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CZ\_Keto



## Need help deciding between OpenWRT vs L3 switch for DHCP & VLAN setup

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Hi folks, I know just enough about networking to be dangerous. I bought a Cisco 3560X to learn with at some point in the future. I needed a PoE switch so I decided to kill two birds with one stone. I'm not ready yet to get into the training - not enough time. But I do need a quick and dirty network setup for right now.

Should I configure the OpenWRT or Cisco as the DHCP server?

Should I configure the VLANs on the OpenWRT or the Cisco?

It seems like the quickest & easiest thing to do is set it all up on OpenWRT?

- VLAN1 - I have my WAN/LAN/WiFi for laptops, desktops, cellphones, etc.
- VLAN2 - I have a few security cameras which I don't want to access the Internet or other VLANS (or vice-versa)
- VLAN3 - I have PoE which I don't want to access the Internet or other VLANS (or vice-versa)

10 replies - I need to know if OpenWRT can do this or if I need to use a switch

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OpenWRT will most likely have a better GUI than the old Cisco switch, so if you need it up and running as soon as possible then it's probably the easiest and most flexible approach.

Should I configure the VLANs on the OpenWRT or the Cisco?

Assuming you need VLANs, you'll need to configure them on both the router and the switch. You will connect one interface of your OpenWRT router to one port on your switch. This interface will be configured as a "trunk" port on both ends (switch and router), meaning that it carries traffic belonging to multiple VLANs.

The other ports on your switch do not need to be trunk ports for the topology you describe. Rather, you will assign some number of ports to each VLAN (these ports are sometimes termed "access" ports). For example, a port used for security cameras would be configured as an access port for VLAN 2. The camera plugged into this port would then be assigned to VLAN 2 and would have no awareness that it was connected to a VLAN or not. All it would know is that it needs to connect to the router to reach hosts outside VLAN 2.

When you configure a trunk port on a L3 switch, you'll have similar options to assign IP addresses and create DHCP pools. If you're using OpenWRT as your default LAN router and DHCP server, you shouldn't set these options on your switch as well.

When you configure a trunk port on your router, it will create a sub-interface for each VLAN. For example `eth0_vlan1`, `eth0_vlan2`, `eth0_vlan3`, etc (I don't know how OpenWRT names interfaces). Since you require the ability to firewall traffic, you'll be assigning an IP address in a different network to each of these sub-interfaces. For example, `eth0_vlan1` could be `10.0.1.1/24` and `eth0_vlan4` could be `10.0.4.1/24`. You would then enable routing on these interfaces, and announce the IP address of each interface via DHCP. For example, this would make `10.0.1.1` the default router for the `10.0.1.0/24` network.

One limitation of L3 switches is firewalling. Some L3 switches implement stateless firewalls, but you'll rarely see a switch with full stateful firewalling abilities. This means that while it's possible to restrict traffic by IP address and port using a L3 switch, you are limited in how you process NAT addresses and malicious inbound traffic to open ports. For these reasons, a stateful firewall is still necessary, even if your switch can handle some filtering.

VLAN1 - I have my WAN/LAN/WiFi for laptops, desktops, cellphones, etc.

Your WAN will always be on a separate network / VLAN to your LAN. While it's not a universal requirement, you should consider a broadcast domain (e.g. a VLAN or unmanaged switch) to carry one L3 network only. For example, if your WAN IP address is `203.0.113.138/24`, it should be on an interface / VLAN that carries *only* `203.0.113.0/24` (no other IPv4 networks). Your WAN router will assign `203.0.113.138/24` to its WAN interface, and act as a router between `203.0.113.138` and `10.0.1.0/24` (to use the previous example). The WAN interface will only forward internet traffic to/from your ISP, and the LAN interface will only forward `10.0.1.0/24` to/from your LAN. Public internet and your LAN will never be mixed on the same broadcast domain.

VLAN4 - I want a Guest WiFi that only has access to the Internet

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wireless NIC of your router. For example, assuming your wireless NIC is `eth1`, you might have sub-interfaces named `eth1_vlan1` (LAN) and `eth1_vlan4` (guest). Since the only way to get onto your guest network is to join the Wi-Fi, there's no need to add VLAN 4 to any other interfaces on your router or switch.

I'm not sure whether VLANs are required for guest Wi-Fi access on OpenWRT. Some wireless routers have a Guest mode / client isolation option that requires no further configuration.



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Easy, leave switching to the switches and routing to the routers.



2



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