

# APPLICATION NOTE

# APNUS38 How to Configure External radius authentication on ACKSYS Router February 2024

Copyright © 2023 ACKSYS Communications & Systems. All rights reserved.



# Content

| 1. | Radius Glossary and Term                             | 3  |
|----|--|----|
| 2. | Introduction   | 4  |
| З. | Radius Authentication Architecture                   | 4  |
| 4. | Radius Server Configuration and requirements         | 5  |
| /  | Adding AP as Radius Client(Authenticator) on Radius  | 5  |
| /  | Adding User on Radius Server                         | 6  |
| 5. | ACKSYS Router configuration                          | 7  |
| (  | Configuring Authenticator Router1 in AP role         | 7  |
|    | Configuring Authenticator Network Interface          | 7  |
|    | Configuring Authenticator Secure SSID                | 9  |
| (  | Configuring Supplicant Router1 in Bridge Client role | 10 |
|    | Configuring Supplicant Network Interface             | 11 |
|    | Configuring Supplicant SSID                          | 12 |
| 6. | TESTING  | 14 |
|    | Example of Acksys Radius Logs during authentication  | 15 |
|    | Example of Radius server Logs during authentication  | 15 |



# 1. Radius Glossary and Term

- Radius Remote Authentication Dial-In User Service.
- **EAP** Extensible Authentication Protocol.
- NAS Network Access Server.
- MSCHAPv2- Microsoft Challenge Handshake Authentication Protocol version 2
- AAA Authentication, Authorization, Accounting.
- LDAP Lightweight Directory Access Protocol.
- AP Access Point
- IPv4 Internet Protocol Version 4.
- EAPOL Extensible Authentication Protocol Over Lan
- **PEAP** Protected Extensible Authentication Protocol
- SSID- Service Sed Id
- ICMP- Internet Control Protocol
- LAN- Local Area Network



# 2. Introduction

Radius stands for Remote Authentication Dial In User Service, becomes more and more important for WIFI network security. The radius is the centralized server used for the authentication, accounting, and authorization of a user in different user cases.

The Acksys Router in the AP role, can be configured as a RADIUS Client compatible with RADIUS server. Radius authentication protocol, such as EAP, can grant or deny user access, based on the responses from the server to a range of services (including Wi-Fi, VPN, and applications etc...).

In this application note, we will explain in detail the basic steps required to configure Acksys Router as Radius Authenticator (NAS) for an external radius authentication.

# 3. Radius Authentication Architecture

In this application note, we will use 2 Acksys Routers, one as Supplicant (Bridge Client) and other as Authenticator (AP) connected to an external radius server which embedded the Ldap Server within the same layer-2 broadcast domain to avoid routing or authentication delays.



Before we begin, let's overview the configuration that we are attempting to achieve and the prerequisites that make it possible in this application note :

- 2 AirLink routers or Any type of Acksys Router
  - 1 Airlink Router configured in WIFI AP Mode as authenticator
- 1 Airlink Router configured in Bridge Client as Supplicant
- A switch to connected the Authenticator and the Radius server
- Laptop to configure the routers
- An external Radius Server embedding the user database and containing the credentials and user information needed for the RADIUS authentication



# 4. Radius Server Configuration and requirements

There are many radius server distributed on Linux and Windows with their RADIUS options which should work with ACKSYS access points if configured correctly.

In this Application note, we will use an external authentication server (radius and Ldap) solution and please refer to your RADIUS server documentation for specifics.

The key requirements for WPA2-Enterprise with Acksys are as follow:

- The server must host a certificate from a Certificate Authority (CA) trusted by clients on the network.
- All Access Points broadcasting the WPA2-Enterprise SSID must be configured as RADIUS clients/ authenticators on the radius server with a shared secret.
- The RADIUS server must have a user base or any Ldap server to authenticate against.
- The RADIUS server must support the same EAP authentication as the Wi-Fi bridged client (ex: PEAPv2 for our test)

# Adding AP as Radius Client(Authenticator) on Radius

In this application note, access points communicate with bridged clients and receive their credentials. Then the access point forwards these credentials to the Radius Server.

Before we configure our Acksys Router to use a RADIUS authentication server, we must have this information for our RADIUS server :

- **Shortname** Name to identify your NAS (Use your custom name)
- An external RADIUS server 192.168.1.2 (IP address and RADIUS port)
- Shared secret acksys (Case-sensitive password that is the same on the Acksys and the RADIUS server)
- Authentication methods Set your RADIUS server to allow the authentication method your device uses: ex: WPA2 Enterprise
- Authorized subnet or IP address The authenticator IP address authorized to contact the radius server

### Example of Radius Server configuration:

| ADIUS configuration   |                        |                                   |                    |      |
|---|------------------------|-----------------------------------|--------------------|------|
| EAP settings  |                        |                                   |                    |      |
| C EAP reauthentication type :   |                        |                                   |                    |      |
| <ul> <li>No EAP reauthentication</li> </ul>   |                        |                                   |                    |      |
| O EAP reauthentication supported by N   | NAS                    |                                   |                    |      |
| <ul> <li>EAP reauthentication supported by or</li> </ul>                              | controller             |                                   |                    |      |
|   |                        |                                   | * Mandatory fields | Conf |
|   |                        |                                   |                    |      |
|   |                        |                                   |                    |      |
|   |                        |                                   |                    |      |
|   |                        |                                   |                    |      |
|   |                        |                                   |                    |      |
|   |                        |                                   |                    |      |
| ADIUS configuration   |                        |                                   |                    |      |
| AS modification acksys  |                        |                                   |                    |      |
| NAS settings  |                        |                                   |                    |      |
| Shortname *   | acksys                 |                                   |                    |      |
| Shared secret *   | •••••                  |                                   |                    |      |
| Authorized subnet or IP address *   |                        |                                   |                    |      |
| IP address  | 192,168,1,1            |                                   |                    |      |
|   |                        |                                   |                    |      |
| <ul> <li>Interface</li> </ul>   | Native outgoing VLAN ( | 192.168.10.0/24) ~                |                    |      |
| Interface     Subnet address  | Native outgoing VLAN ( | 192.168.10.0/24) ~<br>Subnet mask |                    |      |
| Interface     Subnet address     NAS architecture which performs a portal redirection | Native outgoing VLAN ( | 192.168.10.0/24) V<br>Subnet mask |                    |      |



# Adding User on Radius Server

The Ldap Server Is embedded on the Radius Server as explained early therefore no need to create a separated external LDAP server.

- User Database
  - The user database contains the credentials and user information needed for the RADIUS server to perform authentication and authorization for the user. In this test, the Ldap is embedded in the Radius server

| User modification acksys                  | acksys  | O Last name  |  |
|---|---|--|--|
| Confirm password                          | •••••   | G First name   |  |
| Custom fields<br>Customized<br>Customized |   | Customized   |  |
| Profile  Available profiles *             | guests ^<br>employees<br>temp<br>preauth<br>no_authentication | <ul> <li>Related services</li> <li>Validity dates</li> <li>Time sots</li> <li>Time credit</li> </ul> | Instant_Messaging, Mail, Microsoft_Network, Remote_Access,<br>Web, VPN, Printers, SSH<br>Always valid<br>No time restriction<br>No restriction |



# 5. ACKSYS Router configuration

Let keeping in mind that all Acksys routers are compatible with Radius Server as Authenticator and Supplicant, but are not responsible for wireless clients authentication. The AP acts only as an intermediary between clients and the RADIUS server.

