

# 3: Wi-Fi MESH UNITS AND EXTENDERS

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**TuCS** COMPUTER  
**son**  
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An International  
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# SUMMARY

To increase the special range and signal strength of a Wi-Fi router, you can utilize "Wi-Fi extenders" and "Wi-Fi mesh extenders". This is a demonstration and explanation of this useful technique.

# TOPICS

- Basic Configuration: Wi-Fi router plus mesh device or Wi-Fi extender

# Wi-Fi ROUTERS AND MESH UNITS AND EXTENDERS

- Basic coverage area of a Wi-Fi router is a horizontal circle
- Mesh unit or extenders connect to the Wi-Fi router via wired or wireless equivalent or Wi-Fi technologies (= "backhaul" )
- Each additional mesh unit or extender adds in an additional horizontal circle

# Wi-Fi ROUTERS, MESH UNITS, AND EXTENDERS (continued)

- To use a Wi-Fi technology as a backhaul connection, you usually have to use routers and mesh units from the same manufacturer or "mesh type" but you can mix and match routers from multiple manufacturers if you use "EasyMesh" routers.

# Wi-Fi MESH UNITS, AND Wi-Fi EXTENDERS (continued)

Wi-Fi mesh brands:

- Amazon's "Eero 6"
- ASUS's "AiMesh"
- ASUS's "ZenWiFi"
- Google's "Nest Wifi"
- Linksys' "Atlas"
- Linksys' "Velop"
- TP-Link's "Deco"
- TP-Link's "EasyMesh"

# Wi-Fi ROUTERS, MESH UNITS, EXTENDERS (continued)

- Linksys "Atlas" and Linksys "Velop Whole Home Mesh" are compatible with each other.
- Asus "ZenWiFi" & "AiMesh" are compatible with each other.



# Wi-Fi ROUTER, MESH UNITS AND EXTENDERS (continued)

- To use a wired technology as a backhaul connection, you can mix and/or match Cat 5 or Cat 6 or Cat 7 and/or Cat 8 cabling

# Wi-Fi ROUTER AND MESH UNITS AND EXTENDERS (continued)

- To use a wired equivalent technology as a backhaul connection, you can use:  
"Powerline Networking" links  
and/or  
"Multimedia Over Coax Alliance"  
(= "MoCA") links

