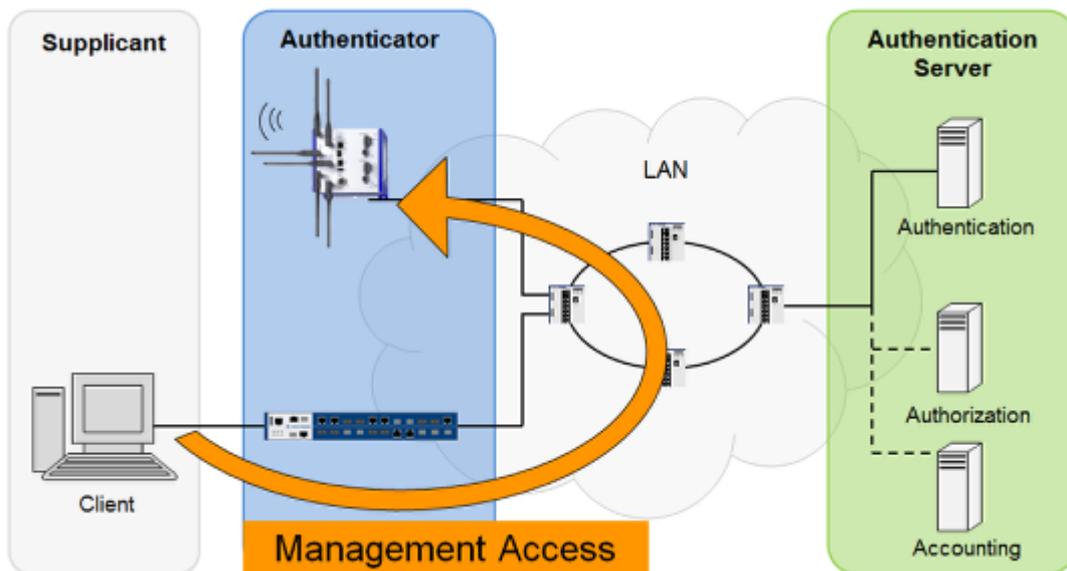# How to use Radius to access the BAT's agent

- 2018-02-21 - BAT, WLC (HiLCOS)

General information

BAT uses so named ""**Privilege Levels**"" to define different access rights of a user to the agent. Those levels are defined as:

1: User, read-only

3: User, write-only

5: Admin, read only, no trace rights

7: Admin, read and write, no trace rights

9: Admin, read-only

11: Admin, read and write

15: Supervisor

All other values are mapped to ""no access"".

Additional to the ""Privilege Levels"" you can define so named ""**Functional Rights**"". A functional right could be e.g. the right to use a specific wizard within WEB-interface.

Open LANconfig configuration dialog
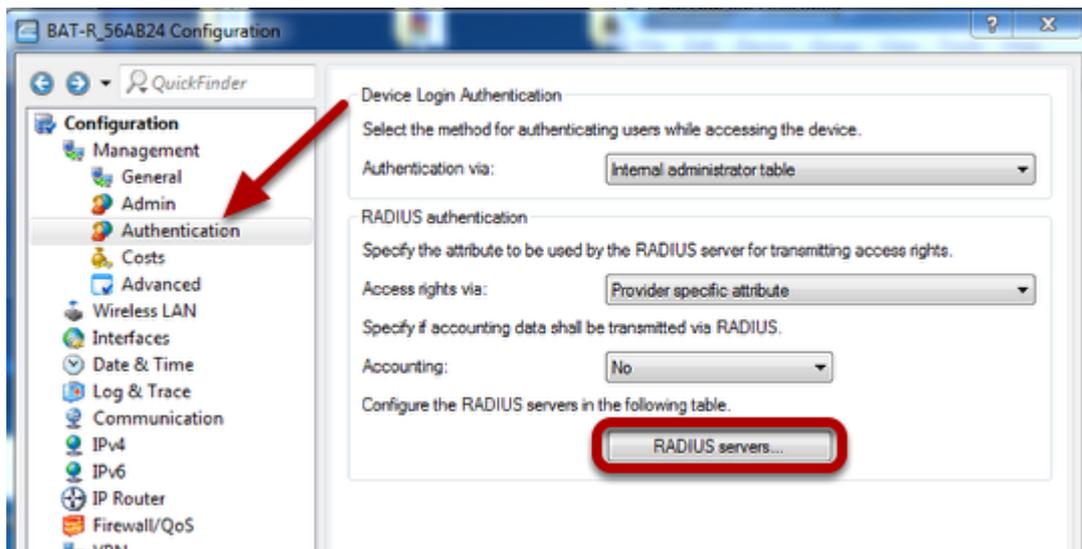
- Open LANconfig dialog
- Click on ""Configuration - Management - Authentication"" in the left hand menu
- Click on ""RADIUS servers..."" to configure the Radius servers.

