# 1. Introduction

This document describes what is "Universal Repeater Mode" implemented in Realtek 11n Router/AP reference design. It includes the configuration setting, operation flow, and limitation.

Normally, Realtek 11n Router/AP could be configured to AP or client respectively. To communicate with other APs, it should enable WDS channel. To use WDS, users must make sure these APs should support this feature. Besides, user may need to set MAC address of peer AP into WDS table before communication. Thus, it will have some limitation to use WDS.

Beside WDS, user may use URM (Universal Repeater Mode) to communicate with other APs. When URM is enabled, besides the AP function, it will behave as an infrastructure-client, which is able to link to another AP.
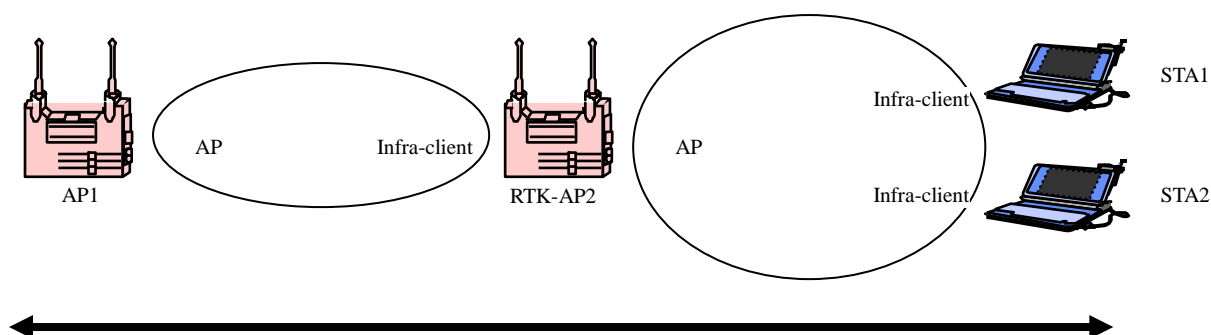
In above figure, STA1 and STA2 could communicate to AP1 through RTK-AP2. In this case, RTK-AP2 is like as a "Repeater" to forward the packet between AP1 and STA1/STA2.

When using URM with WISP (WAN ISP mode) mode, user could let Realtek 11n Router/AP connect to ISP AP, and act as AP simultaneously in LAN interface. By that, multiple wireless clients could access Internet and share one IP address through Realtek 11n Router/AP.

2. Configuration Setting and Security

User could enable URM in operation mode page. When URM is enabled, user should input SSID of the root interface in the field of "SSID", and input SSID of another AP in the field of "SSID of Extended Interface". Please note, the channel number will be the channel of the root interface before the extended interface connects to another AP, and will be changed according to the channel used by another AP because Realtek 11n Router/AP will share the same channel between AP and URM interface (called as extended interface hereafter).

The security settings for root interface and extended interface are independent. User needs to go to "Security" page to set security types and security key for both interfaces.

When URM is enabled, it will display the link status and statistics of extended interface in status and statistic web pages as shown below.

WLAN Access Point

REALTEK

Site contents:
- ULinker Operation Mode
- Wireless
  - Basic Settings
  - Advanced Settings
  - Security
  - Site Survey
  - WPS
  - Schedule
- TCP/IP Settings
- Management
  - Status
  - Statistics
  - Time Zone Setting
  - Log
  - Upgrade Firmware
  - Save/Reload Setting
  - Password

Access Point Status

This page shows the current status and some basic settings of the device.

System	
Uptime	0day:0h:27m:20s
Firmware Version	v3.2
Build Time	Thu Mar 1 15:23:24 CST 2012
Wireless Configuration	
Mode	AP
Band	2.4 GHz (B+G+N)
SSID	RTK 11n AP
Channel Number	11
Encryption	Disabled
BSSID	00:e0:4c:a1:cc:01
Associated Clients	0
Wireless Repeater Interface Configuration	
Mode	Infrastructure Client
SSID	RTK 11n AP RPT0
Encryption	Disabled
BSSID	00:00:00:00:00:00
State	Scanning
TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.1.254
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Server	Auto
MAC Address	00:e0:4c:a1:cc:01
WAN Configuration	
Attain IP Protocol	PPPoE Disconnected
IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Default Gateway	0.0.0.0
MAC Address	00:e0:4c:a1:cc:09

3. Summary

- When repeater mode is enabled, an extended virtual interface (wlan0-vxd) will be created automatically.
- User should set the SSID of extended virtual interface, which will let wlan driver look for the AP with the same SSID. If the SSID is empty or 'ANY', it will search and associate to any AP. The Infra-client of virtual interface will probe APs among the channels. The channel will be switched to another AP and therefore the control channel of root AP will also be changed.
- If 'WISP' mode is set (in GW or GW-VPN version), the root interface (wlan0) will bind to LAN port (br0), and extended virtual interface will bind to WAN port.
- The security settings for root interface and extended interface are independent. User needs to go to "Security" page to set security types and security key for both interfaces.