# Configuring Authenticator Router1 in AP role

If you have familiarized yourself with the configuration scheme, we can start configuring the router using instructions provided.

| Networks | AirLink Router 1: Authenticator         |
|----------|---|
|          | IP: 192.168.1.1/24                      |
| Mode: AP | SSID:RADIUS                             |
|          | Authentication Methods: WPA2/enterprise |
| Radius   | IP:192.168.1.2/24                       |
|          | Radius Port:1812                        |
|          | Share Secret: Testing123                |

## Configuring Authenticator Network Interface

In this section, we will create modify the default Network according to our network scope in Bridged Mode.

In the GUI, go to Setup ightarrow Physical Interfaces ightarrow Edit LAN Interface to create the LAN Network

|                     |    | SETUP | TOOLS     | STATUS       |              |               |               |                       |             |         |
|---------------------|----|-------|-----------|--------------|--------------|---------------|---------------|-----------------------|-------------|---------|
| PHYSICAL INTERFACES | NI |       |           | ,            |              |               |               |                       |             |         |
| VIRTUAL INTERFACES  |    | EIWOR | OVERVIEW  |              |              |               |               |                       |             |         |
| BRIDGING            |    | NAME  | ENABLED   | IPV6 ADDRESS | IPV6 GATEWAY | IPV4 ADDRESS  | NETMASK       | IPV4 GATEWAY (METRIC) | PERSISTENCE | AOTIONS |
| NETWORK             |    | lan   |           |              |              | 192.168.1.253 | 255.255.255.0 |                       | Default     | 2       |
| LAN                 |    | + Ade | I notwork |              |              |               |               |                       |             |         |
| VPN                 |    | Aut   | THELWOIK  |              |              |               |               |                       |             |         |
| ROUTING / FIREWALL  |    |       |           |              |              |               |               |                       |             |         |
| SECURITY            |    |       |           |              |              |               |               |                       |             |         |
| QOS                 |    |       |           |              |              |               |               |                       |             |         |
| SERVICES            |    |       |           |              |              |               |               |                       |             |         |

Click the "Edit" button located to the right and configure the Alias IP address used to configure the LAN Interface.

- General Setup
  - Network description :WLAN (use your custom name)
  - Protocol: Static
  - IPv4-Address : 192.168.1.1
  - IPv4 Netmask:255.255.255.0
  - Save



#### NETWORK - LAN

| On this page you can configure the network interfaces. You can be | oridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces                               |
|---|---|
| COMMON CONFIGURATION  |   |
| General Setup Interfaces Settings Advanced Settings               |   |
| Enable interface  |   |
| Network description   | LAN   |
|   | Friendly name for your network  |
| Protocol  | static ~  |
| IPv6-Address  |   |
|   | O CIDR-Notation: address/prefix   |
| Default <u>IPv6</u> gateway                                       |   |
| Delegated prefix length (for ULA Addresses)                       | 09  |
|   | It is a standard of the address assigned to this interface- see "IPv6 Global Configuration" section below   |
| IPv4-Address  | 192.168.1.1   |
| IPv4-Netmask  |   |
|   | 255.255.255.0   |
| Default <u>IPv4</u> gateway                                       |   |
| Default gateway metric  | 0   |
|   | Ocateway priority when several default gateways are configured; lowest is chosen. (Used only when a default gateway is defined on this interface) |
| DNS server(s)   | You can specify multiple IPv4 DNS servers here, press enter to add a new entry. Servers entered here will override automatically assigned ones.   |
|   |   |

- Interface Settings
  - Bridge Interfaces: enable
  - Interface: Tick Ethernet Adapter and WiFI Adaptor
  - Click Save

#### NETWORK - LAN

| On this page you can configure the network interfaces. You can be | ridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces.   |
|---|---|
| COMMON CONFIGURATION  |   |
| General Setup Interfaces Settings Advanced Settings               |   |
| Bridge interfaces   | (g) creates a bridge over specified interface(s)  |
| Enable <u>STP/RSTP</u>  | @ Enables the Spanning Tree Protocol on this bridge<br>WARNING: Some cautions must be taken with wireless interfaces, please see user guide   |
| Enable LLDP forwarding  | Image: |
| bridge VLAN   | 🗌 😰 Enable VLAN management in bridge. You must configure the bridge VLANs before enabling this option (setup->bridging)   |
| Interface   | ✓ 是 Ethernet adapter: LAN (network: LAN) ✓ ∰ WiFi adapter: WiFi - Radius (network: LAN)   |
| мто   | 1500  |

After modifying the default network, we should have the result below:

#### NETWORK OVERVIEW

| NAME | ENABLED    | IPV6 ADDRESS | IPV6 GATEWAY | IPV4 ADDRESS | NETMASK       | IPV4 GATEWAY (METRIC) | PERSISTENCE | ACTIONS |
|------|------------|--------------|--------------|--------------|---------------|-----------------------|-------------|---------|
| LAN  |            |              |              | 192.168.1.1  | 255.255.255.0 |                       | Default     | 2       |
| 1 A  | dd network | ]            |              |              |               |                       |             |         |



## **Configuring Authenticator Secure SSID**

By default the WiFI Adaptor is disabled therefore in this application note, we will create an SSID to associate to the WIFI adapter to allow end device in client mode to connect on its .

In the GUI, go to Setup  $\rightarrow$  Physical Interfaces  $\rightarrow$  Click WiFI Adaptor to On



• Click the "Edit" button located to the right and your SSID configuration page:

| WI-FI INT | ERFACE                        |             |        |                                |          |           |
|-----------|-------------------------------|-------------|--------|--------------------------------|----------|-----------|
|           | Ni-Fi 4 (802.11n) Wireless in | terface     |        |                                |          | <b>()</b> |
| <u>k</u>  | CHANNEL                       | 802.11 MODE | SSID   | ROLE                           | SECURITY | ACTIONS   |
|           | Automatic                     | 802.11b+g+n | acksys | Access Point (in frastructure) | none     | <b>X</b>  |

- Role: Access Point
- ESSID: Radius
- Network: LAN
- Click on Save

#### WIRELESS SETTINGS : WIFI

The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration. If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).

| EVICE CONFIGURATION   |  |
|---|--|
| General Setup a/b/g Data Rates 802.11n Mcs Advanced<br>802.11 mode  | d Settings<br>802.11a+n (5 GHz)  |
| HT mode   | Changing the mode may arrect the still are along paral rates tab  20MHz  Automatic doWhit HT mode is not compatible with AP, Ad-hoc, Mesh and multi-interfaces   |
| Automatic channel select  | 🗹 🔞 Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces  |
| Exclude DFS channels  | If checked, ACS will never select a DFS channel  |
|   | The Max Tx Power mentioned above is the legal limit for the selected country, it may be higher than the effective maximum power that can be provided<br>by the radio card  |
|   |  |
|   |  |
| NTERFACE CONFIGURATION  |  |
| NTERFACE CONFIGURATION  | AC Filter Frame filters Passpoint  |
| NTERFACE CONFIGURATION       General Setup       Wireless Security       Advanced Settings       Role   | AC Filter Frame filters Passpoint<br>Access Point (infrastructure)   |
| TERFACE CONFIGURATION         General Setup       Wireless Security       Advanced Settings       MF         Role       ESSID   | AC Filter Frame filters Passpoint<br>Access Point (infrastructure)   |
| VTERFACE CONFIGURATION         General Setup       Wireless Security       Advanced Settings       MA         Role         ESSID         Maximum simultaneous associations  | AC Filter Frame filters Passpoint<br>Access Point (infrastructure)   |
| VTERFACE CONFIGURATION         General Setup       Wireless Security       Advanced Settings       MF         Role       ESSID         Maximum simultaneous associations  | AC Filter Frame filters Passpoint<br>Access Point (infrastructure)<br>Radius<br>Max allowed by radio card (see documentation)<br>Specifies the maximum numer of clents to connect  |
| NTERFACE CONFIGURATION         General Setup       Wireless Security       Advanced Settings       MA         Role         ESSID         Maximum simultaneous associations         Hide ESSID   | AC Filter Frame filters Passpoint Access Point (infrastructure) Radius Max allowed by radio card (see documentation) Geospheric Specifies the maximum number of clients to connect Geospheric Comply with the DFS regulation, clients might not associate if you check this option and select a DFS channel. See the user guide for more details.  |
| NTERFACE CONFIGURATION         General Setup       Wireless Security       Advanced Settings       MA         Role         ESSID         Maximum simultaneous associations         Hide ESSID         Network                                   | AC Filter Frame filters Passpoint Access Point (infrastructure) Radius Max allowed by radio card (see documentation) Geospecifies the maximum number of clents to connect In the complex with the DFS regulation, clents might not associate if you check this option and select a DFS channel. See the user guide for more details. In the complex set of the comp |
| MTERFACE CONFIGURATION         General Setup       Wireless Security       Advanced Settings       MA         Role       ESSID       Maximum simultaneous associations         Hide ESSID       Network       Maximum simultaneous associations | AC Filter Frame filters Passpoint Access Point (infrastructure) Radius Max allowed by radio card (see documentation) Specifies the maximum number of clients to connect In or a brack to comply with the DFS regulation, clients might not associate if you check this option and select a DFS channel. See the user guide for more details. In or edails In or enable In or edails In or enable In or edails In or enable In or enab |