# Wi-Fi ROUTERS, MESH UNITS AND EXTENDERS (continued)

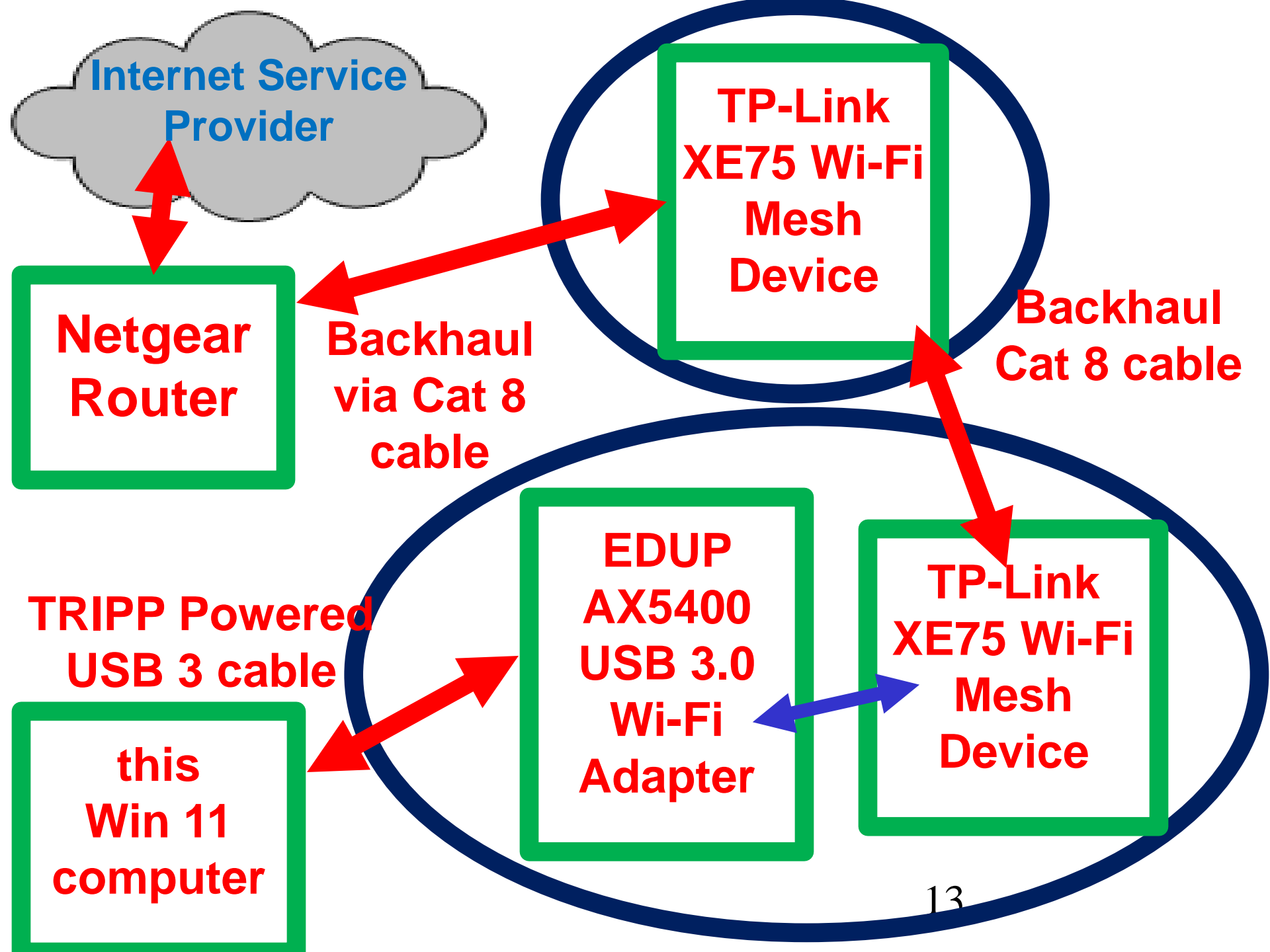
- "Mesh units" are usually smarter than "Wi-Fi Extenders":

Mesh units automatically pick up the SSID's of the transceivers of the nearest Wi-Fi router when you install them.

Some Wi-Fi extenders add in the SSID of the nearest Wi-Fi router + "\_ext".

# Wi-Fi 6E MESH DEVICES DEMO

- Windows 10 or 11 virtual machine-->
  - > Tripp-Lite powered USB 3 cable
  - > EDUP AX5400 Wi-Fi adapter
  - > connects wirelessly to
    - > TP-Link Deco XE75 mesh device #2
    - > Netgear powerline AV2000 kit
    - > TP-Link Deco XE75 mesh device #1
    - > Category 8 Ethernet cable
    - > Netgear router
    - > fiber optic terminal of the Internet service provider





