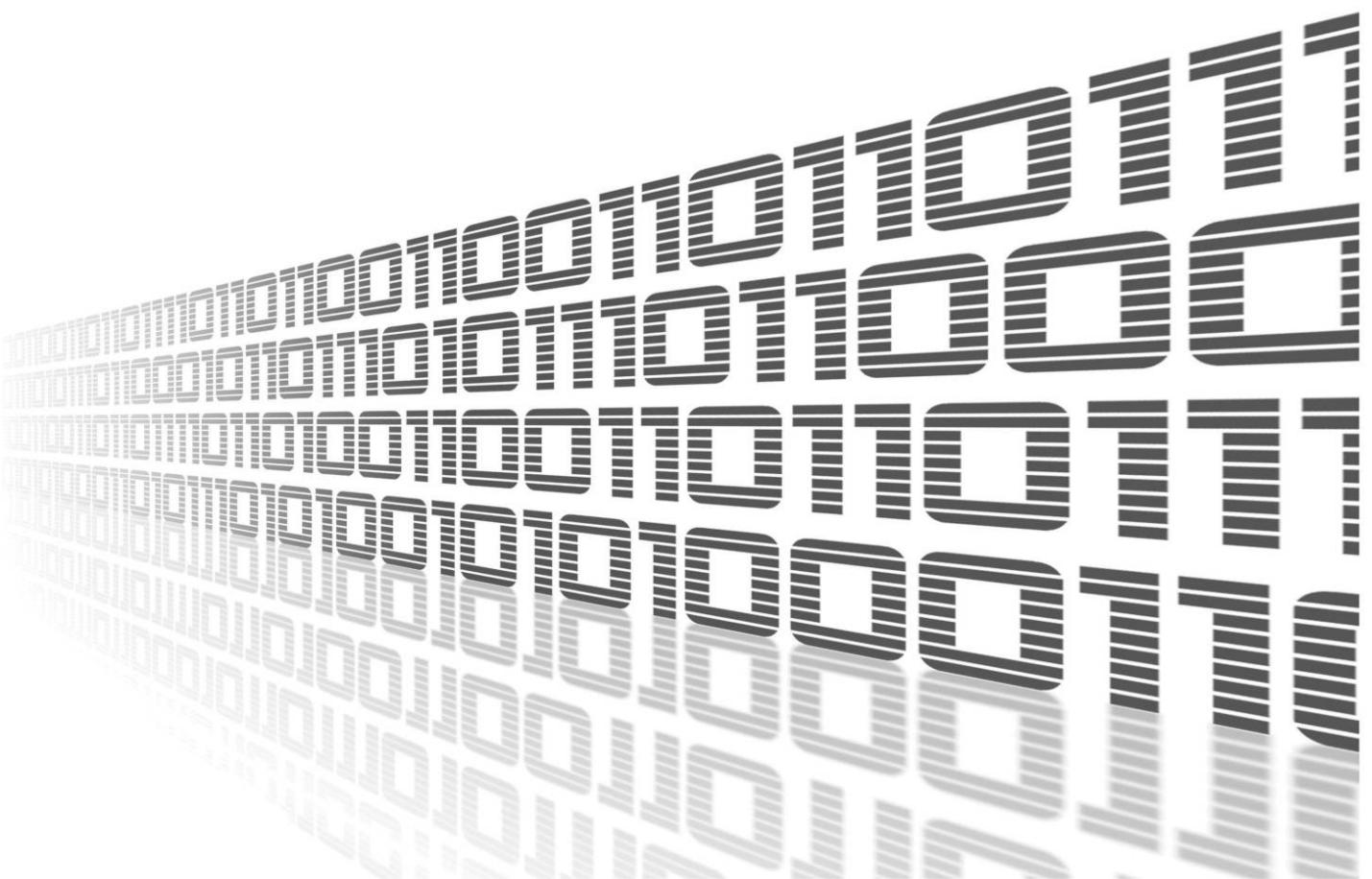


ADVANTECH



Technical Report 069



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Used symbols

 *Danger* – Information regarding user safety or potential damage to the router.

 *Attention* – Problems that can arise in specific situations.

 *Information* – Useful tips or information of special interest.

 *Example* – Example of function, command or script.

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1. Changelog

1.1 Technical Report 069 Changelog

v1.0.0 (2022-03-30)

- First release.

