



MT7986 8021xd Application Notes

Version: 1.0
Release date: 2021-08-13

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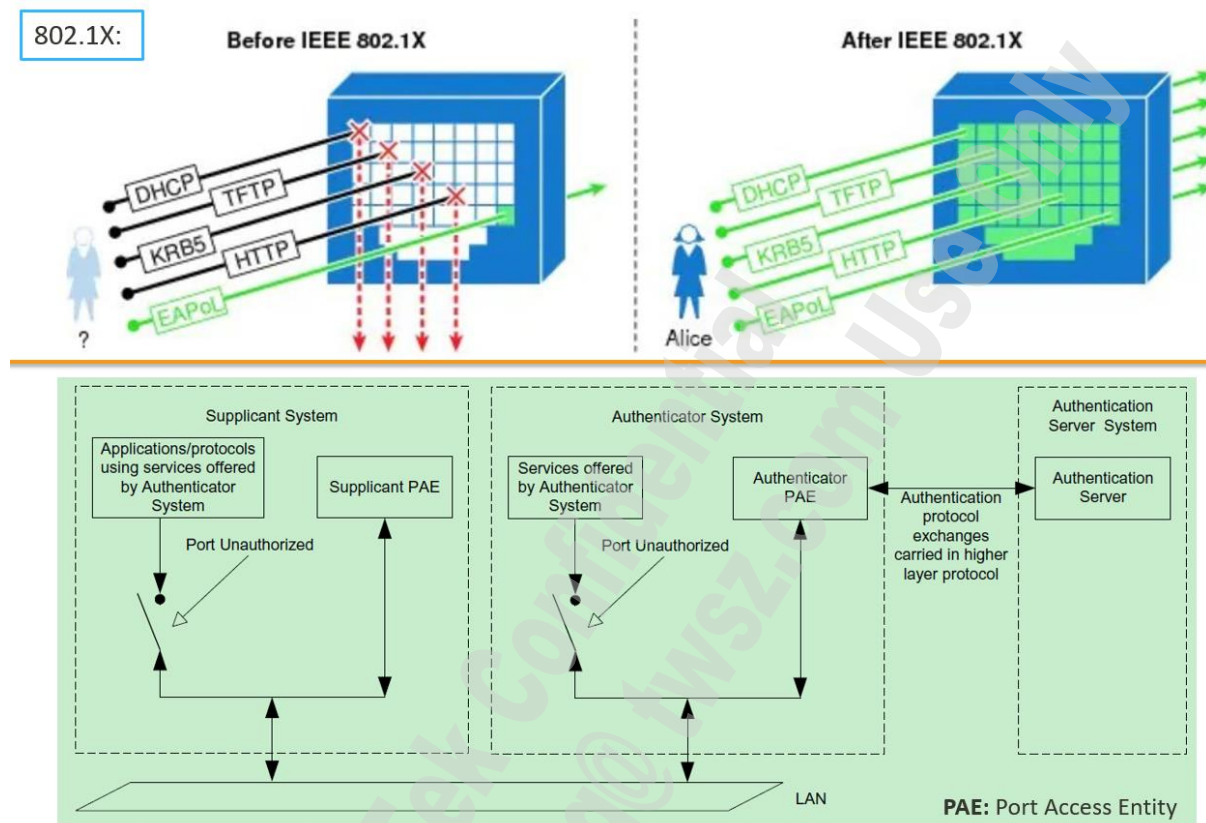
Version History

Version	Date	Author	Description
0.1	2021-8-13	Cheery Chen	Initial draft
1.0	2021-8-20	Cheery Chen	Add command to open 8021xd
1.1	2022-2-2	Micheal Su	Official release

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1 Introduction



IEEE 802.1X-2001: an IEEE Standard for port-based Network Access Control (PNAC). It is part of the IEEE 802.11 group of networking protocols. It provides an authentication mechanism to devices wishing to attach to a LAN or WLAN.

IEEE 802.1X-2004: it was clarified to suit other IEEE 802 LAN technologies such as IEEE 802.11 wireless and Fiber Distributed Data Interface (ISO 9314-2).

