



Pre-Installation Manual

**Mechanic Handheld
Wireless Access Point
Setup Guide**

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Mechanic Handheld Wireless Access Point Setup Guide Pre-Installation Manual

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Mechanic Hand-Held Wireless Access Point Setup Guide

OVERVIEW

The Mechanic's System Hand Held device requires that a wireless network be installed in the bowling center. This document is intended for IT specialists with experience in setting up wireless networks. Some basic information is presented regarding this topic, but the configuration steps of access points should be completed by personnel experienced in setting up this type of equipment.

1. **Wireless Access Point (WAP)** - A device which allows wireless devices to connect to a wired network.
 - The device allowing the MHH phone to connect to the Bowling Center's scoring network.
2. **Wireless 'G' Standard** – A modulation standard allowing for a maximum physical layer bit rate of 54 MBit/s, 22 MBit/s average throughput.
 - The wireless standard which will be used by all Mechanic Hand-Held WAP's.
3. **Attenuation** – A decrease in signal strength due to distance limitations, physical obstructions, Radio Frequency (RF) or Electro-Magnetic interference (EMI).
 - Obstacles throughout the Bowling Center which will limit Wireless signal strength.
4. **Power over Ethernet (PoE)** – Technology enabling the ability to pass electrical power and data simultaneously using Category 5 or higher cabling.
 - POE can be used if AP's are located in places without AC power outlets.

PURCHASING THE MECHANIC HAND-HELD WIRELESS ACCESS POINT



Note: Brunswick does not sell Access Points (AP's). The AP needs to be purchased independently by the customer. Also, Brunswick does not endorse one particular brand or model. The following manufacturers have worked well with Mechanic Hand-Held.

www.netgear.com

www.home.cisco.com

Access Point Specifications

Wireless 'G' - The Mechanic Hand-Held Wireless Network must be configured to support 'Wireless G' traffic. Many new Access Points are designed for 'Wireless N' standard, but are backwards compatible to support the 'G' standard. This type of Access Point may be used as long as the device can be configured internally to support 'Wireless G' devices.

Access Point Signal Range

Access Points support an indoor range of up to 150 ft (46 m). This estimate is typically on the high end of the range that will be seen in practice. Attenuation can reduce this estimate by 25% or more. Expect to receive adequate signal strength at distances no greater than 120 ft.

How Many Access Points

Determine the area the Hand Held device should cover within the Bowling Center. A physical drawing of the area, with dimensions, will be useful when trying to determine the number of AP's needed to provide adequate coverage throughout the building.

Based on the information in the "Signal Range" section above, calculate the number of AP's necessary to provide coverage to all desired areas. Depending on the environment, the only real way of determining the number will be during the installation and testing of the device coverage under actual conditions.

Power Over Ethernet (PoE)

If PoE will be utilized, Brunswick recommends purchasing "PoE Compatible" or "Active Ethernet Compatible" Access Points. Adding a PoE Adapter Kit to any "Non PoE Compatible" Access Point will allow PoE technology to be used, however it is recommended to purchase "PoE Compatible" devices.

THINGS TO CONSIDER DURING SET UP

Taking the time to plan your WAP locations carefully can help avoid frustrating connection issues after installation. For your reference, we have included some possible installation examples at the back of this manual as well as a blank layout for your use.

- Do not isolate or enclose the WAP in a confined location such as a closet.
- Do not attempt to hide the WAP in locations such as under the front desk, in a drawer or cabinet – this device needs to be high (close to the ceiling).
- Do not mount behind a pillar or block wall.
- Do not mount the WAP any lower than the ceiling height. (mounting above a ceiling tile on a drop ceiling is acceptable).
- Do not install near a microwave oven or portable phone base.
- Do not install the WAP near the limit of it's range – when in doubt – add another WAP.
- Poor coverage from the above issue can cause the MHH to drop service and spend a lot of time “searching” for a signal – this will greatly reduce the battery life of the MHH.
- DO take into consideration the areas where the mechanic spends most of their time or where WAP connections will be critical.
- DO consider obstructions such as pillars, dividing walls, bends in the building floor plan that could produce “dead zones.”
- DO use the blank center layout to map your center before you start.

CONFIGURING THE MECHANIC HAND-HELD ACCESS POINT(S)

i *Note: Follow Vendor Specific guidelines when configuring the Access Point. The following information will allow the Access Point to communicate with the Scoring Network.*

SSID - Select a unique name for the wireless network. All Access Points will need to use the same SSID, and all AP's should be configured to disable/hide the SSID Broadcast.