2. Basic Information

Technical Report 069 (TR-069) is a technical specification of the Broadband Forum that defines an application layer protocol for remote management and provisioning of customer-premises equipment (CPE) connected to an Internet Protocol (IP) network. TR-069 uses the CPE WAN Management Protocol (CWMP) which provides support functions for auto-configuration, software or firmware image management, software module management, status and performance managements, and diagnostics.

3. Router App Description

3.1 Web Interface

After Router App installation, the module's GUI can be invoked by clicking the router app name on the Router Apps page of router's web interface.

Left part of this GUI contains menu with Status menu section, Configuration menu section and Information menu section. Customization menu section contains only the Return item, which switches back from the module's web page to the router's web configuration pages. The main menu of router app GUI is shown on Figure below.



Figure 1: Menu

3.2 Status

Status menu section contains Overview item where we can find detailed data about TR-069 service and received parameters.



The screenshot shows a 'Status Overview' page with a 'Services' tab selected. The main content area displays a JSON-like list of parameters for the 'TR-069 service'. Some key entries include:

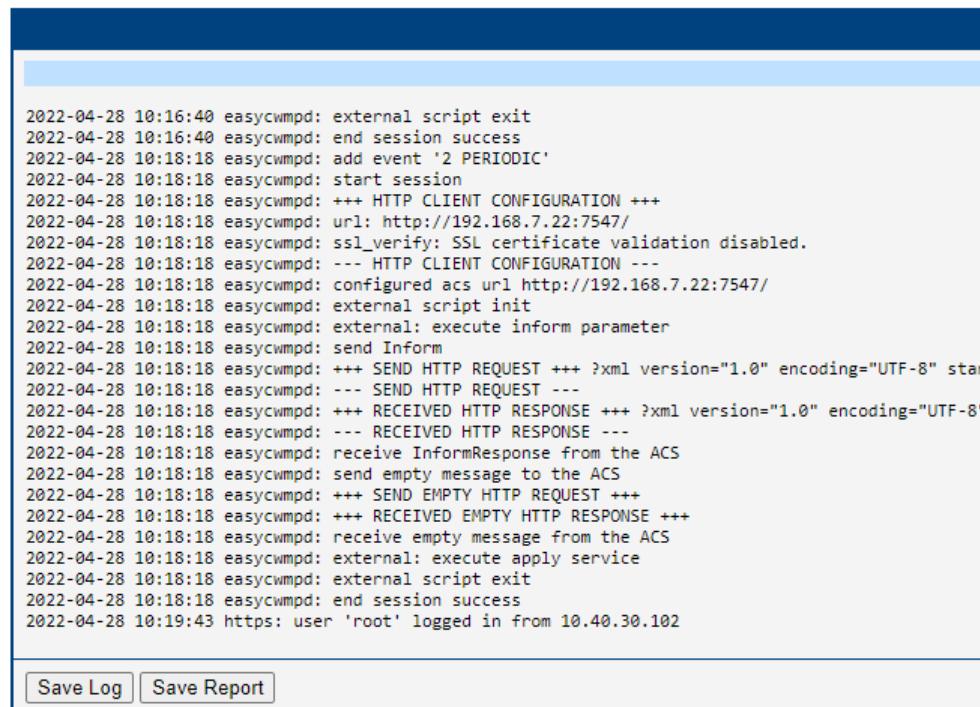
```

{
  "parameter": "Device.DeviceInfo.SpecVersion", "value": "1.0"
  "parameter": "Device.DeviceInfo.ProvisioningCode", "value": ""
  "parameter": "Device.DeviceInfo.Manufacturer", "value": "Advantech"
  "parameter": "Device.DeviceInfo.ManufacturerUI", "value": "74FE48"
  "parameter": "Device.DeviceInfo.ProductClass", "value": "ICR-323x"
  "parameter": "Device.DeviceInfo.SerialNumber", "value": "0007231"
  "parameter": "Device.DeviceInfo.HardwareVersion", "value": "NA"
  "parameter": "Device.DeviceInfo.SoftwareVersion", "value": "6.3.6 (2022-04-26) BETA"
  "parameter": "Device.DeviceInfo.Uptime", "value": "5416", "type": "xsd:unsignedInt"
  "parameter": "Device.DeviceInfo.DeviceLog", "value": "nf_nat64: nat64_prefix=64:ff9b::\\96"
  "parameter": "Device.DeviceInfo.MemoryStatus.Total", "value": "509428"
  "parameter": "Device.DeviceInfo.MemoryStatus.Free", "value": "462008"
  "parameter": "Device.ManagementServer.URL", "value": "http://192.168.7.22:7547/"
  "parameter": "Device.ManagementServer.Username", "value": "easycwmpl"
  "parameter": "Device.ManagementServer.Password", "value": ""
  "parameter": "Device.ManagementServer.PeriodicInformEnable", "value": "1", "type": "xsd:boolean"
  "parameter": "Device.ManagementServer.PeriodicInformInterval", "value": "300", "type": "xsd:unsignedInt"
  "parameter": "Device.ManagementServer.PeriodicInformTime", "value": "1970-01-01T23:04:37.128Z", "type": "xsd:dateTime"
  "parameter": "Device.ManagementServer.ConnectionRequestURL", "value": "http://192.168.7.231:7547/"
  "parameter": "Device.ManagementServer.ConnectionRequestUsername", "value": "74FE48-ICR%2D323x-0007231"
  "parameter": "Device.ManagementServer.ConnectionRequestPassword", "value": ""
  "parameter": "Device.ManagementServer.ParameterKey", "value": ""
}