#### • Wireless Security

- WPA2-EAP (Enterprise)
- Radius Server: 192.168.1.2
- Radius-Port: 1812
- Shared secret: Use the same secret configured on Radius server
- Click Save and Apply



| ITERFACE CONFIGURATION                            |   |
|---|---|
| General Setup Wireless Security Advanced Settings | MAC Filter Frame filters Passpoint  |
| Security  | WDA2_EAD (Enterprice)   |
|   | WHAZ-EAR (Eliterprise)  |
| Pre-Authentication / PMK caching                  |   |
| Protected management frame (802.11w)              | disable v   |
| Radius-Server                                     | 192.168.1.2   |
|   | (g) This field accepts IPv4 or IPv6 adresses  |
| Radius-Port                                       | 1812  |
| Shared secret                                     | AØ•   |
|   | This key must have a length from 8 to 63 characters.  |
| NASID   |   |
| Group rekey interval                              | 000   |
|   | Image: Time interval for rekeying the GTK (broadcast/multicast encryption keys) in second     |
| Pair rekey interval                               | 600   |
|   | Time interval for rekeying the PTK (unicast encryption keys) in second                        |
| Master rekey interval                             | 86400   |
|   | Time interval for releasing the OWK (menter law used interval) to expect the OTK) is expected |

After modifying the default WIFI parameter, we should have the result below:

| VIREL                                | ESS INTERFACE   | S OVERVIEW  |                                      |                                       |                   |                        |            |           |
|--------------------------------------|---|---|--------------------------------------|---------------------------------------|-------------------|------------------------|------------|-----------|
| /ou can s                            | et up several simultane                                       | ous roles (wifi interface ty                          | pes) per radio card,                 | among the following combinations:     |                   |                        |            |           |
|                                      |   |   | Channel                              | selection                             |                   | Max number of interfac | es         |           |
|                                      | Combination   |   | ultiplicity                          | Can use DFS                           | Access point      | Infrastructure client  | Mesh point | Ad-hoc    |
|                                      | Multiple access   | points single   | auto, multiple                       | yes                                   | 8                 |                        |            |           |
|                                      | Portal  |   | single                               | no                                    | 8                 |                        | 1          |           |
|                                      | Client / bridg  | je single, auto                                       | , multiple, roaming                  | yes                                   |                   | 1                      |            |           |
|                                      | Other / repea   | ter   | single                               | no                                    | 8                 | 1 (non-roaming)        | 1          | 1         |
| hen usii<br>epeater<br>VI-FI IN      | ng several roles, they al<br>mode is a combination<br>TERFACE | I use the same shared ch<br>of two roles: access poin | annel; in this case, tl<br>+ client. | ne client role must not be set to mul | ichannel roaming. |                        |            |           |
| Wi-Fi 4 (802.11n) Wireless interface |   |   |                                      |                                       |                   |                        |            | <b>()</b> |
| R                                    | CHANNEL   | 802.11 MODE   | SSID                                 | ROLE                                  |                   | SECURITY               |            | ACTIONS   |
|                                      | Automatic   | 802.11a+n   | Radius                               | Access Point (infrastr                | icture)           | WPA2 EAD (Entern       | rico)      |           |

# Configuring Supplicant Router1 in Bridge Client role

The Authentication configuration is similar with the supplicant with some specific with the following instructions.

| Networks            | AirLink Router 2: Supplicant   |  |  |  |
|---------------------|--------------------------------|--|--|--|
|                     | IP: 192.168.1.3/24             |  |  |  |
| Mode: Bridge Client | SID:Radius                     |  |  |  |
|                     | Authentication Methods: PEAPv2 |  |  |  |
| Radius              | Share Secret:Testing123        |  |  |  |
|                     | User Identity: acksys          |  |  |  |
|                     | User Password: acksys          |  |  |  |



## **Configuring Supplicant Network Interface**

In the GUI, go to Setup  $\rightarrow$  Physical Interfaces  $\rightarrow$  Edit LAN Interface to create the LAN Network

|                     |   | SETUP | TOOLS     | STATUS       |              |               |               |                       |             |       |
|---------------------|---|-------|-----------|--------------|--------------|---------------|---------------|-----------------------|-------------|-------|
| PHYSICAL INTERFACES | N |       |           | ,            |              |               |               |                       |             |       |
| VIRTUAL INTERFACES  |   |       | CVERVIEW  |              |              |               |               |                       |             |       |
| BRIDGING            | Γ | NAME  | ENABLED   | IPV6 ADDRESS | IPV6 GATEWAY | IPV4 ADDRESS  | NETMASK       | IPV4 GATEWAY (METRIC) | PERSISTENCE | Actor |
| NETWORK             |   | lan   |           |              |              | 192.168.1.253 | 255.255.255.0 |                       | Default     |       |
| LAN                 |   | + Ad  | d notwork |              |              |               |               |                       |             |       |
| VPN                 |   | Au    | unetwork  |              |              |               |               |                       |             |       |
| ROUTING / FIREWALL  |   |       |           |              |              |               |               |                       |             |       |
| SECURITY            |   |       |           |              |              |               |               |                       |             |       |
| QOS                 |   |       |           |              |              |               |               |                       |             |       |
| SERVICES            |   |       |           |              |              |               |               |                       |             |       |

Click the "Edit" button located to the right and configure the Alias IP address used to configure the LAN Interface.