Channel - It is important that adjacent or overlapping Access Points do not use the same channel number. Keep 5 channels of separation between devices to reduce interference. The use of "auto" setting is not recommended.

Enable Wireless G (if necessary) - Some access points have a special setting to allow backward compatibility to wireless G ('N' routers.) Others do not support 'N' and 'G' at the same time. In this case, the router must be manually setup to support wireless 'G'. **Security** - Brunswick recommends the use of WPA2-PSK (Pre-Shared Key) with AES encryption, change PSK regularly.

Wireless Pre-Shared Key – Develop a minimum 13 character random passphrase as the Pre-Shared Key.

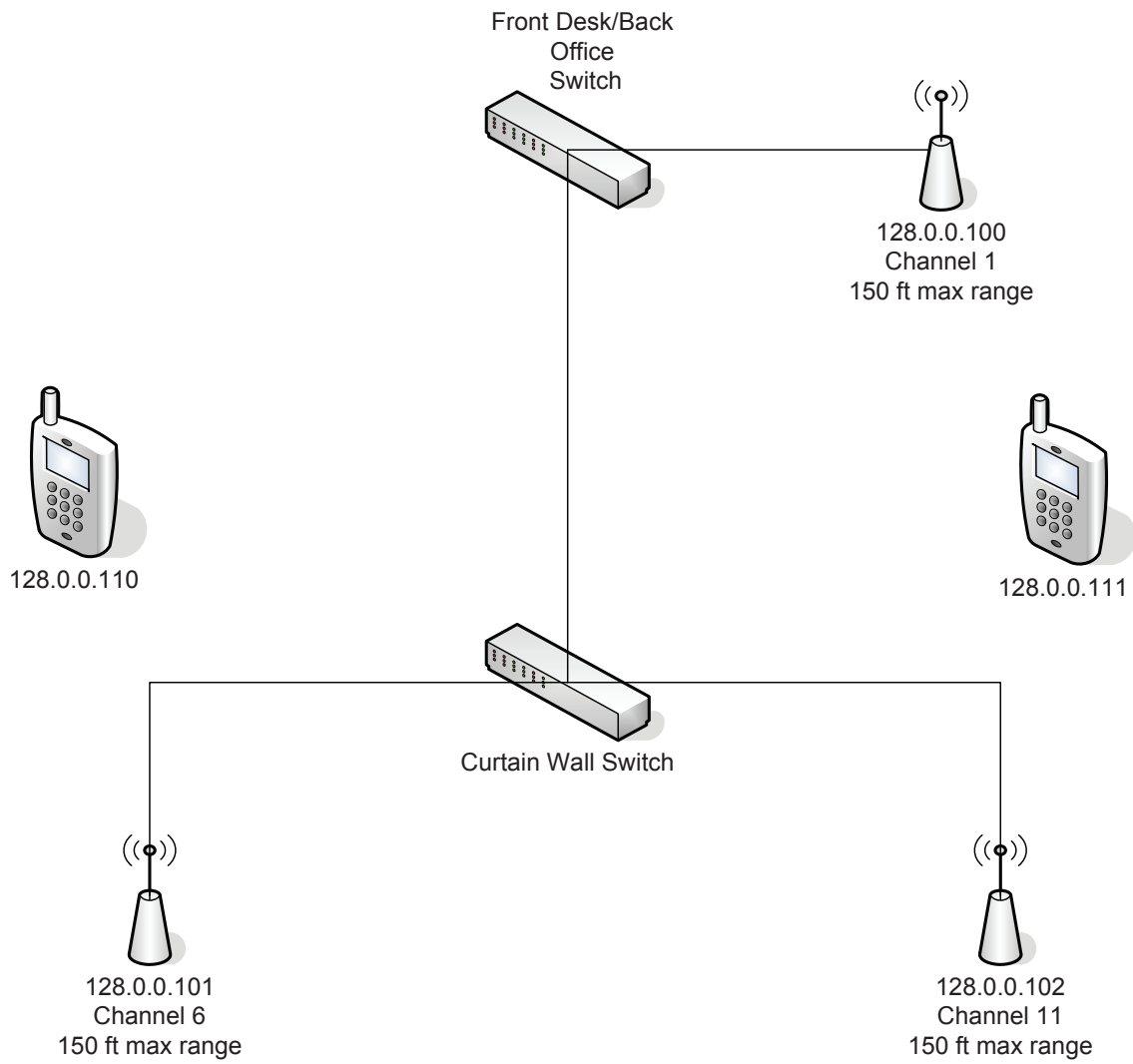
Access Point username & password - All Access Points come with default usernames and passwords. Change default username & passwords during initial configuration.

