Specially made for Ubuntu Linux & QNAP NAS

QWA-AC2600 Dual band dual concurrent wireless PCIe expansion NIC
Easy to build a network for your device

1. Wireless network card advantages
2. QWA-AC2600 Introduction
3. Build a AP station step-by-step
4. Application introduction
1 Wireless network card advantages
What are the advantages of wireless network card?

Direct access to wireless terminal data, effectively reducing the physical wireless routers loading.

QWA-AC2600 provides 5Ghz and 2.4Ghz dual-band, allow working together at some time.

Flexible configuration and expansion, one single PC/NAS can be configured with 2 or more NICs for expansion.

Create private network applications.
Good news for DIY maker

Build your own wireless network base station

Ubuntu system + QWA-AC2600
Wireless edge computing

PC / NAS

Direct access, compute & process

Data collection

Show results

Data

Data
Enjoy network optimization with traffic shunting

Separate NAS traffic to avoid busy routers slowing down the network

Traditional

Router loading high

NOW

Separate NAS traffic to avoid busy routers slowing down the network
Set up a flexible wireless environment

Through QWA-AC2600 dual IC design, it allows dual-band working at some time, 1 band as client and 1 band as AP.
Add multiple expansion wireless NICs IN A PC/NAS

Expand more physical bandwidth for more user

PC / NAS PCIe slot
Turn Ubuntu PC into wireless AP

Build Ubuntu PC as a wireless access point with QWA-AC2600
Turn QNAP NAS into wireless AP

- TS-253Be
- QWA-AC2600
- WirelessAP Station app
Supports NAS models with PCIe slot(s)

**ARM-based processor**
- TS-x31XU
- TS-832X
- TS-1635, TS-1635AX
- *TS-531P, TS-531X, TS-831X

*QTS 4.3.5 or newer required

**x86-based processor**
- TS-x53B/x53Be, TS-x53BU
- TVS-x63, TS-x63U
- TVS-x73/x73e, TS-x73U
- TS-x77
- TVS-x82/x82T, TVS-1582TU
Freely set up independent, secure wireless connection interface

you can also assign individual NICs to the Container or use different QNAP services as required through integration with QNAP Network & Virtual Switch, and enjoy a separate wireless connection interface.

For example: If you need to set up a private IOT environment, you can set it up to not pass through any other devices, so that your IoT network becomes a highly secure and reliable independent network.
QWA-AC 2600 introduction
QWA-AC2600 PCIe wireless NIC

- 4 X Detachable RP-SMA connector
- For extending to Quad-antenna magnetic base
- Low profile PCIe
- 3 size bracket for all QNAP NAS (include X70 model)
- Active cooling module to ensure the transmission quality
- Adjust the 3-level fan speed by real time chip temperature
- Up to 500 MB/s PCIe bandwidth
- With a PCIe 2.0 x1 interface
5 GHz and 2.4 GHz dual band

802.11ac (5GHz): up to 1733 Mbps
802.11n (2.4GHz): up to 800 Mbps

Up to 2600 Mbps total bandwidth

Dual Qualcomm QCA9984 support Dual Band Dual Concurrent
High mobility Quad-antenna base

- 0.8 m RF high frequency coaxial cable
  - For optimized antenna placement
- 4 detachable omni-directional high gain antennas
  - Upgrade or replace the antenna by demand
Flexible deployments with the antenna base

- **Wall-mount**: Attached on the wall or ceiling
- **Magnetic**: Attached to metal surfaces
Simultaneously communicate with multiple devices
Compliant with IEEE 802.11ac wave 2
Compatible with IEEE 802.11ac, IEEE 802.11n and IEEE 802.11a/b/g
All QNAP NAS PCIe card bracket

Low profile PCIe expansion card design

- Low profile bracket
- Special half height bracket (For some QNAP NAS)
- Standard full height bracket
Wireless base station setup

- Ubuntu
- QNAP NAS
Ubuntu PC Wireless base station setup
Ubuntu PC system requirement

Ubuntu version : 17.10 or later
Kernel version:  4.13 or later
Driver :  ATH10K
(Ubuntu system built-in )
3 step to build a Wireless AP with Ubuntu PC

1. Install Ubuntu 17.10
2. Install QWA-AC2600
3. Install and setup AP suite: Hostapd Client: wpa_supplicant
Install AP Suite

