

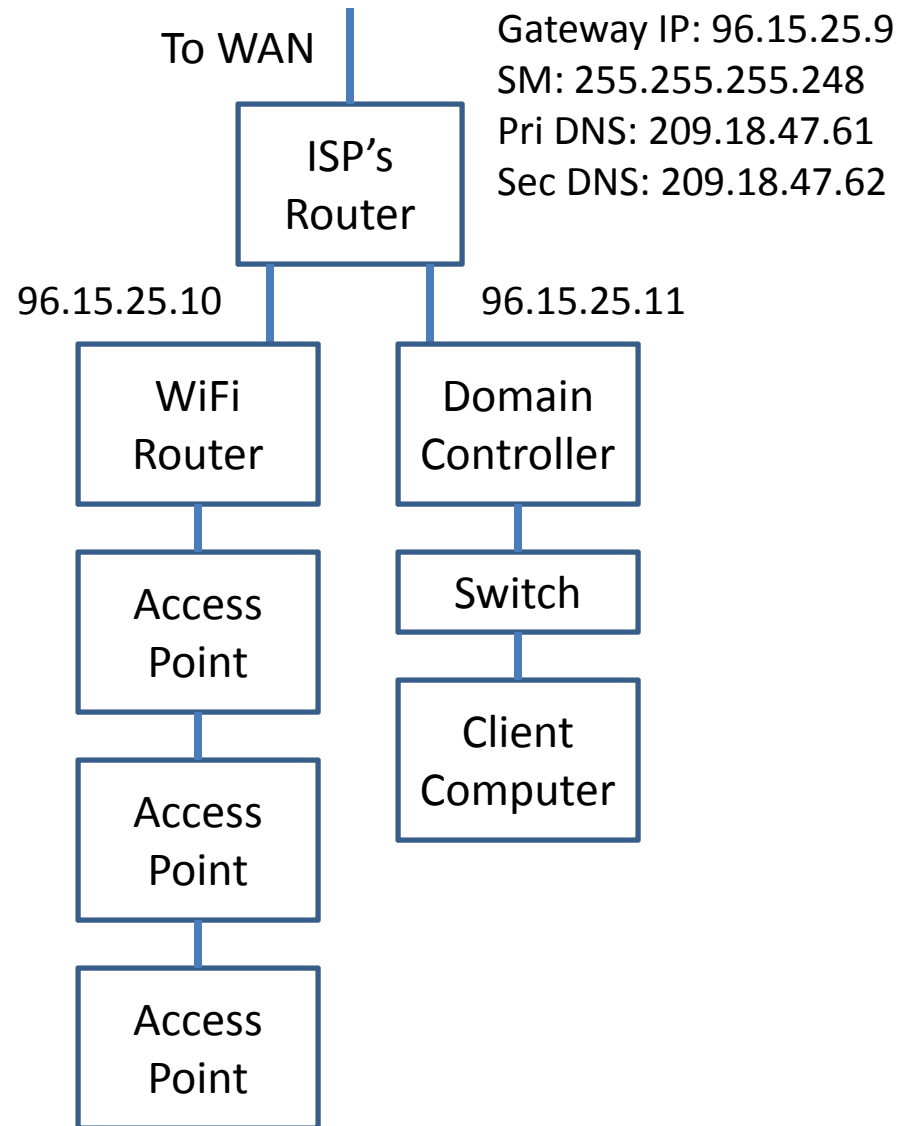
Building a Wireless Network

April 10, 2012

Planning for Wireless Access Points

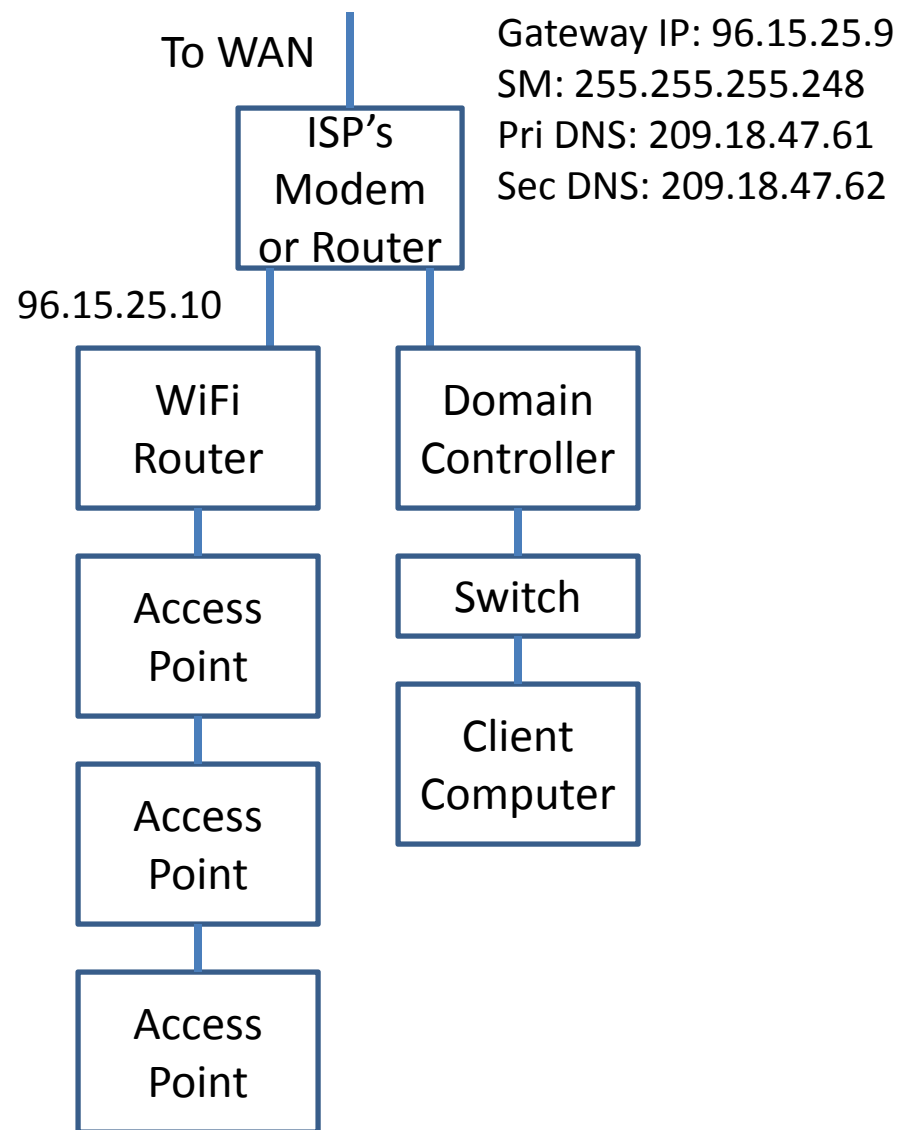
When we are planning to add wireless capability to a building for mobile users, we will add one, two or more wireless access points to obtain 3, 4 or 5 bars throughout the entire building.

When the Internet Service Provider (ISP) gives us static IP addresses for our business class, we can use one of the dedicated IP addresses coming off their modem for the business' wired net and a second IP address for the employee's and customer's WiFi access points.



