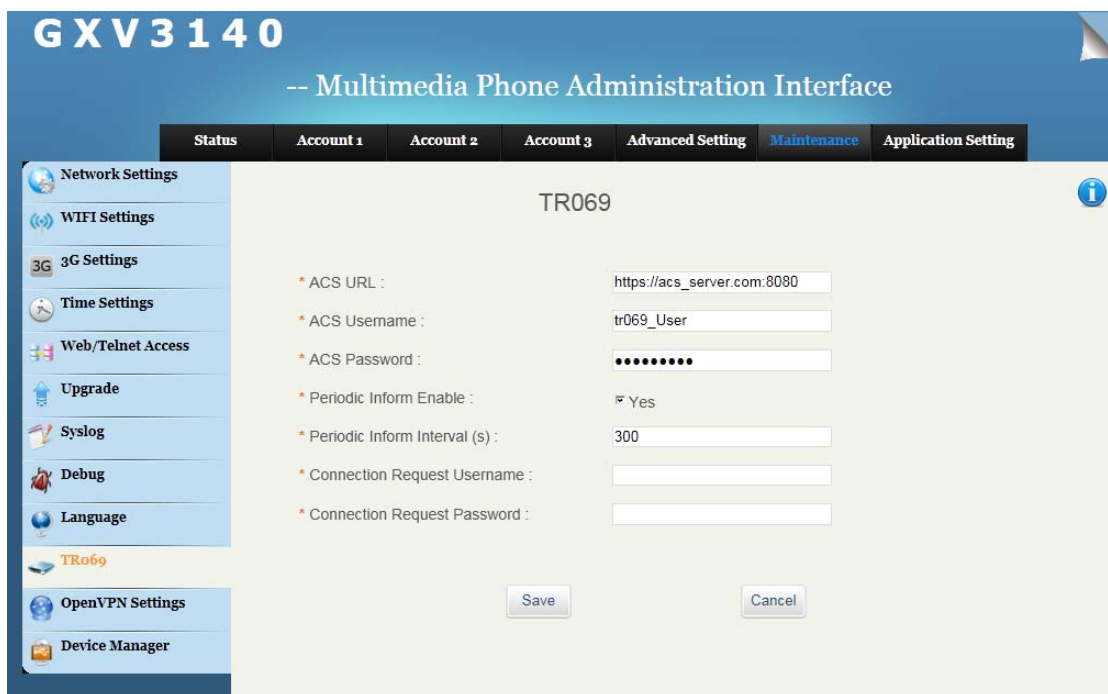
- Service provider contacts Grandstream sales department to establish initial relationship and provide both parties technical contact information.
- Service provider sends to Grandstream the requirement list and/or expected provisioning flow chart.
- Grandstream works together with service provider and ACS vendor to get the test cases and testing accounts.
- Testing and corrections.
- Initial deployment and verification.

## WEBUI CONFIGURATION:

Normally ACS configuration settings are pre-provisioned by the service provider or the Grandstream device is redirected by our GAPS to the location where the service provider has each device configuration file. However, we still have a graphic interface for easy testing and debugging.

The TR-069 related parameters are:

- ACS URL: URL of the TR-069 ACS, Grandstream device will try to connect and send messages to this server.
- ACS Username: Username used for the HTTP authentication against the ACS.
- ACS Password: Password used for the HTTP authentication against the ACS.
- Periodic Inform Enable: Set the Grandstream device to start a new session after “Periodic Inform Interval”
- Periodic Inform Interval: time in seconds where the CPE will initiate a new session against the ACS.
- Connection Request Username: Username to authenticate incoming connection requests.
- Connection Request Password: Password to authenticate incoming connection requests.



The screenshot displays the GXV3140 Multimedia Phone Administration Interface. The interface has a blue header with the model number 'GXV3140' and the title '-- Multimedia Phone Administration Interface'. Below the header is a navigation bar with tabs for 'Status', 'Account 1', 'Account 2', 'Account 3', 'Advanced Setting', 'Maintenance', and 'Application Setting'. The 'Advanced Setting' tab is selected, and the 'TR069' sub-tab is active. On the left side, there is a sidebar menu with various settings categories: Network Settings, WIFI Settings, 3G Settings, Time Settings, Web/Telnet Access, Upgrade, Syslog, Debug, Language, TR069 (highlighted), OpenVPN Settings, and Device Manager. The main content area shows the TR069 configuration form with the following fields:

- \* ACS URL :
- \* ACS Username :
- \* ACS Password :
- \* Periodic Inform Enable :  Yes
- \* Periodic Inform Interval (s) :
- \* Connection Request Username :
- \* Connection Request Password :

At the bottom of the form, there are 'Save' and 'Cancel' buttons.

## STANDARDS COMPLIANCE

Currently Grandstream CPEs support the list of standards shown below. For further information about this technical documents, please refer to Broadband Forum website.

- TR-069 Amendment 2 (partially compliant)
- TR-104 (Compliant with SIP)
- TR-111 (Compliant)

## ACS INFORMATION:

Grandstream has worked or it is currently working with the following ACS vendors:

- Finepoint
- Alcatel/Motive ACS
- ASISco Geremias

For more info regarding interoperability with these vendors or other ACS vendors, please contact Grandstream technical support.

## CONTACT US

For any additional inquire, please visit our website <http://www.grandstream.com/contactus.html> and we will be more than glad to help and provide you specific information regarding Grandstream devices.