● AP suite : Hostapd
  ○ command : sudo apt-get install hostapd
● Ubuntu default setting will lock the network management function, need to unlock by instruction.
  ○ sudo nmcli radio wifi off
  ○ sudo rfkill unblock all
● If need to change network interface card name(or use default name)
  sudo ip link set wlp4s0 name wifiap0
  sudo ip link set wlp5s0 name wifiap1
Set up Hostapd #1

1. Create /etc/hostapd/hostapd_5G.conf Profile
2. interface set up to wifiap0
   
   # AP netdevice name (without 'ap' postfix, i.e., wlan0 uses wlan0ap for # management frames); ath0 for madwifi
   interface=wifiap0
3. Set up driver

# Driver interface type (hostap/wired/madwifi/test/none/nl80211/bsd);
# default: hostap). nl80211 is used with all Linux mac80211 drivers.
# Use driver=none if building hostapd as a standalone RADIUS server
# that does
# not control any wireless/wired driver.

driver=nl80211
4. Set up SSID for Wireless network:
   # SSID to be used in IEEE 802.11 management frames
   ssid=QNAP-AP

5. Set up Wireless network operation mode:
   # Operation mode a(5G)
   # Default: IEEE 802.11b
   hw_mode=a
6. WPA Setting:

# Enable WPA. Setting this variable configures the AP to require WPA
# bit0 = WPA
# bit1 = IEEE 802.11i/RSN (WPA2) (dot11RSNAEnabled)
wpa=2
7. Input password for wireless network:
   # WPA pre-shared keys for WPA-PSK.
   wpa_passphrase=QNAP12345

8. #Start up hostapd
   sudo /usr/sbin/hostapd -B /etc/hostapd/hostapd_5G.conf
   sudo /usr/sbin/hostapd -B /etc/hostapd/hostapd_2.4G.conf
interface=wifiap0
driver=nl80211
ssid=QNAP-AP-5G
hw_mode=a
channel=0
preamble=1
auth_algs=3
wpa=2
wpa_key_mgmt=WPA-PSK
rsn_pairwise=CCMP
wpa_passphrase=QNAP12345
wmm_enabled=1
uapsd_advertisement_enabled=1
disassoc_low_ack=1
country_code=TW
ieee80211d=1
ieee80211n=1
ht_capab=[HT40+][SHORT-GI-20][SHORT-GI-40][LDPC][TX-STBC][RX-STBC1][DSSS_CCK-40][MAX-AMSDU-7935]
ieee80211ac=1
vht_capab=[MAX-MPDU-11454][RXLDPC][VHT160-80PLUS80][SHORT-GI-80][SHORT-GI-160][TX-STBC-2BY1][RX-STBC-1][SU-BEAMFORMER][SU-BEAMFORMEE][MU-BEAMFORMER][BF-ANTENNA-2][BF-ANTENNA-3][SOUNDING-DIMENSION-2][SOUNDING-DIMENSION-3][MAX-A-MPDU-LE-N-EXP7][RX-ANTENNA-PATTERN][TX-ANTENNA-PATTERN]
vht_oper_chwidth=1
vht_oper_centr_freq_seg0_idx=0
vht_oper_centr_freq_seg1_idx=0
Private ubuntu wireless network architecture

Using the Ubuntu system with QWA-AC2600 to collect, process, and analyze wireless network data.
QNAP NAS Wireless base station setup
Installation of QWA-AC2600

NOTE 1: Some model may require its speaker to be temporary removed to install QWA-AC2600

NOTE 2: Bracket exchange of QWA-AC2600 is required to install it in the some model
Install WirelessAP Station suite

Exclusive wireless Network bandwidth
Application suite for NAS

Directly connect to the NAS with a wireless network
Scalable physical AP – add several access points with multiple expansion cards
Set up separate wireless connection interfaces (such as IoT/VM/Container) as needed
Enjoy network optimization with traffic shunting
Set up separate wireless connection interfaces

Now you can freely set up independent, secure wireless connection interface
4 Application introduction
Setting of QWA-AC2600

Normal application
QNAP NAS wireless AP

Advance application
private network environment (Router)
3 Step convert a QNAP NAS into an AP