Accessing the WAN

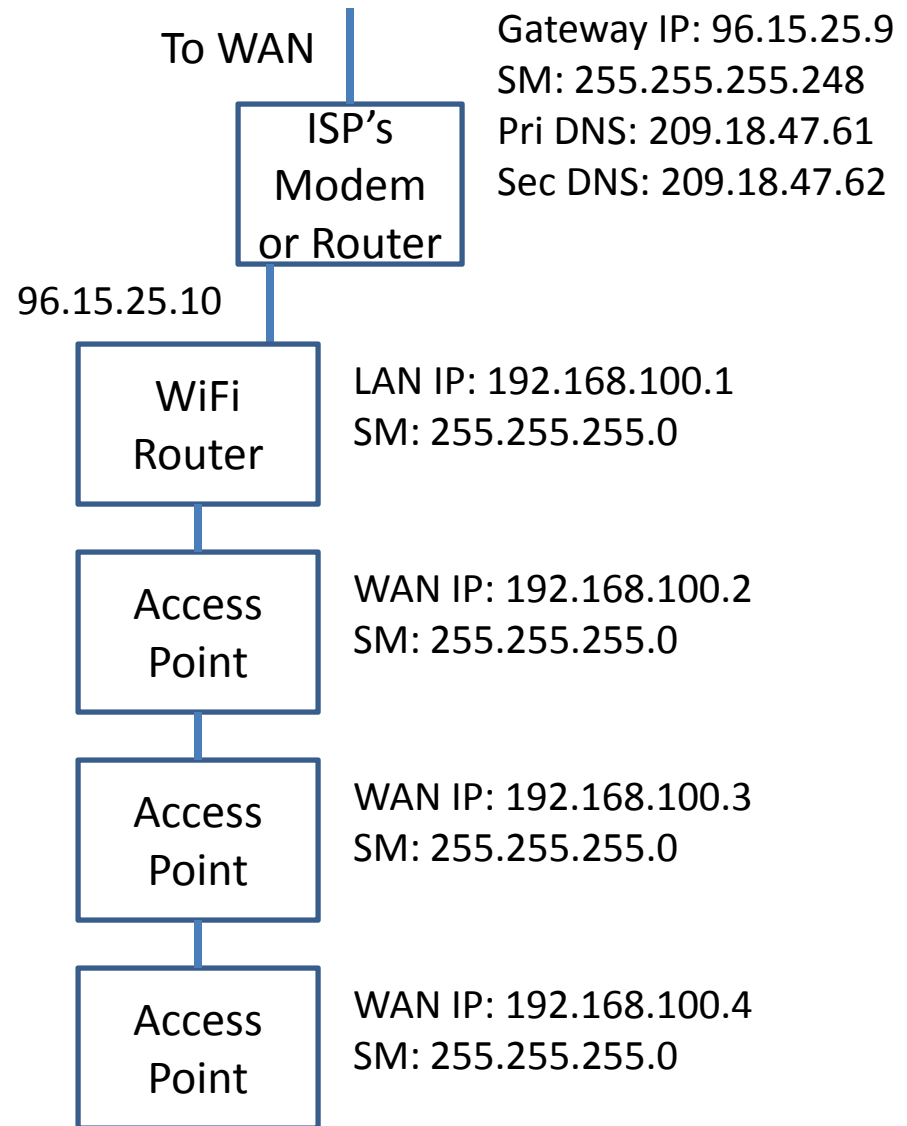
The wireless (WiFi) router acting as the gateway to the ISP needs one of the WAN IP addresses given to us when we contact the provider about our account. A typical small business network can receive five Class A IP addresses for their connection. These IP addresses come with a class A subnet mask of 255.255.255.248. A class A network is capable of having 16777216 IP addresses. With a subnet mask of 255.0.0.0 with 255.255.248 in the second, third and fourth octet, we divide 16777216 by 2097152 to get 8. The first address of the block of eight is the network address. The last is the broadcast address. One address is reserved for the ISP's gateway address. The rest are available for our use.



Planning for Wireless LAN

The WiFi router will connect to the WAN using one of the Class A IP addresses. The WiFi router will have a subnet mask of 255.255.255.248. Its gateway IP address is 96.15.25.9 and its primary DNS IP address is 209.18.47.61 and with a secondary IP address of 209.18.47.62.