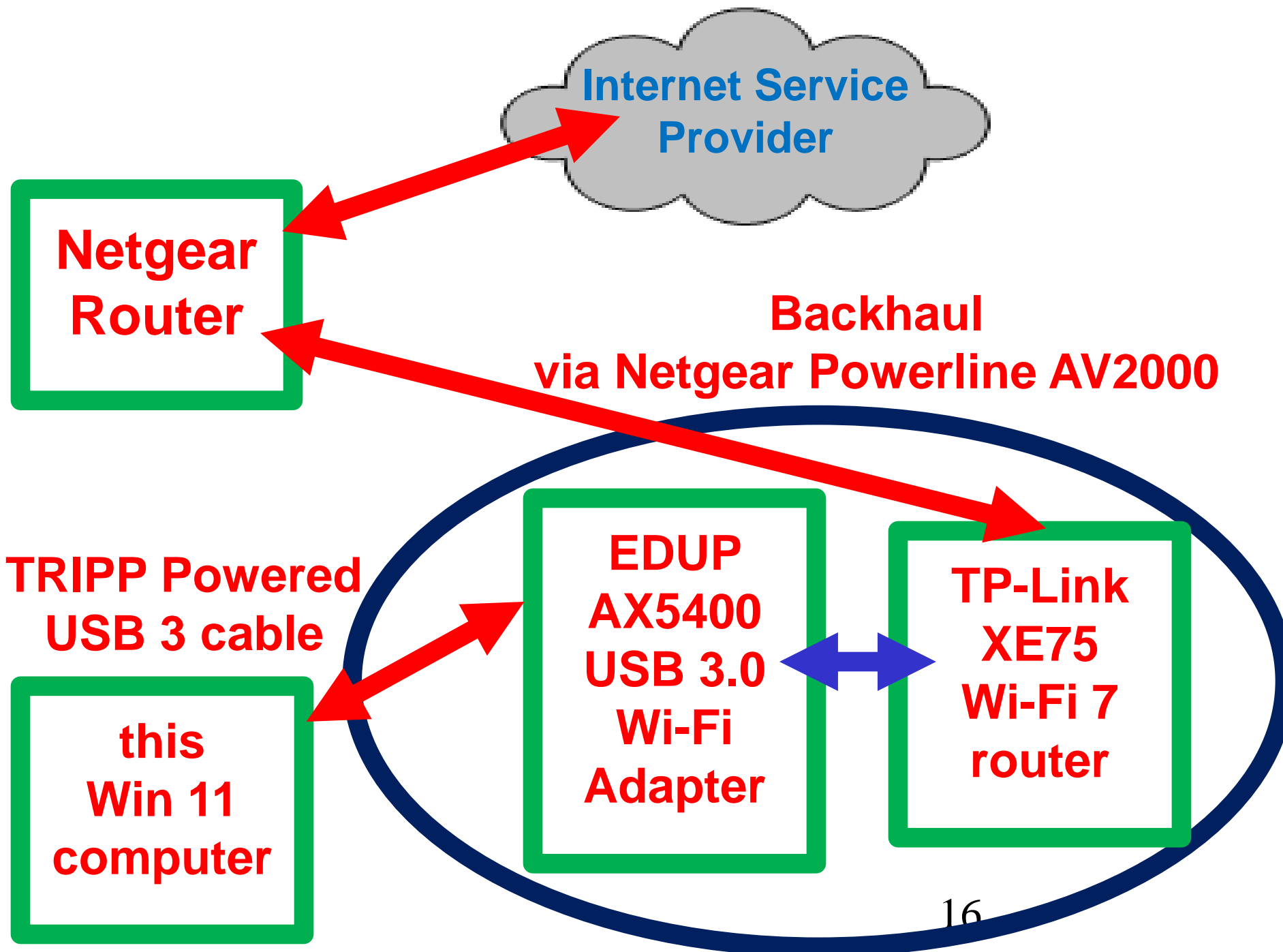
Wi-Fi 9

testmesh1\_6GHz

Intel(R) Wi-Fi 6E AX210 160MHz

# Wi-Fi 7 ROUTER DEMO

- Windows 10 or 11 virtual machine-->
  - > Tripp-Lite powered USB 3 cable
  - > EDUP AX5400 Wi-Fi adapter
  - > connects wirelessly to
    - > TP-Link BE19000 Wi-Fi 7 router
    - > Netgear powerline AV2000 kit
    - > Netgear router
    - > fiber optic terminal of the Internet service provider



**Internet Service Provider**

**Netgear Router**

**Backhaul via Netgear Powerline AV2000**

**EDUP AX5400 USB 3.0 Wi-Fi Adapter**

**TP-Link XE75 Wi-Fi 7 router**

**TRIPP Powered USB 3 cable**

**this Win 11 computer**





Wi-Fi 10

TP-Link\_B03A\_6G

Realtek 8832CU Wireless LAN Wi...

# Wi-Fi MESH DEVICE DEMO (continued)

- Powered Tripp-Lite USB 3 cable to get the USB Wi-Fi adapter away from the metal case of the host computer:  
<https://www.amazon.com/Tripp-Lite-Active-Extension-U330-05M-C2C/dp/B07YZRX3RQ>

# Wi-Fi MESH DEVICE DEMO

## (continued)

- Since almost all USB Wi-Fi adapters have USB-C plugs, the following USB-C plug to USB-A jack converter is usually required for previously-mentioned powered USB cable:  
<https://www.amazon.com/Anker-Adapter-Converts-Technology-Compatible/dp/B01COOQIKU/>

# Wi-Fi MESH DEVICE DEMO (continued)

- The newly-available EDUP AX5400 USB 3 adapter is currently the fastest one that is available as of August 2023:  
<https://www.amazon.com/dp/B0C77GBBY6?psc=1>