- General Setup
  - Network description :LAN (use your custom name)
  - Protocol: Static
  - IPv4-Address : 192.168.1.3
  - IPv4 Netmask:255.255.255.0
  - Save

#### NETWORK - LAN

| On this page you can configure the network interfaces. You can bridge s | everal interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces.                                    |
|---|---|
| COMMON CONFIGURATION  |   |
| General Setup Interfaces Settings Advanced Settings                     |   |
| Enable interface  |   |
| Network description   | LAN   |
|   | Friendly name for your network  |
| Protocol  | static 🗸  |
| IPv6-Address  |   |
|   | QDR-Notation: address/prefix  |
| Default IPv6 gateway  |   |
| Delegated prefix length (for ULA Addresses)                             | 60  |
|   | The prefix size for the address assigned to this interface- see "Pv6 Global Configuration" section below  |
| IPv4-Address  | 192.168.1.3   |
| IPy4 Netmask  | 255.255.255.0 ×   |
| Default IPv4 gateway  |   |
| Default gateway metric  | 0   |
|   | Gateway priority when several default gateways are configured; lowest is chosen.  |
| DHC control   | (Used only when a default gateway is defined on this interface)   |
| <u>nuo aerver(a)</u>  | You can specify multiple IPv4 DNS servers here, press enter to add a new entry. Servers entered here will override automatically assigned ones. |
|   |   |

- Interface Settings
  - Bridge Interfaces: enable
  - Interface: Tick Ethernet Adapter and WiFI Adaptor
  - Click Save

#### NETWORK - LAN

| On this page you can configure the network interfaces. You can be | oridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interface      |
|---|---|
| COMMON CONFIGURATION  |   |
| General Setup Interfaces Settings Advanced Settings               |   |
| Bridge interfaces   | Image: Creates a bridge over specified interface(s)   |
| Enable <u>STP/RSTP</u>  | (iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii  |
| Enable LLDP forwarding  | Image: Include the LLDP frame forwarding.   |
| bridge VLAN   | 🗌 🕘 Enable VLAN management in bridge. You must configure the bridge VLANs before enabling this option (setup->bridging) |
| Interface   | 🗹 🔊 Ethernet adapter: LAN (network: LAN) 🗹 🔹 WiFi adapter: WiFi - Radius (network: LAN)                                 |
| MTU   | 1500  |



After modifying the default network, we should have the result below:

| IETWORI | K OVERVIE | w            |              |              |               |                       |             |         |
|---------|-----------|--------------|--------------|--------------|---------------|-----------------------|-------------|---------|
| NAME    | ENABLED   | IPV6 ADDRESS | IPV6 GATEWAY | IPV4 ADDRESS | NETMASK       | IPV4 GATEWAY (METRIC) | PERSISTENCE | ACTIONS |
| LAN     |           |              |              | 192.168.1.3  | 255.255.255.0 |                       | Default     | 2       |
| 1 Ad    | d network |              |              |              |               |                       |             |         |

# **Configuring Supplicant SSID**

In the GUI, go to Setup  $\rightarrow$  Physical Interfaces  $\rightarrow$  Click WiFI Adaptor to On

| WI-FI INT | ERFACE                       |             |        |                               |          |                    |
|-----------|------------------------------|-------------|--------|-------------------------------|----------|--------------------|
|           | Wi-Fi 4 (802.11n) Wireless i | nterface    |        |                               |          |                    |
|           | CHANNEL                      | 802.11 MODE | SSID   | ROLE                          | SECURITY | ACTIONS            |
|           | Automatic                    | 802.11b+g+n | acksys | Access Point (infrastructure) | none     | Interface disabled |