Configure Radius Servers
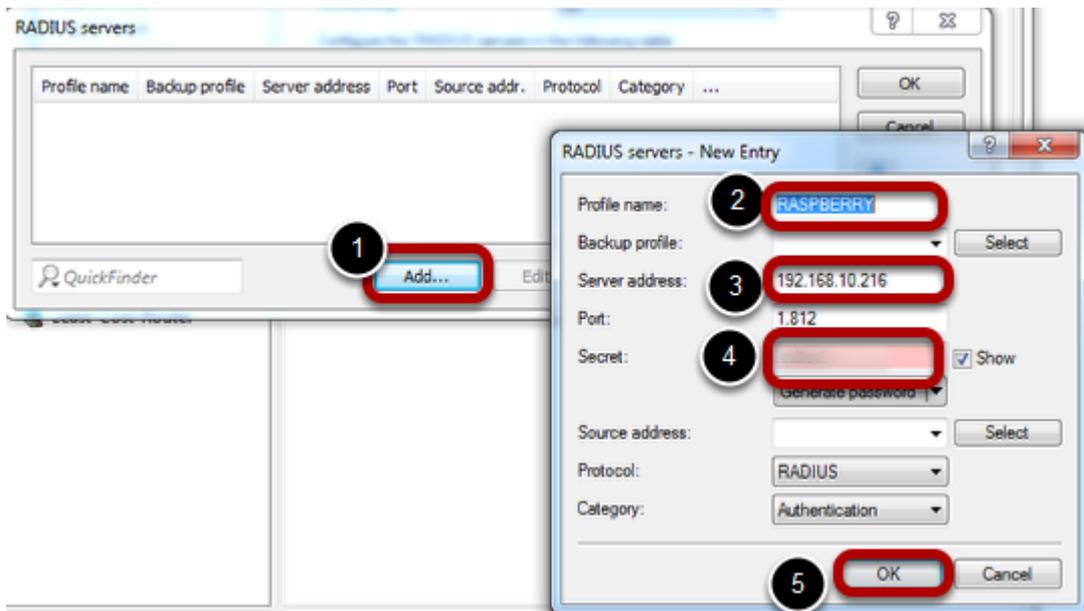
1. Press ""Add..."" to open the Radius Servers dialog.