1. Click “Add Access Point”

2. Select QWA-AC2600

3. Configure the Access Point

Download and install WirelessAP Station form QTS App Center
Install Wireless AP Station suite

Install and Open WirelessAP Station form App Center
Add Access Point

Click “Add Access Point” to select and configure a network interface card (NIC) as an access point.
Select an NIC

Select the NIC that you want to use as an access point

QWA-AC2600 support 5G/2.4G dual IC
Configure Access Point

Setting SSID and Password

Model: QW-AC2600
Display name: QW-AC2600-5G
SSID: WirelessAP5G
Password: 12345678
Frequency: 5G

1. Configure Access Point
2. Next
Configure Access Point

Waiting the Status turn to Active
Editing an Access Point Profile

- Check and modify Wireless AP setting
- Review the connection details

WirelessAP Station

Display name: QW-AC2600-5G
Model: QW-AC2600
Status: Active
SSID: WirelessAP5G
Encryption type: WPA2 (Recommended)
Password: 12345678
Frequency: 5G
Channel: Auto

Connection details:

<table>
<thead>
<tr>
<th>No.</th>
<th>MAC</th>
<th>Uploaded</th>
<th>Downloaded</th>
<th>Duration</th>
<th>Signal Quality</th>
<th>IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40:cb:02:00:c0:44</td>
<td>531.46KB</td>
<td>2.07/1KB</td>
<td>12s</td>
<td></td>
<td>192.168.1.22</td>
</tr>
</tbody>
</table>

Save  Cancel  Delete
Advance: Private Surveillance

Connect wireless cameras to the network provided by WirelessAP Station and build a secure and professional surveillance system with QVR Pro.
Enable DHCP & NAT services to a secure surveillance environment

Create a Virtual Switch to a private network by QTS "Network and Virtual Switch" function

Adapter 1

10.0.0.1

QVR Pro Client

10.0.0.3

Wireless camera

10.0.0.2

WirelessAP 1

Set SSID as QVR Pro
Wireless encryption as WPA2

Virtual Switch 1

10.0.0.1
6 step to set up secure wireless connection interface

1. Click 「Add」
2. Select Advanced Mode
3. Select the devices for the Virtual Switch
4. Set up the Virtual Switch IP address
5. Set up the Virtual Switch service
6. Confirm Virtual Switch settings

Open Network & Virtual Switch form QTS

- Virtual Switch
  - Add
  - Delete

- Advanced Mode

- Physical Adapter
  - Status
  - Adapter
    - Adapter 1
    - Adapter 2

- Static IP
  - Use the same settings as the selected adapter
  - Manually configure the IP address

- Fixed IP Address
  - Subnet Mask

- Set up the Virtual Switch service
  - Enable NAT
  - Enable DHCP Server

- Start IP address
- End IP address

- Confirm Virtual Switch settings
  - Virtual Switch
  - NAT: Yes
  - DHCP service: Yes
  - IP Address: 192.168.2.20
Open Network & Virtual Switch form Control Panel

1. Control Panel
2. Network & Virtual Switch
Select Advanced Mode

1. Select "Interfaces"
2. Click on "Advanced"
Create a Virtual Switch

1. Select Advanced Mode

2. Select Advanced Mode
Select the devices for the Virtual Switch

Choose physical adapter for the Virtual Switch
Set up the Virtual Switch IP address

1. Choose "Static IP".

2. Enter the IP address details:
   - Fixed IP Address: 192.168.1.20
   - Subnet Mask: 255.255.255.0

3. Click "Next".
Enable NAT and DHCP Server

1. Enable NAT
2. Enable DHCP Server

Set up IP address and DNS server
Confirm setting and Apply

Confirm Virtual Switch settings

- Virtual Switch: Virtual Switch 3
- NAT: Yes
- DHCP service: Yes
- IP Address: 192.168.1.20
- Submask: 255.255.255.0
- Gateway: --
- Member: Network & Virtual Switch
- Adapter: Adapter 2, WirelessAP 1, WirelessAP 2
- DNS Server: 10.8.2.11
- DHCP Start: 192.168.1.21
- DHCP End: 192.168.1.250
- DHCP Lease: 1 Day(s)

Check the setting

Step 4/4

Cancel

Previous

Apply
Setting completed
Made for Ubuntu PC and QNAP NAS