Click the "Edit" button located to the right and your SSID configuration page: •

| 4 (802.11m Wireless interface         CHANINEL       SECUNTY         Access Point (infrastructure)       SECUNTY         Automatic       802.11 Mode       SSID       ROLE       SECUNTY       None <ul> <li>Role: Client</li> <li>ESSID: Radius</li> <li>Network: LAN</li> <li>Click on Save</li> </ul> <ul> <li>WIRELESS SETTINGS : WIFI</li> </ul> The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Infrastrace Configuration.<br>If SRCC role is selected, most of the Device Configuration.<br>If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).          Security of Client (Client (C |  |   |                             |   |                               |    |
|---|--|---|-----------------------------|---|-------------------------------|----|
| CHAININEL       B0211 MODE       SBD       ROLE       SECURITY         Automatic       80211b-g+n       ackays       Access Point (infrastructure)       none         •       Role: Client       •       ESSID: Radius       •       none       •         •       Rotework: LAN       •       Click on Save       •       Click on Save       •         WIRELESS SETTINGS : WIFI       The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration.       If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).       •       •         •       FOLICE CONFIGURATION       •       •       •       •         @ Clanging the mode may affect the list in the 'abig data rales' tab       •       •       •         #11 mode       20MHZ       •       •       •       •         HT mode       20MHZ       •       •       •       •       •         HT mode       20MHZ       •       •       •       •       •       •         Automatic channel select       •       •       •       •       •       •       •       •       •   | (802.11n) Wireless   | interface   |                             |   |                               |    |
| Automatic       BUZ:118-9-N       ackays       Access Point (intrastructure)       none         •       Role: Client       •       ESSID: Radius       •       Network: LAN         •       Network: LAN       •       Click on Save         WIRELESS SETTINGS : WIFI       The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the <i>interface Configuration</i> . If SRC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).         Device ConFigURATION       •         General Setup       ab/g Data Rates         802.11b-g+n (2.4 GHz)       •         •       Charging the mode may affect the list In the 'abig data rates' tab         HT mode       •         •       Automatic channel select         •       •         •       •         •       •         •       •         •       •         •       •         •       •         •       •         •       •         •       •         •       •         •       •         •       •       •  | CHANNEL  | 802.11 MODE   | SSID                        | ROLE  | SECURITY                      |    |
| <ul> <li>Role: Client</li> <li>ESSID: Radius</li> <li>Network: LAN</li> <li>Click on Save</li> </ul> <b>WIRELESS SETTINGS : WIFI</b> The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the <i>InterFace Configuration</i> . If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide). <b>DEVICE CONFIGURATION</b> General Setup         ab/g Data Rates         802 11n Mcs         Advanced Settings           802.11m mode         802 11n Mcs         Advanced Settings <ul> <li>Changing the mode may affect the list in the 'ab/g data rates' tab</li> <li>HT mode</li> <li>20MHz</li> <li>Automatic channel select</li> <li>© Automatic channel select is not compatible with AP. Advince, Mesh and multi-interfaces</li> </ul>   | Automatic  | 802.11b+g+n   | acksys                      | Access Point (infrastructure)   | none                          |    |
| <ul> <li>Role: Client</li> <li>ESSID: Radius</li> <li>Network: LAN</li> <li>Click on Save</li> </ul> WIRELESS SETTINGS: WIFI The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration is irrelevant (please refer to the product user guide). DEVICE CONFIGURATION General Setup a/b/g Data Rates 802.11n Mcs Advanced Settings 802.11 mode 802.111 mode </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>   |  |   |                             |   |                               |    |
| <ul> <li>ESSID: Radius         <ul> <li>Network: LAN</li> <li>Click on Save</li> </ul> </li> <li>WIRELESS SETTINGS: WIFI         <ul> <li>The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration.<br/>If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).</li> </ul> </li> <li>DEVICE CONFIGURATION         <ul> <li>General Setup a/b/g Data Rates 802.11n Mcs Advanced Settings             <ul> <li>@ Changing the mode may affect the last in the a/big data rates tab</li> <li>HT mode 20MHz</li></ul></li></ul></li></ul>  |  | <ul> <li>Role: Client</li> </ul>  |                             |   |                               |    |
| <ul> <li>Network: LAN</li> <li>Click on Save</li> </ul> WIRELESS SETTINGS : WIFI The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration. If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide). DEVICE CONFIGURATION General Setup arb/g Data Rates 802.11n Mcs Advanced Settings 6 Changing the mode may afted the list in the 'arbig data rates' tab HT mode 20MHz <ul> <li>Quintle' and compatible with AP, Achoc, Mesh and multi-interfaces</li> <li>Automatic channel select</li> <li>Quintle' Automatic tannel select is not compatible with Ad-hoc, Mesh and multi-interfaces</li></ul>  |  | • ESSID: Radius   |                             |   |                               |    |
| <ul> <li>Click on Save</li> <li>WIRELESS SETTINGS : WIFI</li> <li>The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the <i>Interface Configuration</i>. If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).</li> <li>DEVICE CONFIGURATION         <ul> <li>General Setup</li> <li>a/b/g Data Rates</li> <li>802.11n Mcs</li> <li>Advanced Settings</li> <li>@ Changing the mode may affect the list in the 'a/big data rates' tab</li> <li>HT mode</li> <li>20MHz</li> <li>@ Automatic 40MHz HT mode is not compatible with AP, Achoc, Mesh and multi-interfaces</li> <li>Automatic channel select</li> <li>@ Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces</li> </ul> </li> </ul>  |  | • Network: LAN  |                             |   |                               |    |
| WIRELESS SETTINGS : WIFI         The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration. If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).         DEV/CE CONFIGURATION         General Setup       a/b/g Data Rates       802.11n Mcs       Advanced Settings         802.11 mode       802.11b+g+n (2.4 GHz)       •         HT mode       20MHz       •         Automatic channel select       © Automatic channel select is not compatible with AP, Ad-hoc, Mesh and multi-interfaces  |  | Click on Save   |                             |   |                               |    |
| WIRELESS SETTINGS : WIFI         The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration is irrelevant (please refer to the product user guide).         If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).         DEVICE CONFIGURATION         General Setup       a/b/g Data Rates       802.11n Mcs       Advanced Settings         802.11n mode       802.11b+g+n (2.4 GHz)       v         WIRELESS List of the Device Configuration is irrelevant (please refer to the product user guide).   |  |   |                             |   |                               |    |
| WIRELESS SETTINGS : WIFI         The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration. If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).         DEVICE CONFIGURATION         General Setup       a/b/g Data Rates       802.11n Mcs       Advanced Settings         802.11 mode       802.11b+g+n (2.4 GHz)       •         #T mode       20MHz       •         Automatic channel select       @ Automatic channel select is not compatible with Ad-hoc, Mesh and multi-Interfaces  |  |   |                             |   |                               |    |
| The Device Configuration section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the Interface Configuration.         If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).         DEVICE CONFIGURATION         General Setup       a/b/g Data Rates         802.11 mode       802.11h Hcs         Advanced Settings         802.11 mode       @ Changing the mode may affect the list in the 'a/b/g data rates' tab         HT mode       20MHz         @ Automatic 40MHz HT mode is not compatible with AP, Ad-hoc, Mesh and multi-interfaces         Automatic channel select       @ Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces  | WIRELESS S   | ETTINGS : WIFI  |                             |   |                               |    |
| Operation mode are in the Interface Configuration.         If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).         DEVICE CONFIGURATION         General Setup       a/b/g Data Rates       802.11n Mcs       Advanced Settings         802.11 mode       @ Changing the mode may affect the list in the 'a/b/g data rates' tab         HT mode       20MHz   | The Device   | Configuration section covers physica  | al settings of the radio l  | hardware which is shared among all defined wireless networks. Per net   | work settings like encryption | or |
| If SRCC role is selected, most of the Device Configuration is irrelevant (please refer to the product user guide).         DEVICE CONFIGURATION         General Setup       a/b/g Data Rates       802.11n Mcs       Advanced Settings         802.11 mode       802.11b+g+n (2.4 GHz)       •         @ Changing the mode may affect the list in the 'arbig data rates' tab         HT mode       20MHz       •         @ Automatic channel select       @ Automatic channel select is not compatible with AP, Ad-hoc, Mesh and multi-interfaces   | oporation m  | configuration socion covors physica   | n                           | narawaro which is shared allong all donnod wholess networks. For her  | work solarigs into oner puoli |    |
| DEVICE CONFIGURATION         General Setup       a/b/g Data Rates       802.11n Mcs       Advanced Settings         802.11 mode       802.11b+g+n (2.4 GHz)       •         @ Changing the mode may affect the list in the 'a/b/g data rates' tab         HT mode       20MHz       •         @ Automatic channel select       @ Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces  | operation in   | node are in the Interface Configuration   |                             |   |                               |    |
| General Setup       a/b/g Data Rates       802.11n Mcs       Advanced Settings         802.11 mode       802.11b+g+n (2.4 GHz)           i i i i i i i i i i i i i i i i i i i  | If SRCC role   | node are in the Interface Configuration<br>e is selected, most of the Device Cor  | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
| 802.11 mode       802.11b+g+n (2.4 GHz)         Image: Changing the mode may affect the list in the 'arbig data rates' tab         HT mode       20MHz         Image: Changing the mode is not compatible with AP, Ad-hoc, Mesh and multi-interfaces         Automatic channel select       Image: Changing the mode is not compatible with Ad-hoc, Mesh and multi-interfaces   | If SRCC role   | iode are in the Interface Configuratio<br>e is selected, most of the Device Cor<br>SURATION   | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
| Image: Changing the mode may affect the list in the 'arbig data rates' tab         Image: Changing the mode may affect the list in the 'arbig data rates' tab         Image: Changing the mode may affect the list in the 'arbig data rates' tab         Image: Changing the mode may affect the list in the 'arbig data rates' tab         Image: Changing the mode may affect the list in the 'arbig data rates' tab         Image: Changing the mode may affect the list in the 'arbig data rates' tab         Image: Changing the mode may affect the list in the 'arbig data rates' tab         Image: Changing the mode may affect the mode is not compatible with AP, Ad-hoc, Mesh and multi-interfaces         Image: Changing the mode may affect the mode is not compatible with Ad-hoc, Mesh and multi-interfaces         Image: Changing the mode may affect the mode is not compatible with Ad-hoc, Mesh and multi-interfaces  | DEVICE CONFIG  | node are in the Interface Configuration         e is selected, most of the Device Consumation         SURATION         p       a/b/g Data Rates       802.11n Michael   | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
| HT mode     20MHz        @ Automatic channel select     @ Automatic 40MHz HT mode is not compatible with AP, Ad-hoc, Mesh and multi-interfaces       Automatic channel select     @ Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces   | General Setup<br>802.11 mode   | ode are in the Interface Configuratio<br>e is selected, most of the Device Con<br>SURATION<br>p a/b/g Data Rates 802.11n Mo   | nfiguration is irrelevant   | (please refer to the product user guide).<br>gs<br>D2.11b+g+n (2.4 GHz)   |                               |    |
| Automatic channel select  | DEVICE CONFIG<br>General Setup<br>802.11 mode  | ode are in the Interface Configuratio<br>e is selected, most of the Device Cor<br>SURATION<br>p a/b/g Data Rates 802.11n Mo   | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
| V V Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces   | DEVICE CONFIG<br>General Setup<br>802.11 mode  | ode are in the Interface Configuratio<br>e is selected, most of the Device Cor<br>SURATION<br>p a/b/g Data Rates 802.11n Mo   | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
|   | DEVICE CONFIG<br>General Setup<br>802.11 mode<br>HT mode   | index are in the Interface Configuration         e is selected, most of the Device Consumation         SURATION         p       a/b/g Data Rates         802.11n Me         pnel select   | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
|   | DEVICE CONFIG<br>General Setur<br>802.11 mode<br>HT mode<br>Automatic char   | ode are in the Interface Configuratio<br>e is selected, most of the Device Cor<br>SURATION<br>p a/b/g Data Rates 802.11n Mo   | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
| INTERFACE CONFIGURATION   | DEVICE CONFIG<br>General Setur<br>802.11 mode<br>HT mode<br>Automatic char   | inde are in the Interface Configuration         e is selected, most of the Device Consumation         SURATION         p       a/b/g Data Rates         a/b/g Data Rates       802.11n Monanti Select   | nfiguration is irrelevant   | (please refer to the product user guide).<br>22.11b+g+n (2.4 GHz)<br>Changing the mode may affect the list in the 'aibig data rates' tab<br>OMHz<br>Automatic 40MHz HT mode is not compatible with AP, Ad-hoc, Mesh and multi-interfaces<br>Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces |                               |    |
| INTERFACE CONFIGURATION  General Setup Wireless Security Advanced Settings Roaming Frame filters  | DEVICE CONFIG<br>General Setur<br>802.11 mode<br>HT mode<br>Automatic char<br>INTERFACE COI<br>General Setur                         | inde are in the Interface Configuration         e is selected, most of the Device Consumation         SURATION         p       a/b/g Data Rates         802.11n Monantian         nnel select         NFIGURATION         p         Wireless Security         Advanced                                    | rinfiguration is irrelevant | (please refer to the product user guide).   |                               |    |
| INTERFACE CONFIGURATION  General Setup Wireless Security Advanced Settings Roaming Frame filters  Client (infrastructure)   | If SRCC role General Setur 802.11 mode HT mode Automatic char INTERFACE COI General Setur Role                                       | inde are in the Interface Configuration         e is selected, most of the Device Consumation         SURATION         p       a/b/g Data Rates         802.11n Monage         nnel select         NFIGURATION         p         Wireless Security         Advanced                                       | nfiguration is irrelevant   | (please refer to the product user guide).   |                               |    |
| INTERFACE CONFIGURATION       General Setup     Wireless Security     Advanced Settings     Roaming     Frame filters       Role     Client (infrastructure)         Multiple ESSIDs  | If SRCC role General Setur S02.11 mode HT mode Automatic char INTERFACE COD General Setur Role Multiple ESSID                        | inde are in the Interface Configuration         e is selected, most of the Device Consumation         surration         p       a/b/g Data Rates         802.11n Monage         innel select         NFIGURATION         p         Wireless Security         Advanced         s                           | rafiguration is irrelevant  | (please refer to the product user guide).   |                               |    |
| INTERFACE CONFIGURATION          General Setup       Wireless Security       Advanced Settings       Frame filters         Role       Client (infrastructure)           Multiple ESSIDs           ESSID       Radius  | If SRCC role<br>General Setup<br>802.11 mode<br>HT mode<br>Automatic char<br>INTERFACE CO<br>General Setup<br>Role<br>Multiple ESSID | inde are in the Interface Configuration         e is selected, most of the Device Consumation         survey of the Device Consumation         p       a/b/g Data Rates         802.11n Monantian         innel select         NFIGURATION         p         Wireless Security         Advanced         s | Settings Roaming            | (please refer to the product user guide).   |                               |    |
| INTERFACE CONFIGURATION          General Setup       Wireless Security       Advanced Settings       Roaming       Frame filters         Role       Client (infrastructure)          Multiple ESSIDs  | If SRCC role General Setup 802.11 mode HT mode Automatic char INTERFACE COI General Setup Role Multiple ESSID Network                | inde are in the Interface Configuration         e is selected, most of the Device Consumation         guartion         p       a/b/g Data Rates         802.11n Monantian         innel select         NFIGURATION         p         Wireless Security         Advanced         s                         | Settings Roaming            | (please refer to the product user guide).   |                               |    |
| INTERFACE CONFIGURATION          General Setup       Wireless Security       Advanced Settings       Roaming       Frame filters         Role       Client (Infrastructure)          Multiple ESSIDs  | If SRCC role General Setup 802.11 mode HT mode Automatic char INTERFACE COI General Setup Role Multiple ESSID Network                | inde are in the Interface Configuration         e is selected, most of the Device Consumation         guartion         p       a/b/g Data Rates         802.11n Monantian         innel select         NFIGURATION         p         Wireless Security         Advanced         s                         | Settings Roaming            | (please refer to the product user guide).   |                               |    |