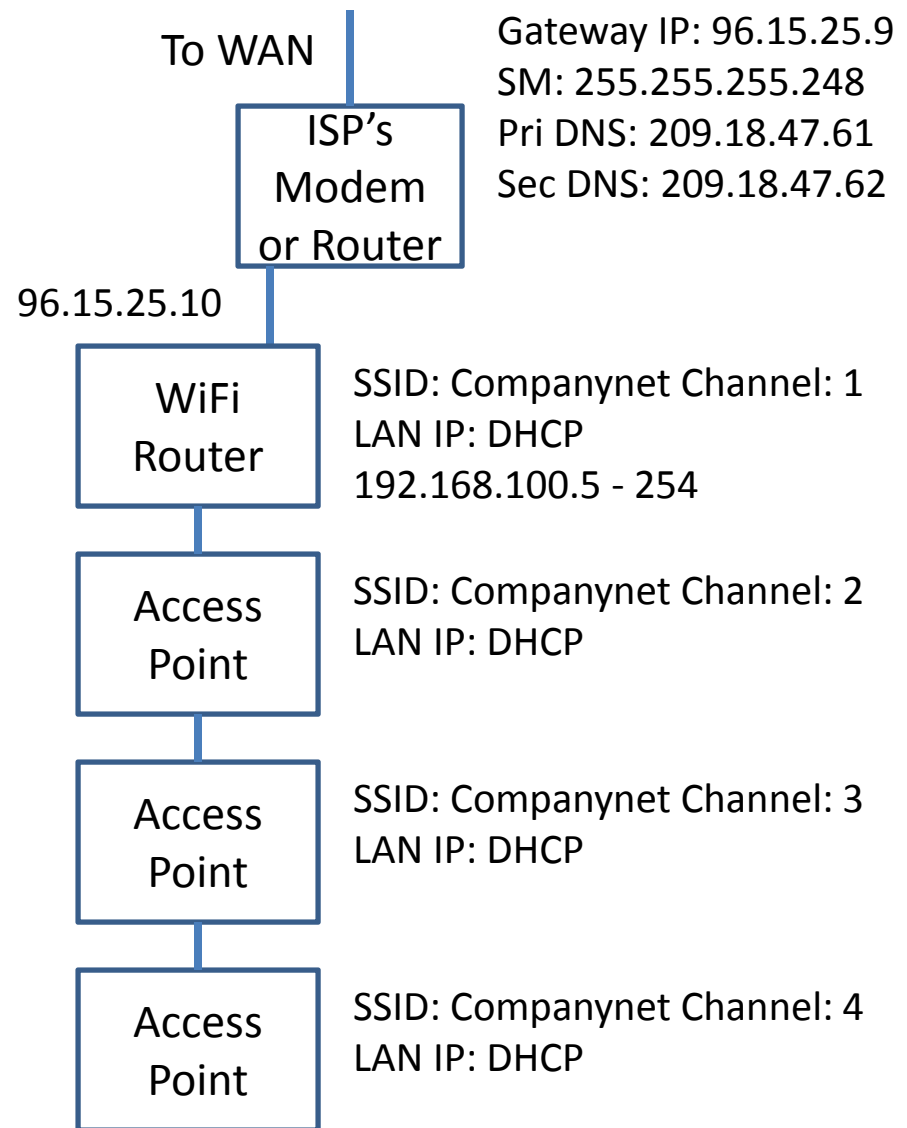
The Class C WiFi router will have a LAN address of 192.168.100.1. We will retain .2, .3, and .4 for the three access points connected by Category 6 gigabit Ethernet cable. All of the class C addresses will have a 255.255.255.0 subnet mask.