```

Figure 2: Overview

While System log contains log messages.



The screenshot shows a 'System Log' page with a large list of log messages. The messages are timestamped and show interactions between the easycwmpld daemon and external scripts and services. Key log entries include:

```

2022-04-28 10:16:40 easycwmpld: external script exit
2022-04-28 10:16:40 easycwmpld: end session success
2022-04-28 10:18:18 easycwmpld: add event '2 PERIODIC'
2022-04-28 10:18:18 easycwmpld: start session
2022-04-28 10:18:18 easycwmpld: +++ HTTP CLIENT CONFIGURATION ***
2022-04-28 10:18:18 easycwmpld: url: http://192.168.7.22:7547/
2022-04-28 10:18:18 easycwmpld: ssl_verify: SSL certificate validation disabled.
2022-04-28 10:18:18 easycwmpld: --- HTTP CLIENT CONFIGURATION ---
2022-04-28 10:18:18 easycwmpld: configured acs url http://192.168.7.22:7547/
2022-04-28 10:18:18 easycwmpld: external script init
2022-04-28 10:18:18 easycwmpld: external: execute inform parameter
2022-04-28 10:18:18 easycwmpld: send Inform
2022-04-28 10:18:18 easycwmpld: +++ SEND HTTP REQUEST +++ ?xml version="1.0" encoding="UTF-8" stand
2022-04-28 10:18:18 easycwmpld: --- SEND HTTP REQUEST ---
2022-04-28 10:18:18 easycwmpld: +++ RECEIVED HTTP RESPONSE +++ ?xml version="1.0" encoding="UTF-8"
2022-04-28 10:18:18 easycwmpld: --- RECEIVED HTTP RESPONSE ---
2022-04-28 10:18:18 easycwmpld: receive InformResponse from the ACS
2022-04-28 10:18:18 easycwmpld: send empty message to the ACS
2022-04-28 10:18:18 easycwmpld: +++ SEND EMPTY HTTP REQUEST ***
2022-04-28 10:18:18 easycwmpld: *** RECEIVED EMPTY HTTP RESPONSE ***
2022-04-28 10:18:18 easycwmpld: receive empty message from the ACS
2022-04-28 10:18:18 easycwmpld: external: execute apply service
2022-04-28 10:18:18 easycwmpld: external script exit
2022-04-28 10:18:18 easycwmpld: end session success
2022-04-28 10:19:43 https: user 'root' logged in from 10.40.30.102

```

Figure 3: System log

3.3 Configuration

Global configuration is place where the configuration string should be. Most important lines are *option url*, *option username* and *option password* in the *config acs* part.

The screenshot shows a 'Global Configuration' interface. At the top, there is a checked checkbox labeled 'Enable TR-069 (CPE WAN Management Protocol) service'. Below this is a 'Configuration:' section containing the following UCI configuration code:

```
# easycwmp uci configuration

config local
    option enable '1'
    option interface eth1
    option port 7547
    option ubus_socket /var/run/ubus.sock
    option date_format %FT%T%z
    option username easycwmp
    option password easycwmp
    option provisioning_code ''
    option authentication 'Digest'
    #Logging levels: Critic=0, Warning=1, Notice=2, Info=3,
    Debug=4
    option logging_level '4'

config acs
    option url http://192.168.7.22:7547/
    option username easycwmp
    option password easycwmp
    option parameter_key ''
    option periodic_enable '1'
    option periodic_interval '100'
    option periodic_time '0001-01-01T00:00:00Z'
```

At the bottom of the configuration area is a blue 'Apply' button.