- Wireless Security
  - WPA2-EAP (Enterprise)
  - EAP-Method: PEAP
  - Server CA-Certificate: Import the .pem certificate use on the Radius Server
  - Authentication phase2: MSCHAPv2
  - User identity: acksys
  - Password: acksys
  - Click Save and Apply

| General Setup Wireless Security Advanced Settings | Roaming Advanced Roaming Frame filters   |
|---|--|
| ecurity   | WPA2-EAP (Enterprise)  |
|   | WARNING. The WEP encryption is only supported with 11abg mode.   |
| rotected management frame (802.11w)               | disable v  |
| Fast transition support (802.11r)                 |  |
| EAP-Method  | PEAP v   |
| Anonymous identity                                |  |
|   | (2) This identity it used during the authentication phase 1. It is recommanded to set a different value than user identity |
| Server CA-Certificate                             | Parcourir Aucun fichier sélectionné.   |
|   | Please check this device's time to avoid a certificate out of date error   |
|   | Only PEM certificates are accepted   |
| Authentication (phase 2)                          | MSCHAPV2 V   |
| . ,   |  |
| Jser identity                                     | acksys   |

After modifying the default WIFI parameter, we should have the result below:

| VIRELESS INTERFACES OVERVIEW   |  |            |                                    |             |                              |              |                       |            |           |  |  |
|--|--|------------|------------------------------------|-------------|------------------------------|--------------|-----------------------|------------|-----------|--|--|
| /ou can s  | et up to 8 simultaneous                    | s roles (v | vifi interface types)              | per radio c | ard, among the following com | binations:   |                       |            |           |  |  |
|  | Channel selection Max number of interfaces |            |                                    |             |                              |              |                       |            |           |  |  |
| 1  | Combination                                |            | Multiplicit                        | у           | Can use DFS                  | Access point | Infrastructure client | Mesh point | Ad-hoc    |  |  |
|  | Multiple access po                         | ints       | single, auto, m                    | ultiple     | yes                          | 8            |                       |            |           |  |  |
|  | Portal                                     |            | single                             |             | no                           | 8            |                       | 1          |           |  |  |
|  | Client / bridge                            |            | single, auto, multiple,<br>roaming |             | yes                          |              | 1                     |            |           |  |  |
|  | Other / repeater                           | r          | single                             |             | no                           | 8            | 1 (non-roaming)       | 1          | 1         |  |  |
| When using several roles, they all use the same shared channel; in this case, the client role must not be set to multichannel roaming.<br>Repeater mode is a combination of two roles: access point + client.<br>WI-FI INTERFACE |  |            |                                    |             |                              |              |                       |            |           |  |  |
|  | Wi-Fi 4 (802.11n) W                        | /ireless   | interface                          |             |                              |              |                       |            | <b>()</b> |  |  |
| X  | CHANNEL                                    | 80         | 02.11 MODE                         | SSID        | ROLE                         |              | SECURITY              |            | ACTIONS   |  |  |
| (Joseffing)  | 16   | 8          | 02.11b+g+n                         | Radius      | Client (infrastruc           | ture)        | WPA2-EAP (Enterpris   | se)        | 2 🗙       |  |  |
|  |  |            |                                    |             |                              |              |                       |            |           |  |  |

NOTE: The AP as a RADIUS client collects user information (here user name as acksys and password as acksys) and sends this information to a RADIUS server. The RADIUS server authenticates a user according to these information and then performs authorization and accounting for the user.



# 6. **TESTING**

If you've followed all the steps presented above, your configuration should be finished. But as with any other configuration, it is always wise to test the setup in order to make sure that it works properly.