2. Enter Profile name

3. Enter IP-address of your Radius server

4. Enter shared secret defines on your Radius server

5. Press ""OK""

Specify the Radius Attribute to be used
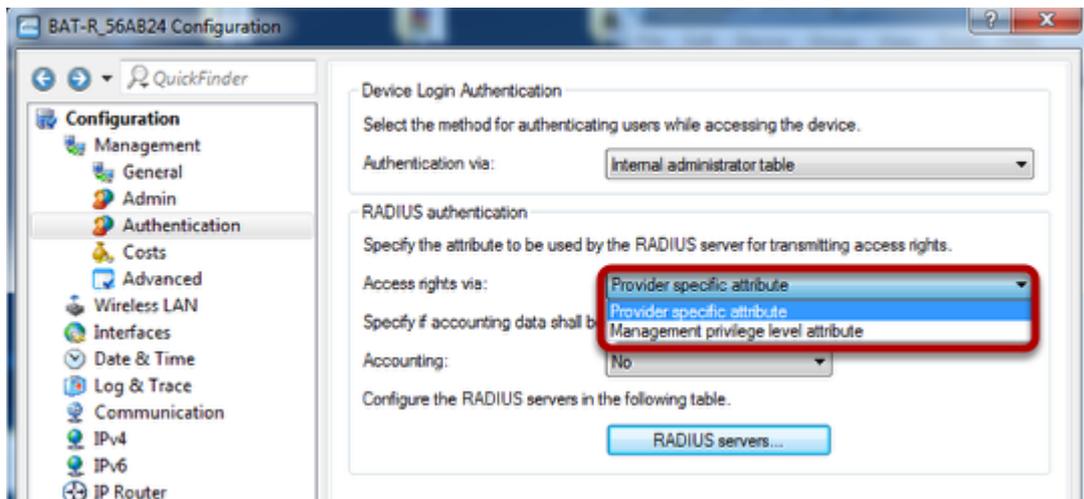
Management privilege level attribute

Use **""Management privilege level attribute""** if you don't want to assign functional access rights to any user and you don't use Radius attribute 136 for other devices in the network.

If you use **""Management privilege level attribute""**, configuration of Radius server is more easy cause you then can use standard Radius attribute 136 (Management-Privilege-Level).

Here is an example of freeradius users file:

testuser Cleartext-Password := ""testpassword""
User-name == ""testuser"",
Service-Type := NAS-Prompt-User,
Service-Type := Administrative-User,
Management-Privilege-Level := ""15""

This testuser will have supervisor rights because of Management-Privilege-Level 15.

Provider specific attribute

If you use Radius attribute 136 for other devices in the network or you want to assign functional access rights to a user then choose **""Provider specific attribute""**. This is the default value.

In this case you have to use two vendor-specific Radius attributes using **vendor ID 2356**.

Access rights ID: 11
Function rights ID: 12

For freeradius these vendor-specific attributes have to be defined in a file which has to be included in /etc/freeradius/dictionary. In the following example the file is named **/etc/freeradius/dictionary.hirschmann**. In this case please add the red line into **/etc/freeradius/dictionary**. It should then look like:

....
#

```
# The filename given here should be an absolute path.
#
$INCLUDE /usr/share/freeradius/dictionary
$INCLUDE /etc/freeradius/dictionary.hirschmann
....................................
```

The file **/etc/freeradius/dictionaly.hirschmann** file should look like:

```
# -*- text -*-
#
# dictionary.hirschmann
#
# originally by
# ""J.S. "" <>
#

VENDOR Hirschmann 2356

BEGIN-VENDOR Hirschmann

# Attributes
ATTRIBUTE Hirschmann-Access-Rights 11 integer
ATTRIBUTE Hirschmann-Function-Rights 12 integer

END-VENDOR Hirschmann
```


An example for a users file could be:

```
network Cleartext-Password := ""hirschmann""
User-name == ""network"",
Hirschmann-Access-Rights := ""1"",
Hirschmann-Function-rights := ""67"",
```

This is how the values for ""Hirschmann-Functional-Rights"" can be calculated:

1. Open the console of the BAT.
2. Change to the directory **Setup** > **Config** > **Admins**.
3. The command set? shows you the current mapping of the function rights to the corresponding hexadecimal code (e.g. Device-Search (0x80)).
4. To combine function rights, you add their hex values together.
5. Convert the hexadecimal value to a decimal number.
6. By using this decimal value in the function rights ID, you can transfer the corresponding rights.

In above example the user ""network"" gets functional rights for
Basic-Wizard (0x1)
Security-Wizard (0x2)

Time-Setting (0x40)

Sum: 43 (HEX) = 67 (DEZ)