# Wi-Fi MESH DEVICE DEMO

## (continued)

- The TP-Link XE75 mesh unit can be used by itself or as a mesh of 2 to 4 units. In my case, I am using a pair of them to get around the Wi-Fi blocking of a metal stairwell:

<https://www.amazon.com/Deco-Mesh-Wifi-6E-Router/dp/B09VW5JHPH>

# Wi-Fi MESH DEVICE DEMO (continued)

- To provide a fast backhaul link between the TP-Link XE75 mesh units, I am using a Netgear AV2000 powerline networking kit
- [https://www.amazon.com/dp/B0778Y6K6N?psc=1&ref=ppx\\_yo2ov\\_dt\\_b\\_product\\_details](https://www.amazon.com/dp/B0778Y6K6N?psc=1&ref=ppx_yo2ov_dt_b_product_details)

# MOVING "USER EQUIPMENT" DOES NOT ALWAYS TRIGGER A "HANDOFF"

- When you move a laptop, tablet, or cell phone from the zone of one Wi-Fi transceiver device to the zone of a related Wi-Fi transceiver device, a handoff is not always triggered so you might have to force the handoff.

# USING WIRED EQUIVALENT TECHNOLOGIES INSTEAD OF WIRED NETWORKING

- Instead of running Cat 5/6/7/8 wires as backhaul connections, you can use one of two wired equivalent technologies:  
"Powerline Networking" links  
or  
"Multimedia Over Coax Alliance" links



# USING WIRED EQUIVALENT TECHNOLOGIES INSTEAD OF WIRED NETWORKING (continued)

- Netgear's AV2000 Powerline Networking kit provides Gigabit-speed connections:

[https://www.amazon.com/gp/product/B0778Y6K6N/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&th=1](https://www.amazon.com/gp/product/B0778Y6K6N/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&th=1)

# USING WIRED EQUIVALENT TECHNOLOGIES INSTEAD OF WIRED NETWORKING (continued)

- Screenbeam's "Multimedia Over Coax Alliance" can provide gigabit-Ethernet speed over an existing television coax line, if one is available in your home.
- [https://www.amazon.com/gp/product/B08ML1TSXC/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&th=1](https://www.amazon.com/gp/product/B08ML1TSXC/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&th=1)

# USING EXISTING Wi-Fi ROUTERS INSTEAD OF BUYING NEW ONES

- If you have routers of various brands and models, you can usually wire them together to expand your existing Wi-Fi coverage:

Run Ethernet or other wired technologies to connect the "WAN" jack of the older Wi-Fi routers to the "LAN" jacks of the newer upstream Wi-Fi routers

# USING EXISTING Wi-Fi ROUTERS INSTEAD OF BUYING NEW ONES (continued)

- Here are two configurations that I have successfully installed into homes in the past:  
These are NOT mesh configurations since the two routers do not share information with each other:

**Internet Service Provider**

**Linksys  
Wi-Fi  
Router**

**Netgear  
Wi-Fi  
Router  
acting as  
an  
extender**

**Backhaul  
must be  
wired or  
wired  
equivalent**

**Internet Service Provider**

**D-Link  
Wi-Fi  
Router**

**Asus  
Wi-Fi  
Router  
acting as  
an  
extender**

**Backhaul  
must be  
wired or  
wired  
equivalent**

# USING EXISTING Wi-Fi ROUTERS INSTEAD OF BUYING NEW ONES (continued)

- Not all routers of different brands or even different models of the same brands of routers will always get along with each other but you will usually get the WAN jacks of an older router to communicate with a LAN jack of a newer router

# USING EXISTING Wi-Fi ROUTERS INSTEAD OF BUYING NEW ONES

(continued)

- When you use a spare or older router as a Wi-Fi extender, do not expect the existing upstream router to immediately get chummy with the spare or older router:  
Just "lie" to the spare or older router and act like you are connecting it to a broadband Internet modem of an Internet provider.



# USING EXISTING Wi-Fi ROUTERS INSTEAD OF BUYING NEW ONES

(continued)

- In addition to running Category 5/6/7/8 cabling between your routers, you can also use  
Powerline Networking links  
and  
Multimedia Over Coax Alliance "Wave 2" links to connect LAN jack of an upstream router to WAN jack of a downstream router