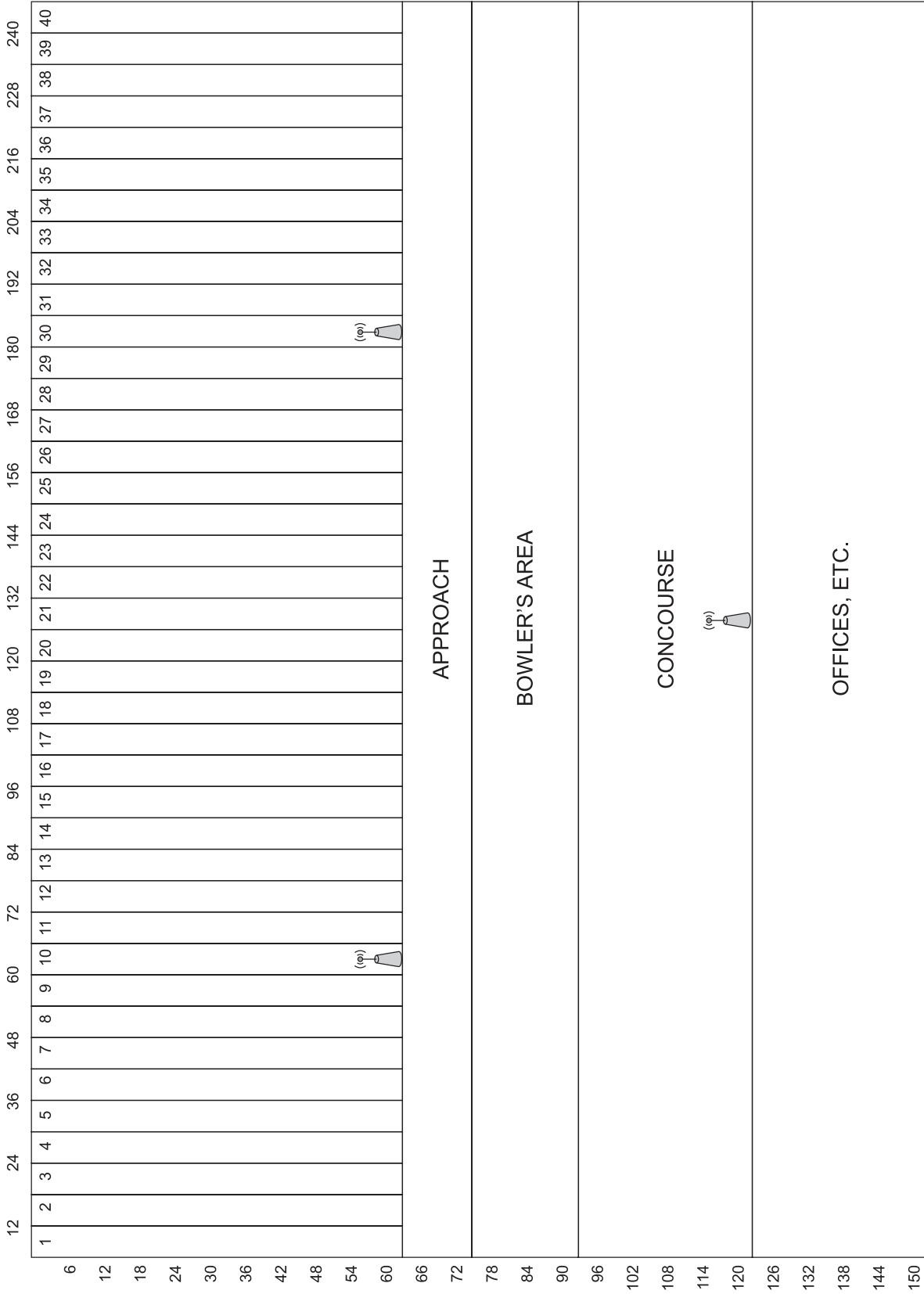
IP Addresses - Each Access Point will need a static IP address in the 128.0.0.xxx range. Brunswick recommends using 128.0.0.100 to 128.0.0.109 for static Access Point IP addresses. Subnet mask is 255.255.0.0.