Figure 4: Global configuration

3.4 Licenses

Summarizes Open-Source Software (OSS) licenses used by this module.

TR-069 (CPE WAN Management Protocol) Licenses		
Project	License	More Information
easycwmp	GPLv2	License
openssl	OpenSSL	License
json-c	Json-c	License
libubox	Ubox	License
libuci	LGPLv2.1	License
libubus	LGPLv2.1	License
microxml	LGPL2	License
curl	Curl	License

Figure 5: Licenses

4. Example

In this example is *genieacs*¹ solution used as auto configuration server (acs). There are 3 routers managed with ACS.

The screenshot shows the 'Devices' section of the genieacs web interface. At the top, there's a navigation bar with tabs: Overview, Devices (which is selected), Faults, and Admin. Below the navigation bar, the title 'Listing devices' is displayed. A 'Filter' section allows sorting by Serial number, Product class, Software version, IP, SSID, Last inform, and Tags. Three devices are listed:

Serial number	Product class	Software version	IP	SSID	Last inform	Tags
ACZ1100002281167	ICR-253x				26. 4. 2022 10:27:56	Others
0007231	ICR-323x				28. 4. 2022 7:21:07	Online now
N/A	ICR-445x				26. 4. 2022 10:30:31	Others

Below the table, there are links for '3/3 More' and 'Download'. At the bottom, there are buttons for Reboot, Reset, Push file, Delete, Tag, and Untag.

Figure 6: Devices

We can display the detail of each added device

The screenshot shows the detail view for a specific device. The top navigation bar is identical to Figure 6. The main title is '74FE48-ICR%2D323x-0007231'. Below the title, there's a summary section with a ping status (Pinging 192.168.7.231 0 ms), last inform time (28. 4. 2022 8:36:06), and an 'Online now' status with a 'Summon' button. Detailed information includes Serial number (0007231), Product class (ICR-323x), OUI (74FE48), and Manufacturer (Advantech). A 'Faults' section shows a table with columns: Channel, Code, Message, Detail, Retries, and Timestamp. The table is empty with the message 'No faults'. Below the faults section is a 'All parameters' section with a search bar and a download button. A sidebar on the right lists various parameters with their current values, such as Device (NA), Advantech, 74FE48, ICR-323x, blank, 0007231, and 1.0.

Figure 7: Detail of the device

¹<https://genieacs.com/>

In this detail it is possible to edit parameter values

The screenshot shows the 'Overview' tab of the genieacs interface for a device with serial number 0007231. The top bar displays statistics: Queued: 0, Pending: 0, Fault: 0, Stale: 0. A search bar is present for 'Editing Device.Configuration.eth0_ipaddr'. Below the search bar, the IP address is set to 10.10.0.1. There are 'Commit' and 'Clear' buttons. A 'Queue' button is highlighted with a cursor. The main area shows device details: Pinging 192.168.7.231: 0 ms, Last inform: 28.4.2022 8:42:26, Online now, Summon button. Product class: ICR-323x, OUI: 74FE48, Manufacturer: Advantech. A 'Faults' section shows no faults. The 'All parameters' section lists configuration parameters like Device.Configuration.eth0_bootproto, Device.Configuration.eth0_ipaddr, etc., with their current values and download links. Buttons at the bottom include Reboot, Reset, Push file, and Delete.

Figure 8: Device parameter edit

or even push files. Files, that can be pushed to router are only:

- Config files
- Router firmware

to the router which could be useful for changing config files or even uploading new firmware.

The screenshot shows the 'Admin' tab of the genieacs interface for the same device. The top bar displays statistics: Queued: 0, Pending: 0, Fault: 0, Stale: 0. A dropdown menu is open under 'Push' with options: ICR-323x(5).cfg and ICR-323x.bin. There are 'Commit' and 'Clear' buttons. A 'Queue' button is highlighted with a cursor. The main area shows device details: Pinging 192.168.7.231: 0 ms, Last inform: 28.4.2022 8:42:59, Online now, Summon button. Product class: ICR-323x, OUI: 74FE48, Manufacturer: Advantech.

Figure 9: Push file to the device

5. Related Documents

You can obtain product-related documents on *Engineering Portal* at icr.advantech.cz address.

To get your router's *Quick Start Guide*, *User Manual*, *Configuration Manual*, or *Firmware* go to the [Router Models](#) page, find the required model, and switch to the *Manuals* or *Firmware* tab, respectively.

The *Router Apps* installation packages and manuals are available on the [Router Apps](#) page.

For the *Development Documents*, go to the [DevZone](#) page.