Access Point SSID and Channels

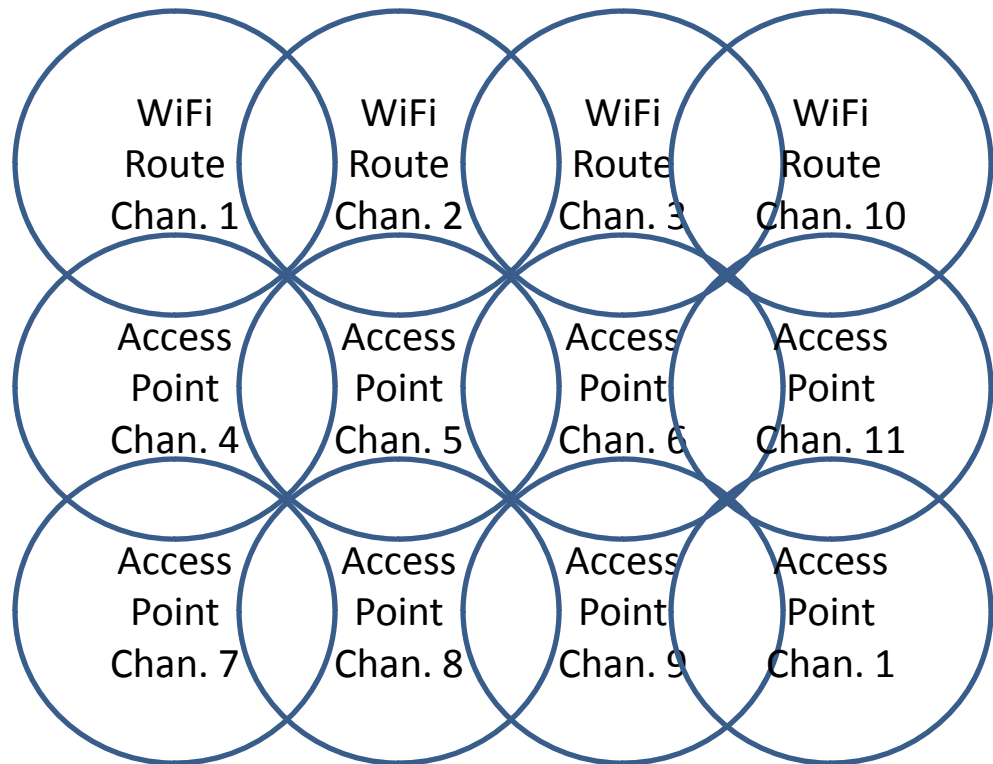
All of the company's access points and WiFi router will have a SSID like "Companynet". When a person with a mobile device walks through the building, they will connect with the next access point in that area. Wireless access points that border each other will not be on the same channel or frequency.

Each wireless access point and router will deploy IP addresses to user's mobile devices using DHCP. The WiFi router cannot assign any addresses being used by the wireless access points.



Locating the Wireless Access Points

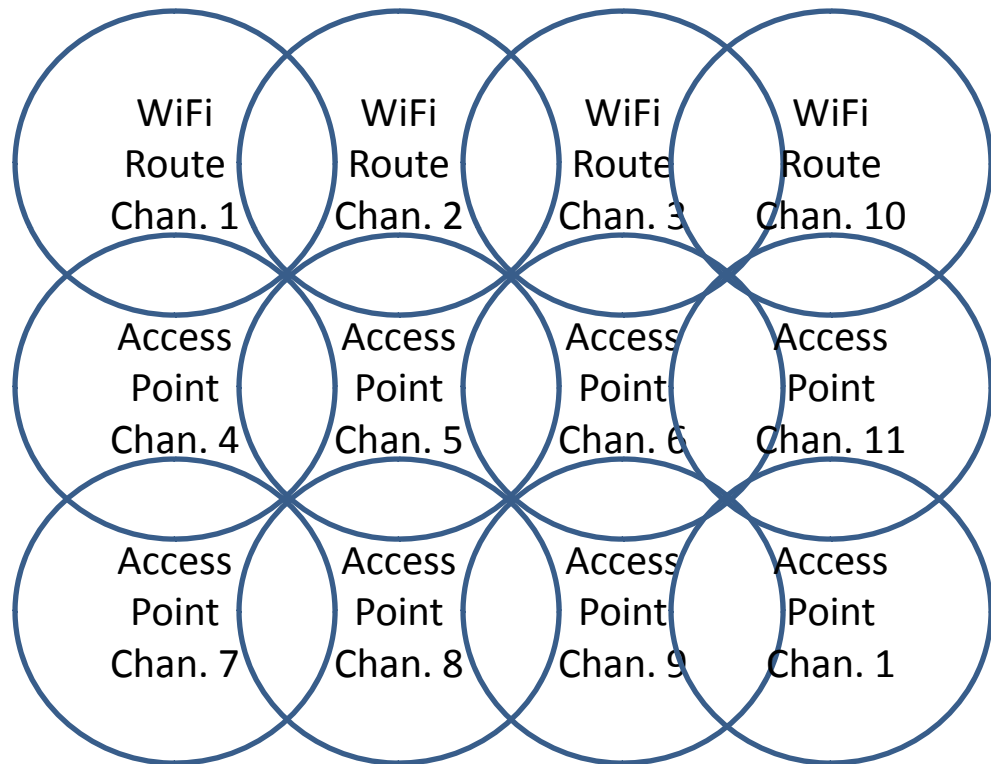
When locating the wireless access points in the company area, we will most likely follow a symmetrical pattern. The signal from each access point will overlap and we will check to make sure the channels for each overlapping device do not match. A person with a mobile device such as a laptop or phone in an area with the same overlapping channel can experience problems when trying to join the network.



