

# PPP-controlled Settings for AVM's FRITZ!OS *supported by AVM*

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## History

<b>Date</b>	<b>Version</b>	<b>Changes</b>
2019-10-10	1.0	Initial version
2019-11-19	1.1	Line ID added
2020-05-05	1.2	TR-069 ACS Discovery added PAP-/CHAP-Info adapted Title changed

## 1 Introduction

FRITZ!OS offers a special interface for Internet Service Providers (ISP) to set some useful system parameters. It gives ISP an easy option to configure each device with individual settings. These settings are conveyed via the Point to Point Protocol (PPP RFC 1334, 1994) at dial-in time and applied immediately in FRITZ!OS. This document describes how to make use of PPP-controlled settings for FRITZ!OS.

### 1.1 Speed Rate Shaping

Using the speed rates over this interface is especially useful for service providers if they have customers with line speeds exceeding the speed rates declared in their contract. For instance, on a DSL line the synchronized speed is 100/40 Mbit/s, but the customer signed a contract that offers only 50/10 Mbit/s. In this case the service provider can utilize this interface to set the speed rates to 50/10 Mbit/s, so that FRITZ!OS will automatically adopt these new speed rates and set up the internal shaping parameters accordingly. This will ensure proper QoS configuration in FRITZ!OS for services such as voice or others, even during high data load situations.

In addition to the speed rates, the type of rate will be transferred. The type can be either layer 2 (L2, Ethernet) or layer 3 (L3, IP only). FRITZ!OS will interpret the transferred speed rates with respect to the type provided. L2 means that the speed rate already includes the Ethernet header – this is not the case for L3.

For clarification: Normally, Ethernet frames are transmitted in any case. But the type of rate instructs the FRITZ!OS to interpret the rate as a value either including the Ethernet header (L2) or not (L3) .

FRITZ!OS will check the plausibility of the transferred speed rates. If the speed rates are very close to or higher than the line speed, FRITZ!OS will use the line speed rate instead. This allows the service provider to deliver customers speed rates irrespective of the available line speed.

The information will be transferred to the FRITZ!OS via PPP authentication and will be set in the PPP-PAP/CHAP authentication message, PAP=Code 2 or 3, CHAP=Code 3 or 4 (RFC 1334, 1994).

### 1.2 Line ID

The Line ID is provided only for information purposes and is displayed in the WebUI of the FRITZ!Box.

The information will be transferred to the FRITZ!OS via PPP authentication and will be set in the PPP-PAP/CHAP authentication message, PAP=Code 2 or 3, CHAP=Code 3 or 4 (RFC 1334, 1994).

### 1.3 TR-069 ACS Discovery

As part of PPP Authentication, a PPP server on the access network MAY be configured to include the ACS URL and the provisioning code in the PPP Authentication ACK. If FRITZ!OS needs to contact a ACS, it MAY use the PPP discovery mechanism if both conditions are met:

- FRITZ!OS has an empty value for the 'ManagementServer.URL' parameter
- FRITZ!OS has a PPP connection and authenticates successfully via PPP PAP or PPP CHAP

The information will be transferred to the FRITZ!OS via PPP authentication and will be set in the PPP-PAP/CHAP authentication message, PAP=Code 2, CHAP=Code 3 (RFC 1334, 1994).

The ACS URL MUST be in the form of a valid HTTPS URL. It indicates that FRITZ!OS MUST establish an SSL or TLS connection to the ACS. Other URLs than HTTPS will be ignored. The value of TR069URL is applied only if the ManagementServer.URL parameter is empty. The value of TR069PROVC is applied only if the ManagementServer.URL parameter is empty.

There is no PPP rediscover mechanism if FRITZ!OS obtained an ACS URL through PPP and it cannot reach the ACS.

FRITZ!OS will use DNS to resolve the IP address of the ACS from the host name component of the URL. The "host" portion of the ACS URL is used by FRITZ!OS to validate the certificate from the ACS. FRITZ!OS will authenticate the ACS using the root certificate store on FRITZ!OS.

