TR-069 Technote

Version 1.0

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Yeastar Information Technology Co. Ltd.

Contents

About This Technote

This technote gives a brief introduction of TR-069 and instructions of how to enable TR-069 on Yeastar VoIP gateways. The technote also provides RPC methods supported on Yeastar VoIP gateways.

Supported VoIP Gateways and firmware version:
- TA1600/2400/3200 (40.19.0.14)

* TR-069 will be supported on the following gateways soon:
- TA400/800
- TA410/810
- TA1610/2410/3210
- TB200/400

What is TR-069?

TR-069 (Technical Report 069) is a Broadband Forum (formerly known as DSL Forum) technical specification entitled CPE WAN Management Protocol (CWMP). It defines an application layer protocol for remote management of end-user devices. As a bidirectional SOAP/HTTP-based protocol, it provides the communication between customer-premises equipment (CPE) and Auto Configuration Servers (ACS). It includes both a safe auto configuration and the control of other CPE management functions within an integrated framework. The protocol addresses different Internet access devices such as modems, routers, gateways, set-top boxes, and VoIP-phones for the end-users.
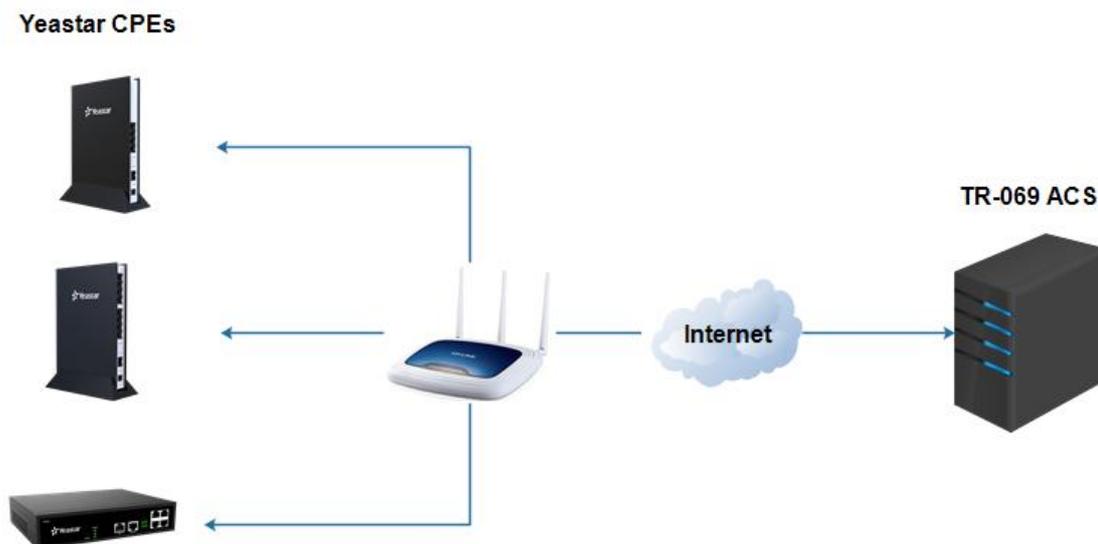
Figure 1 TR-069 Schematic Design

Why Use TR-069?

With TR-069, Service Providers can use one common platform to manage, through the Internet, all of their Customer Premise Devices, no matter the device nor the manufacturer.

This common application has never been achieved before due to CPE vendors creating proprietary mechanisms for management.

What is the Scope of the Remote Management?

Auto provisioning is used to provide configuration information to multiple Yeastar VoIP gateways, while remote management takes this one step further.

- **Auto Provision**
  This mechanism allows Yeastar devices auto-provisioning at the time of initial connection, and the ability to re-provision at any subsequent time. The ACS can also check the provision status (success or failure).
- **Reboot and Reset the devices**
  Yeastar devices can be rebooted and reset by using the mechanisms established by TR-069.
- **Firmware Management**
  The Yeastar device firmware could be updated by downloading the firmware file from the ACS.TR-069 also provides mechanisms for version identification and file download initiation (ACS initiated downloads and optional phone initiated downloads). The ACS can be notified of the success or failure of a file downloading.
- **Monitoring CPEs' Status & Performance**
  With RPC methods GetParameterValues and GetParameterAttributes, the ACS could monitor Yeastar CPEs' status and performance statistics. A set of mechanisms defined in TR-069 allow Yeastar CPEs to actively notify the ACS of changes.
- **Configuring CPEs' parameters**
  Settings on Yeastar CPEs can be configured remotely on ACS by sending a RPC method.

TR-069 Configurations on Yeastar VoIP Gateways

TR-069 feature is disabled on Yeastar VoIP gateways by default. You can enable the feature on the gateways' Web user interface.

