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This tutorial discusses various alternatives for linking routers to create wireless and/or wired networks.

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Alternative Modes

These are various ways to connect two or more routers (or a modem), besides the default gateway router with wireless access points. For a visual comparison between these modes, see [Router Mode Comparison Table](#).

- **WDS is the preferred mode to extend a wired network using wireless with two or more routers.**

Access Point / Switch

Extend the Wireless access area using more routers, with WIRED connections between routers, or turn a wired port on an existing network into a Wireless Access Point. All computers will be on the same network segment, and will be able to see one another in Windows Network. This works with all devices with LAN ports, and does not require dd-wrt to be installed.

- [Wireless Access Point](#) - Extend Wi-Fi & LAN (Requires physical ethernet connection between routers)
- [Switch](#) - Similar config as WAP, but radio disabled (accepts only wired connections)

Repeater / Repeater Bridge

Extend the Wireless access area using a second router WIRELESSLY connected to the primary. The secondary router must have dd-wrt installed, but the primary does not matter.

Note: There is no repeater mode option on Qualcomm/Atheros devices. As described in their wiki, *Repeater* or *Repeater Bridge* are set up as *Client* or *Client Bridge* mode with an added VAP.

Linking_Routers

- Repeater Bridge - A wireless repeater with DHCP & NAT disabled, clients on same subnet as host AP (primary router). That is, all computers can see one another in Windows Network.
- Repeater - A wireless repeater with DHCP & NAT enabled, clients on different subnet from host AP (primary router). Computers connected to one router can not see computers connected to other routers in Windows Network.
- Universal Wireless Repeater - [obsolete] Uses a program/script called AutoAP to keep a connection to the nearest/best host AP.

Client / Client Bridge / Client Bridged - (Now called Station / Station Bridge)

Connect two wired networks using a WiFi link (WIRELESS connection between two routers). The secondary router must have dd-wrt installed; the primary router does not need to have dd-wrt.

- Client Mode - Join two wired networks by two Wireless routers (unbridged). Computers on one wired network can not see computers on other wired network in Windows Network.
- Client Bridge (Broadcom)- Join two wired networks by two Wireless routers building a bridge. All computers can see one another in Windows Network.
- Client Bridged (Non-Broadcom)- Join two wired networks by two Wireless routers building a bridge. All computers can see one another in Windows Network.

WDS

Extend the Wireless access area using more routers connected WIRELESSLY. WDS is a mesh network. Routers must almost always have the SAME chipset type for WDS to work, and any non dd-wrt routers must be WDS compatible. Using identical routers is best, but not always necessary if all devices have the same chipset types. (All Broadcom or all Atheros etc)

- WDS Linked router network

OLSR

Extend the Wireless access area using more routers. Extra routers do not need any wired connections to each other. Use several ISP (Internet) connections. OLSR is a mesh network.

- Mesh Networking with OLSR
- [+ OLSR]

Comparisons

- Repeating Mode Comparisons (and router mode table)
- Bridging Mode Comparisons

Resources

- [Whitepaper](#) on the differences and scenarios for client bridges, repeaters, WDS, and mesh networks.