## In GUI Status →Wireless

The Router configured as Supplicant is well authenticated with its credential on the Radius Sever Via the AP configured as Authenticator.

| $\bigcirc$ $\aleph$                           | 192.168.1.3/cgi-b | oin/guiweb/;stok=e9b7d9 | 96bf51e39be9af756874eb | 09d4c/status/wire              | ess/               |  |          | ×       | A 23         |
|---|-------------------|-------------------------|------------------------|--------------------------------|--------------------|--|----------|---------|--------------|
| ć   |                   | CINS & SYSTEMS          | se Aind B              | is just beca<br>rLink <i>s</i> | me easier<br>eries | ue of q are<br>story to he<br>e range to | V        |         | 1            |
| DEVICE INFO                                   | SETUP             | TOOLS ST                | ATUS                   |                                |                    |  |          |         |              |
| NETWORK                                       | ASSOCIAT          | TED STATIONS            |                        |                                |                    |  |          |         |              |
| WIRELESS                                      | ASSOCIATE         | O STATIONS RESULTS : 1  |                        |                                |                    |  |          |         |              |
| CHANNEL STATUS<br>MESH SURVEY                 | GRAPH             | RADIO                   | NAME / SSID            | MODE                           | MAC $\ominus$      | CHANNEL                                  | SIGNAL O | NOISE 0 | SIGNAL/NOISE |
| SERVICES STATUS<br>SITE SURVEY<br>SRCC STATUS | 論                 | WiFi                    | Radius                 | Infrastructure                 | C4:93:00:08:A0:76  | 11                                       | -34 dBm  | -95 dBm | 61 dB        |

IP Connectivity for the Supplicant to the Radius Server work properly showing the User Acksys is well authenticated on the radius server as shown on the below screenshot

| NETWORK UTILITIES  |  |       |           |   |             |  |  |  |
|--|--|-------|-----------|---|-------------|--|--|--|
| LINK DIAGNOSTIC  |  |       |           |   |             |  |  |  |
| 192.168.1.2<br>Ping Ping IPv   | www.example  | e.com |           |   |             |  |  |  |
| BANDWIDTH TEST   |  |       |           |   |             |  |  |  |
| MODE<br>Server V   | PROTOCOL<br>TCP  | ~     | DELAY (S) | 0 | DISPLAY (S) |  |  |  |
| Run Test   |  |       |           |   |             |  |  |  |
| DNS TEST   |  |       |           |   |             |  |  |  |
| www.example.com  |  |       |           |   |             |  |  |  |
| PING 192.168.1.2 (192.168.1.2): 56 data bytes<br>64 bytes from 192.168.1.2: seq=0 ttl=64 time=1<br>64 bytes from 192.168.1.2: seq=1 ttl=64 time=0<br>64 bytes from 192.168.1.2: seq=2 ttl=64 time=1<br>64 bytes from 192.168.1.2: seq=3 ttl=64 time=1<br>64 bytes from 192.168.1.2: seq=4 ttl=64 time=1<br>192.168.1.2 ping statistics<br>5 packets transmitted, 5 packets received, 0%<br>round-trip min/avg/max = 0.844/21.188/101.464 t | .299 ms<br>.844 ms<br>.464 ms<br>.872 ms<br>01.464 ms<br>packet loss<br>ms |       |           |   |             |  |  |  |



## Example of Acksys Radius Logs during authentication

In the GUI, go to Status  $\rightarrow$  Logs and look after radius logs to check the authentication logs

| Wed Jan 24 15-48-45 2024 daemon debug wha sunnicant[7426]. RX FAPOL - heydumn(len=47). 02 00 00 26 01 06 00 26 19 00 17 03 01 00 20 48 dc 57   | af f  |
|--|-------|
| Wed Jan 24 15:48:45 2024 daemon.debug wha sunlicant[7426]: FAPOI: Received HAP-Parket frame  |       |
| Wed lan 24 15:48:45 2024 daemon, debug what supplicant[7426]: FAPOI: SUPP BE entering state REQUEST  |       |
| Wed Jan 24 15:48:45 2024 daemon, debug wha supplicant[7426]: EAPOL: getSunpRsn   |       |
| Wed Jan 24 15:48:45 2024 daemon, debug wha supplicant[7426]: FAP: FAP entering state RECEIVED  |       |
| Wed lan 24 15:48:45 2024 daemon, debug what supplicant[7426]: EAP: Received EAP-Request id=11 method=25 vendor=0 vendorMethod=0  |       |
| Wed lan 24 15:48:45 2024 daemon debug who supplicate[7426]: EAP: FAP entering state METHOD   |       |
| Wed Jan 24 15:48:45 2024 daemon debug wha supplicant[7426]: SSI: Received nacket(len=43) - Elags 0x00  |       |
| Wed Jan 24 15:48:45 2024 daemon, debug was supplicant[7426]; FAP-PFAP: received 37 bytes encryoted data for Phase 2  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa supplicant[7426]: OpenSSL: RX ver=0x0 content type=256 (TLS header info/)  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa supplicant[7426]: OpenSSL: Message - hexdump(len=5): [REMOVED]   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa supplicant[7426]: EAP-PEAP: Decrypted Phase 2 EAP - hexdump(len=11): 01 0b 00 0b 21 80 03 00 02 00 0   | 01    |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa supplicant[7426]: EAP-PEAP: received Phase 2: code=1 identifier=11 length=11   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa supplicant[7426]: EAP-PEAP: Phase 2 Request: type=33   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa supplicant[7426]: EAP-TLV: Received TLVs - hexdump(len=6): 80 03 00 02 00 01   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa supplicant[7426]: EAP-TLV: Result TLV - hexdump(len=2): 00 01  |       |
| Wed Jan 24 15:48:45 2024 daemon.notice wpa_supplicant[7426]: EAP-TLV: TLV Result - Success - EAP-TLV/Phase2 Completed  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAP-PEAP: Encrypting Phase 2 data - hexdump(len=11): [REMOVED]   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: OpenSSL: TX ver=0x0 content_type=256 (TLS header info/)  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: OpenSSL: Message - hexdump(len=5): [REMOVED]   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: OpenSSL: TX ver=0x0 content_type=256 (TLS header info/)  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: OpenSSL: Message - hexdump(len=5): [REMOVED]   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: SSL: 74 bytes left to be sent out (of total 74 bytes)  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAP: method process -> ignore=FALSE methodState=DONE decision=UNCOND_SUCC eapResp[   | Data= |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAP: Session-Id - hexdump(len=65): 19 7a 2a 96 a6 64 84 fd 3f ea 5f f7 e3 a2 0f 44   | 4 2b  |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAP: EAP entering state SEND_RESPONSE  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAP: EAP entering state IDLE   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAPOL: SUPP_BE entering state RESPONSE   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAPOL: txSuppRsp   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: TX EAPOL: dst=c4:93:00:08:a0:76  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: TX EAPOL - hexdump(len=84): 01 00 00 50 02 0b 00 50 19 00 17 03 01 00 20 c4 a8 49  | da 4  |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: nl80211: Send over control port dest=c4:93:00:08:a0:76 proto=0x888e len=84 no_enc  | rypt= |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAPOL: SUPP_BE entering state RECEIVE  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: EAPOL: startWhen> 0  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: 12_packet_receive: src=c4:93:00:08:a0:76 len=22  |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: wlan0: RX EAPOL from c4:93:00:08:a0:76 to c4:93:00:0c:3c:85 (bridge)   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[/426]: wlan0: RX EAPOL from c4:93:00:08:a0:76   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[7426]: KX EAPOL - hexdump(len=8): 02 00 00 04 03 0b 00 04   |       |
| Wed Jan 24 15:48:45 2024 daemon.debug wpa_supplicant[/426]: EAPOL: Received EAP-Packet Trame   |       |
| Wed Jan 24 15:46:45 2024 daemon.debug wpa_supplicant[/420]: LAPUL: SUPY_BE entering state KEQUESI  |       |
| wed Jan 24 15:40:45 2024 daemon.debug wpa_supplicant[/420]: Lavul getSuppMSp   |       |
| Wed Jan 24 15:45:45 2024 daemon.debug wha supplicant/4201; EAP: EAP entering state KECLIVED  |       |
| weu Jan 24 15:40:45 2024 udemon.uebug wpd_supplicati(7420): CAF: Received CAF-SUCCESS  | _     |
| Ned Jan 24 15/48/5 2024 demondabug wpg_supplication(/420). Ler. Status notification. completion (param-sultess)<br>Wed Jan 24 15/48/5 2024 demondabug wpg_supplication(/420). EAD: FAD antening state SUCCESS  |       |
| ned Sun 24 15/48/5 2024 demonnative whe sublicating/4201. Let Let entering state socies.   |       |
| Med Jan 24 15:48:45 2024 demonstrate #pa_appirtant[7406]; Miano, Chtertent - Society Lar addiministration completed successfully   |       |
| Act of a set of a set of a set of a set of the set of t | _     |