Once FRITZ!OS has established a connection to the ACS via a CWMP Endpoint, the ACS MAY at any time modify the ACS URL Parameter (ManagementServer.URL) as well as the provisioning code (DeviceInfo.ProvisioningCode).

## 2 Variables

### 2.1 Speed rate downstream

SRD=xxxx

xxxx = speed rate in Kbit/s (1 Kbit/s = 1000 Bit/s)

### 2.2 Speed rate upstream

SRU=yyyy

yyyy = speed rate in Kbit/s (1 Kbit/s = 1000 Bit/s)

### 2.3 Speed rate type

SRT=zz

zz = speed rate type. Possible values are L2 or L3.

If the speed rate type is not delivered, the default value L3 will be used.

### 2.4 Line ID

LID=line-id

line-id = The Line ID.

### 2.5 TR-069 ACS URL

TR069URL=url

url = HTTPS URL of the ACS

url max. length: 128 Byte

allowed characters for url : [a-Z, 0-9, :-\_ /]

### 2.6 TR-069 Provisioning Code

TR069PROVC=provisioningcode

provisioningcode = Provisioning Code

provisioningcode max. length: 64 Byte

### 3 Syntax

All parameters are optional. The ACK/NAK response message must have the following format:

SRD=xxxx#SRU=yyyy#SRT=zz#LID=line-id#TR069URL=url#TR069PROVC=provisioningcode

For example:

SRD=50000#SRU=10000#SRT=L2#LID=PROVXYZ.DEU.VL.ABCD#

OR

SRD=50000#SRU=10000#LID=PROVXYZ.DEU.VL.ABCD#

OR

LID=PROVXYZ.DEU.VL.ABCD#

OR

SRD=50000#SRU=10000#TR069URL=https://myacs.xyz123.com:7547#TR069PROVC=setup#

### 3.1 Sample Trace

The screenshot shows a network traffic analysis tool interface with a list of captured frames. The selected frame 29 is expanded to show the following details:

- Frame 29: 131 bytes on wire (1048 bits), 131 bytes captured (1048 bits)
- Ethernet II, Src: Avm\_19:c6:41 (9c:c7:a6:19:c6:41), Dst: AvmAudio\_93:ee:68 (e0:28:6d:93:ee:68)
- PPP over Ethernet Session
- Point-to-Point Protocol
- PPP Password Authentication Protocol
- Code: Authenticate-Ack (2)
- Identifier: 1
- Length: 109
- Data
- Message-Length: 104
- Message: SRD=50000#SRU=10000#SRT=L2#LID=Test-Lineid-Text#TR069URL=https://myacs.xyz123.com:7547#TR069PROVC=setup#

At the bottom of the screenshot, a hex dump of the message data is visible, with the following text highlighted in blue:

```

0000  e0 28 6d 93 ee 68 9c c7 a6 19 c6 41 08 64 11 00  (M-h: ...A.d
0010  09 04 00 0f c8 23 02 01 00 6d 68 83 52 44 3d 09  ..o.#.#0009
0020  80 30 30 30 23 52 55 55 3d 31 30 30 30 30 23 53  0000#SRU=10000#S
0030  52 54 3d 4c 32 23 4c 49 44 3d 54 65 73 74 3d 4c  81#L2#LID=Test-L
0040  69 ee 63 69 64 2d 54 65 70 74 23 54 52 30 36 38  69id-Te-#TR069
0050  85 52 4c 3d 68 74 74 70 73 3a 2f 6d 79 61 63  8#L=http s://myac
0060  73 2e 70 79 7a 31 32 33 2e 63 6f 6d 3a 37 35 34  s,xyz123 .com:754
0070  87#TR069#PROVC=se  7#TR069#PROVC=se
0080  75 70 23 44 3d 3a 37 35 34 3d 3a 37 35 34 3d 3a  44
    
```