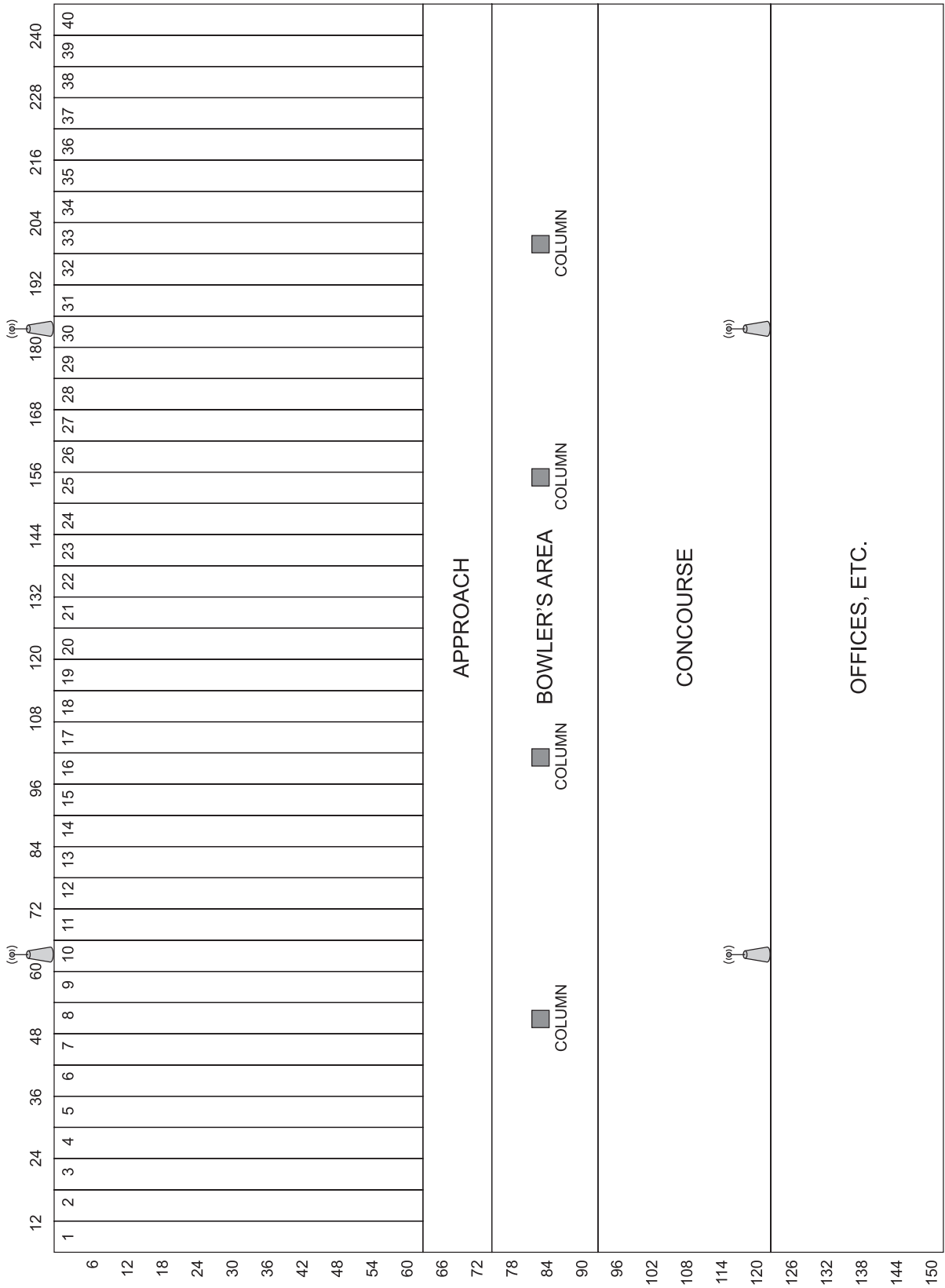
Default Gateway - If prompted for a default gateway during the configuration steps, specify the IP Address of the Server computer with a subnet mask of 255.255.0.0 for Vector or Vector Plus installations. (Default Server IP is 128.0.0.240 for Vector and 128.0.0.200 for Vector Plus.)