## Example of Radius server Logs during authentication

Let checking the authentication details logs and reply logs on the radius server:

## Authentication details radius logs: Access-Accept for success authentication



## **Reply detail radius logs**

| Tue Feb 6 17:51:44 2024<br>Packet-Type = Access-Request<br>User-Name = "acksys"<br>Called-Station-Id = "C4-93:00-08-A0-76:Radius"<br>MAS-Port-Type = Wireless-802.11<br>Service-Type = Framed-User<br>MAS-Port = 1<br>Calling-Station-Id = "C4-93:00-0C-3C:85"<br>Connect-Info = "CONNECT 54Maps 802.11g"<br>Acct-Session-Id = "FF7590FC15229F8"<br>X-Ascend-MitUi = "FF7590FC15229F8"<br>X-Ascend-MitUi = TF7590F76<br>X-Ascend-MitUi k= 1027076<br>X-Ascend-MitUi k= 1027073<br>Framed-HTU = 1400 |
|---|
| Packet-Type = Access-Request         User-Home = "acksys"         Called-Station-Id = "C4-93-00-00-A0-76:Radius"         MAS-Port-Type = Mireless-802.11         Service-Type = Framed-User         NAS-Port = 1         Called-Station-Id = "C4-93-00-00-C-3C-85"         Connect-Info = "CONNECT SAMps 802.11g"         Acct-Session-Id = "FF5980F1C529980"         X-Ascend-Home-Agent-UDP-Port = 1027076         X-Ascend-Home-Home-Num-In-Multilink=10027073         Framed-HUB = 10400        |
| User-Namit = "acksys"<br>Called-Station-1d = "CA-93-00-08-A0-76:Radius"<br>MAS-Port-Type = Wireless-082.11<br>Service-Type = Framed-User<br>MAS-Port = 1<br>Calling-Station-1d = "C4-93-00-9C-3C-85"<br>Connect-Info = "CONNECT 54M8ps 882.110"<br>Acct-Session-1d = "FF7590F1CF229F8"<br>X-Ascend-Mitu = 1FF7590F1CF229F8<br>X-Ascend-Mitu = 10P-Port = 1027076<br>X-Ascend-Mitu = 10P-7076<br>X-Ascend-Mitu = 100P7073<br>Framed-HTU = 1400   |
| Called-Station-1d = "C4-93-00-08-A0-76:Radius"<br>MAS-Port-Type = Wireless-602.11<br>Service-Type = Framed-User<br>MAS-Fort = 1<br>Callung-Station-Id = "C4-93-00-0C-3C-85"<br>Connect-Info = "CONNECT 54Mps 802.11g"<br>Acct-Session-1d = "FF5980F1CE229F8"<br>X-Ascend-Mittlink-TD = 1027076<br>X-Ascend-Mittlink-TD = 1027076<br>X-Ascend-Mittlink = 1027073<br>Framed-MIU = 1400  |
| Lailed-Starton-1d = "(-4-93-00-00-76):Raduus"<br>NAS-Port-Type = Framed-User<br>NAS-Port = 1<br>Callung-Starts = Td = "(4-93-00-0C-3C-85)"<br>Callung-Starts = "CONNECT SAMps 802.110"<br>Cartes information = "FFY500F(C229F0"<br>X-Ascend-Home-Lagent-UDP-Port = 1027076<br>X-Ascend-Home-Lagent-UDP-Port = 1027076<br>X-Ascend-Home-In-Nultiuk = 1027073<br>Framed-HTU = 1400  |
| NAS-FORT-Type = Wrre(ess-062.11<br>Service-Type = Framed-User<br>NAS-FORT = 1<br>Calling-Station-Id = "C4-03-00-0C-3C-85"<br>Connect-Info = "CONNECT 54Mbps 802.11g"<br>Acct-Session-Id = "FF75800F1CE229780"<br>X-Ascend-Minut = 1 = FF75800F1CE229780"<br>X-Ascend-Minut = In+Nittlink = 10927073<br>Framed-MIU = 1400  |
| Service-Type = Framed-User<br>NAS-Port = 1<br>Calling-Station-Id = "C4-93-00-8C-3C-85"<br>Connect-Info = "CONNECT SAMbps 802.11g"<br>Act-Session-Id = "FF75809FLC2229F8"<br>X-Ascend-Home-Agent-UDP-Port = 1027076<br>X-Ascend-Home-InitN+ID = 1027076<br>X-Ascend-Home-InitN+ID = 1027073<br>Framed-MTU = 1040   |
| NAS-Port = 1<br>Calling-Station-Id = "C4-93-00-0C-3C-85"<br>Connect-Info = "CONNECT SAMbps 802.11g"<br>Acct-Session-Id = "FF75800F1CE22978"<br>X-Ascend-Minut-Id = 1F27076<br>X-Ascend-Minut-Ins-TD = 1027076<br>X-Ascend-Minut-Id ink = 10027073<br>Framed-MIU = 1000  |
| Calling-Station-Id = "C4-03-00-0C-32-05"<br>Connect-Info = "CONNECT SAMps 802.11g"<br>Act-Session-Id = "FF75809FLC229F0"<br>X-Ascend-Home-Agent-UDP-Port = 1027076<br>X-Ascend-Home-Ink-ID = 1027076<br>X-Ascend-Home-In-Nultiluk = 1027073<br>Framed-MTU = 1000  |
| Connect-Info = "CONNECT 54Mbps 802.11g"<br>Acct-Session-12d = "FF75800F1C52978"<br>X-Ascend-Home-Agent-UDP-Port = 1027076<br>X-Ascend-MuttiInk-ID = 1027076<br>X-Ascend-MutU = 1027073<br>Framed-HTU = 1040   |
| Acct-Session-Id = "FF75900F1CE229F8"<br>X-Ascend-Home-Agent-UDP-Port = 1027076<br>X-Ascend-Hum-In-Hulttlink = 1027073<br>X-Ascend-HUT = 10400   |
| X-Ascend-Home-Agent-UDP-Port = 1827076<br>X-Ascend-MultiInk-ID = 1827076<br>X-Ascend-MultiInk = 1827073<br>Framed-HTU = 1400  |
| X-Ascend-Multilink-ID = 1027076<br>X-Ascend-Mum-In-Multilink = 1027073<br>Framed-MTU = 1400   |
| X-Ascend-Munu=In-Multilink = 1827073<br>Framed-MTU = 1400   |
| Framed-MTU = 1400   |
|   |
| $FAP_{-Massane} = 0x920h905010001703010020c4a840da45cf7516e7b770f57ad501d30bc023c33b7562c8340f0hf8100fc0f217030100201872ae8588cd6076582060370ha4ab3fe805f30fef7ec2175ae7560cc77deadc$   |
|   |
|   |
| Message-Authenticator = 0xe89a2t251t80/4059ttd3tbc2ee354cc  |
| NAS-IP-Address = 192.168.1.1  |

Support : https://support.acksys.fr