Path: Gateway→ Network Preferences→ TR-069 Settings

Enable TR-069 and configure the parameters in the corresponding fields, if configured correctly, the gateway will establish the TR-069 session with the ACS.

Figure 2 TR-069 Settings on Yeastar Devices

Table 1 Description of TR-069 Settings

Parameter	Description
ACS URL	URL of the TR-069 ACS. This is the URL the Yeastar CPEs will send TR-069 messages to.
ACS Username	Username for HTTP authentication against the ACS. Leave it blank if no ASC username.
ACS Password	Password for HTTP authentication against the ACS. Leave it blank if no ASC password.
Enable Periodic Inform	Set the Yeastar device to start a new session after "Periodic Inform Interval".
Periodic Inform Interval(s)	Time in seconds where the CPE will initiate a new session against the ACS.
Enable STUN	Enable this option to discover the CPE's public IP address if it is located behind a NAT.
STUN Server Address/Port	The STUN Server address and port.
STUN Server Username	The STUN Server username.
STUN Server Password	The STUN server password.
Connection Request Address	HTTP URL for an ACS to make a Connection Request notification to the CPE.
Connection Request Username	Username used to authenticate an ACS making a Connection Request to the CPE. Leave it blank if no username.
Connection Request Password	Password used to authenticate an ACS making a Connection Request to the CPE. Leave it blank if no password.

Supported TR-069 RPC Methods

A RPC (Remote Procedure Call) mechanism is used for bi-directional communication between a CPE device and an ACS. An ACS can get or set parameters to configure and monitor the CPE by using the RPC methods.

The following table provides a description of supported TR-069 RPC methods by Yeastar devices.

Table 2 Supported TR-069 RPC Methods

Method	Description
GetRPCMethods	This method is used to discover the set of methods supported by the CPE.
SetParameterValues	This method is used to modify the value of one or more CPE Parameters.
GetParameterValues	This method is used to obtain the value of one or more CPE Parameters.
GetParameterNames	This method is used to discover the Parameters accessible on a particular CPE.
SetParameterAttributes	This method is used to modify attributes associated with one or more CPE Parameter.
GetParameterAttributes	This method is used to read the attributes associated with one or more CPE Parameter.
AddObject	This method is used to create a new instance of a multi-instance object—a collection of Parameters and/or other objects for which multiple instances are defined.
DeleteObject	This method is used to remove a particular instance of an object.
Download	This method is used to cause the CPE to download a specified file from the designated location. File types supported by Yeastar devices: • Firmware Image • Configuration File • Log Files
ScheduleInform	This method is used to request the CPE to schedule a one-time Inform method call (separate from its periodic Inform method calls) sometime in the future.
Upload	This method is used to cause the CPE to upload a specified file to the designated location.

	File types supported by Yeastar devices: • TR-069 Logs
Reboot	This method causes the CPE to reboot.
FatoryReset	This method resets the CPE to its factory default state.
GetAllQueuedTransfers	This method is used to determine the status of previously requested downloads or uploads.
CancelTransfer	This method is used to cause the CPE to cancel a file transfer initiated by an earlier Download, ScheduleDownload or Upload method call.
X_F4B549_ApplyChange	This method is customized by Yeastar, it is used to save and apply changes to Yeastar CPEs. This method should be supported on a customized ACS.
ScheduleDownload	This method is used to cause the CPE to download a specified file from the designated location and apply it within either one or two specified time windows.

Data Model

Most of the configuration and diagnostics is performed through setting and retrieving the value of the Yeastar CPEs' parameters. These are organized in a well defined hierarchical structure that is more or less common to all device models.

For more information about the common and customized Yeastar devices' parameters, please refer to *Yeastar_TR-069_DataModel.xlsx*. Each of the parameters is marked as writable or non-writable.
Please contact Yeastar technical support for the data model file.

ACS Information

Every ACS is different, but as TR-069 is a standard, ACS vendors should work properly as well once the connection is established. Several ACS have been tested with Yeastar CPEs and work properly.
• Axiros Axess
• IoT (Internet of Things)
• Friendly ACS

Standards Compliance

Yeastar CPEs support the following standards listed below. For more information about the standards, please refer to Broadband Forum website.
• **TR-069**
 http://www.broadband-forum.org/technical/download/TR-069_Amendment-3.pdf

- **TR-098**
  http://www.broadband-forum.org/technical/download/TR-098.pdf

- **TR-104** (Compliant with SIP)
  http://www.broadband-forum.org/technical/download/TR-104.pdf

- **TR-111** (Device Gateway Association & Connection Request via NAT Gateway)
  http://www.broadband-forum.org/technical/download/TR-111.pdf

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