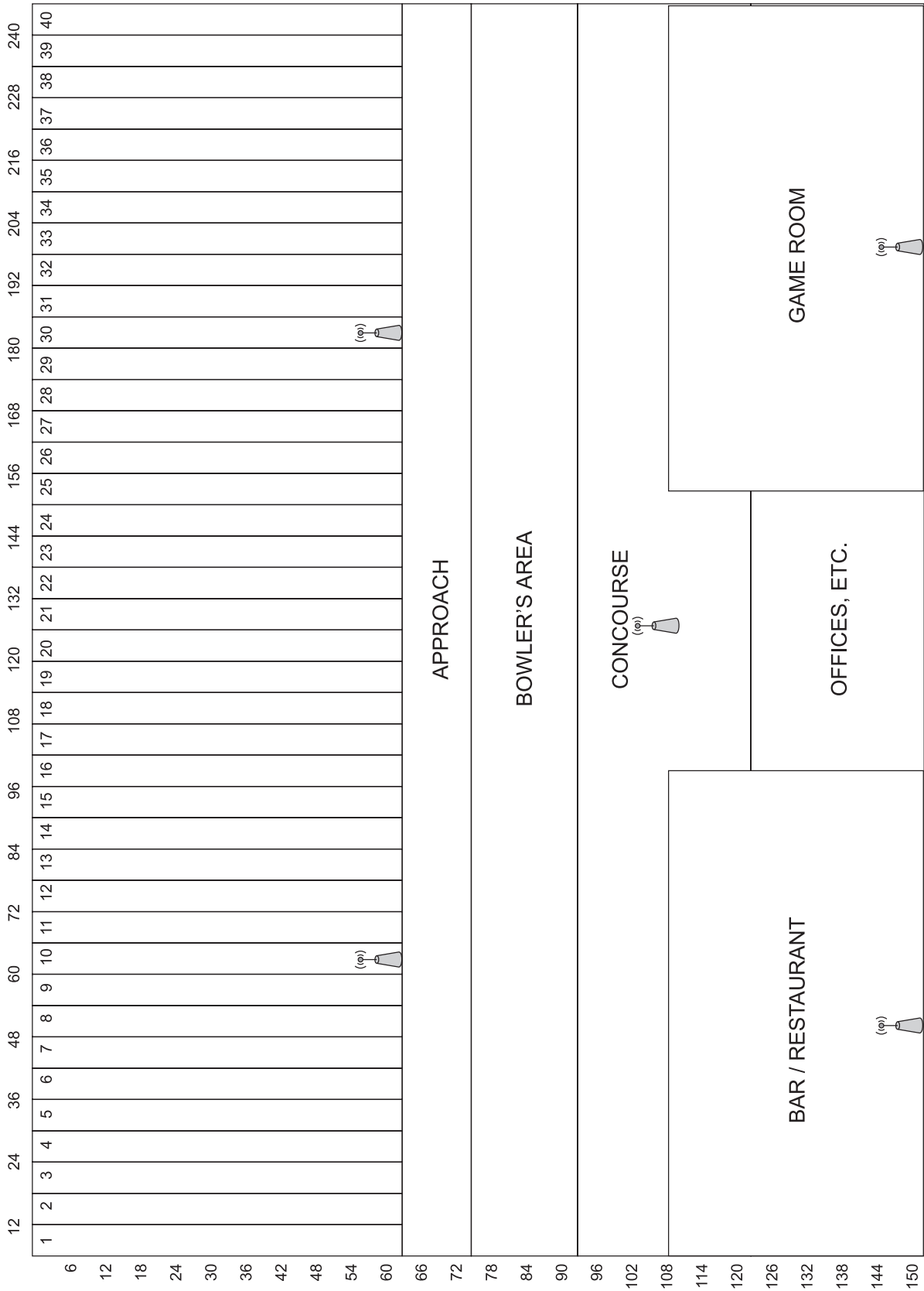
DHCP - All access points in the Vector Plus network must have DHCP disabled!

TYPICAL WAP CONFIGURATION









**Example 3
Divided Rooms**

200' RADIUS IS ROUGHLY 140' OVER AND 140' OUT
 150' RADIUS IS ROUGHLY 100' OVER AND 100' OUT
 120' RADIUS IS ROUGHLY 85' OVER AND 85' OUT
 100' RADIUS IS ROUGHLY 70' OVER AND 70' OUT

6	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
66	APPROACH																				72																		
78	BOWLER'S AREA																				84																		
90	CONCOURSE																				96																		
102	OFFICES, ETC.																				108																		
114	Blank																				120																		
126	Blank																				132																		
138	Blank																				144																		
150	Blank																				156																		

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