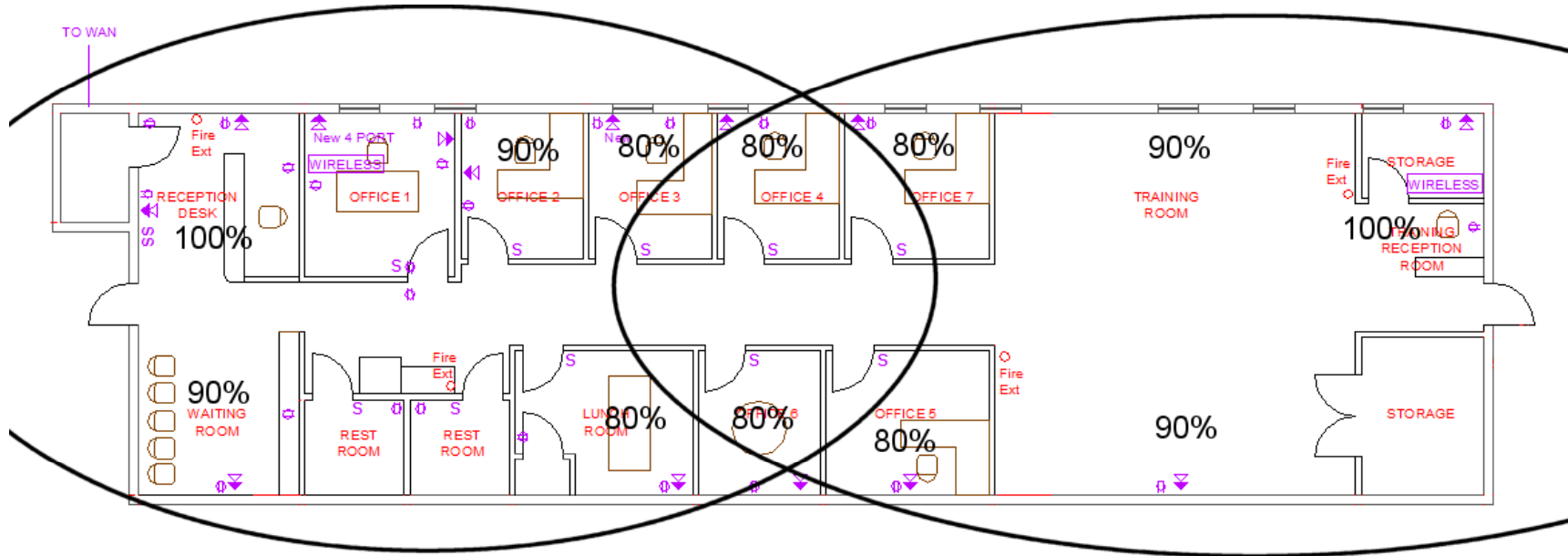
Connecting the Access Points

We could use wireless bridges where each access point connects to the WiFi router without wires. However, we will have less bandwidth than using the gigabit ports for Category 6 cables.

When planning a large wireless network, we need electricians to provide power for each access point. We need a crew to wire a high bandwidth cable network and we need a team to program and install the access point.



Site Visit with Measurements



In a building the wireless signal strength is not a perfect circle because wide brick walls will reduce the signal strength. Even office walls will restrict the amount of bars our employees and customers will get on their mobile devices. We should measure the signal strength in each office and common area throughout the building and record the amount on the layout. We can move a wireless access point or add one to account for low signals.