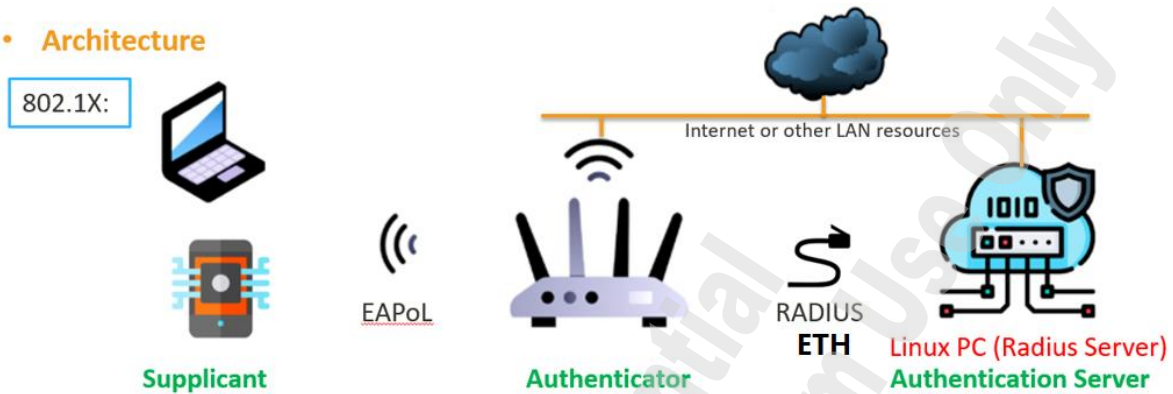
IEEE 802.1X-2010: The EAPoL was also modified for use with IEEE 802.1AE ("MACsec") and IEEE 802.1AR (Secure Device Identity, DevID) in 802.1X-2010 to support service identification and optional point to point encryption over the internal LAN segment.

By default, 8021xd support for IEEE 802.1X-2001, about the other two version, just extend application range.

2 Architecture

8021xd only run at Authenticator. It is responsible for enterprise authentication and an important role at AP.

• Architecture



2.1 SDK Configuration

```

Applications
> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y> include
[*] built-in [ ] excluded <M> module < > module capable

-* 1905daemon..... 1905 daemon
<*> 8021xd..... 802.1X Daemon
< > adbd_pcie..... adbd (PCIe)
<*> adbd_usb..... adbd (USB)

```

3 Getting Started with 8021xd

3.1 Enable 8021xd at WebUI

Step 1:

The screenshot shows the LEDE WebUI interface. At the top, there is a navigation bar with tabs: LEDE, Status, System, Services, Network, MTK, and Logout. The MTK tab is selected, and a dropdown menu is open, showing options: WiFi configuration (highlighted with a red box and labeled '1'), Web Console, and EasyMesh. Below the navigation bar, there is a yellow warning box that says "No password set!" and provides instructions to configure a root password and enable SSH. The main content area is titled "Wireless Overview" and displays the configuration for the MT7915D.1.2 driver. It shows the driver version (7.3.0.1) and the work mode (AP). Below this, there are two interface configurations. The first interface is ra0, configured as an AP with SSID cheery_HARRIER_AP_2.4G and Channel 6. The second interface is apcli0, configured as a STA and is currently disconnected. The "Config" button for the apcli0 interface is highlighted with a red box and labeled '2'.

Step 2:

SSID: cheery_HARRIER_AP_5G

Auth Mode: **1** WPA2 wpa2: wpa2 enterprise
wpa3: wpa3 enterprise

Encryption: TKIP

Key Renewal Interval: 3600 second(s) (0 ~ 4194303)

PMK Cache Period: 10 minute(s)

Pre-Authentication: ☐

MFPC: ☐

MFPR: ☐

MFPSHA256: ☐

2

Radius Server IP: 192.168.1.195

Radius Server Port: 1812

Shared Secret: testing123 From Radius Server Shared Secret

Session Timeout: 0 second(s)

Save and apply

- Use command: "ps" to check "8021xd" is existed. If not, try to use cmd "8021xd -i ra0 -p ra -d 3" to bring up 8021xd manually.

3.2 Radius Server Setting up

3.2.1 Prerequisites

Tool	OS	Other
freeRadius	<u>Ubuntu</u> or Ubuntu Core 10.04+ and <u>Linux</u> kernel 3.0+ 1GB storage space 4GB memory x86 processor	

3.2.2 Install freeRadius

- Install software:
 - sudo apt-get install freeradius
- Change the limits of authority:
 - sudo chmod 755 -R /etc/freeradius

- Test software
 - sudo service freeradius stop
 - sudo freeradius -X

3.2.3 FreeRadius Configuration

Example:

1. Open /etc/freeradius/3.0/client.conf
2. Add


```
client 192.168.1.1 {
    secret = testing123
    shortname = lede
}
```
3. Open /etc/freeradius/3.0/users
4. Add


```
Cheery Cleartext-Password := "123456"
```

3.2.4 Run FreeRadius

- sudo service freeradius stop
- sudo freeradius -X

3.3 Radius Server Setting up

Example:

1. EAP method: PEAP
2. Phase 2 authentication : None
3. CA Certification : None
4. Identity : cheery
5. Password : 123456

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