Marina Wi-Fi Planning Guide

EnGenius®

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Improving the guest experience is just one of the important benefits of incorporating reliable Wi-Fi services into your site upgrade plans. As the demand for near continuous Internet connectivity increases, your ability to provide this "must-have" amenity to existing and potential boaters will help set your marina apart from those who don't.

A surprising 2013 study[1] showed that 69% of employed vacationers planned to bring a work-capable device with them on vacation and 67% of these said they expected to use the device for work-related purposes while vacationing. This is just another example of the growing need for you, as a marina operator, to consider offering reliable Wi-Fi services to your guests, and this guide is the first step to help you plan your wireless network with ease.

The following questions will guide you in assessing your needs in preparation for building your wireless network site plan.

1. **Where is the entry point for your Internet service on the property?**

    When considering Wi-Fi for your staff, boaters and guests, it's important to understand how you're going to deliver that service. The location of the Internet Service Provider's (ISP) equipment will help you determine what's needed, such as Ethernet cabling, network Power-over-Ethernet Switches and/or Wireless Access Points to deliver that service to the end user.

    -   **Wireless Access Point (WAP or AP)** – A device that's located at the edge of a wired network that transmits and receives data wirelessly to and from client devices such as smart phones, laptops, desktops, printers, tablets, other access points, client bridges, etc.

2. **How far is your Internet service entry point from your coverage area?**

    Having an understanding of the distance from your ISP's equipment to the point of service area is important. This gives you a good idea of what equipment is needed, and where it'll be located. In addition, it'll indicate the type of network devices that will need to be deployed.

3. **How much bandwidth are you receiving from your ISP?**

    The amount of bandwidth you're receiving from your ISP will determine the maximum speed you'll be able to offer your staff, boaters or guests. More bandwidth enables more users to connect allowing you to provide high quality Wi-Fi service.

4. **What is your estimated average number of users?**

    The average number of users or user capacity will help determine the number of Access Points needed to connect your marina. The more users you have, the more Access Points you'll need.

5. **What "quality of service" or access would you like to provide?**

    Knowing the quality of service that you want to offer to your staff, boaters or guests will help you determine the placement of your Access Points. For example:

    -   **Hotspot Service** – Specific areas where Wi-Fi service is available. Your guests will need to visit those specific areas in order to access Wi-Fi services. These could include the clubhouse, café or outdoor recreational facilities.

    -   **On Boat/Dock** – Guests can receive Wi-Fi access virtually anywhere throughout the marina, including on their boat and on the docks.

6. **What are your buildings constructed of?**

    Wireless signals degrade when traveling through different obstacles. Concrete, wood, metal siding, and/or rebar can result in different levels of Wi-Fi signal degradation. Knowing the construction of your walls, ceilings and floors will help determine the appropriate placement of your wireless Access Points.

[1]Survey conducted in the U.S. by Harris Interactive on behalf of Expedia from June 25-27, 2013. Retrieved from https://www.teamviewer.com/en/press/team-viewer-survey-employees-planning-to-cope-with-work-during-summer-vacation.aspx

7. **Do you currently have Ethernet cable run out to your docks or to the ends of your docks?**

Having the proper, shielded Ethernet cable already run to or alongside your docks makes the deployment of Wi-Fi very easy. If not, you can simply implement a secure wireless link that will carry the signal to a designated location, avoiding the need for additional cabling, extra cabling costs and the hassle of permits.

- **Wireless Bridge** –a point-to-point link or wireless backhaul, is two devices wirelessly linked together to communicate with one another. The devices are typically called Wireless Bridges and are located on each end and are wired to another device(s) such as a network Switch, IP Camera, Router, Access Point, etc.

8. **Do you plan on implementing or expanding and existing surveillance system?**

Surveillance systems are becoming more and more commonplace among marinas. Not only do they provide important, 24/7 visuals on key areas, they also add a level of comfort and security for your staff, boaters and guests, and can provide valuable evidence to protect your property against liability, vandals and theft. When installing an IP surveillance system (network-based surveillance), you need to also consider your overall site's bandwidth usage. You'll want to decide if you want your security system on the same network as your users or if you want to create a separate, dedicated network. High-resolution IP Cameras will need more bandwidth than lower-resolution IP cameras and may provide sharper details for identifying facial features and license plates as needed.

9. **How many docks and slips do you plan to provide wireless access to?**

The number of docks, and if you're going to offer Wi-Fi to all of them, will help determine the number of Access Points needed and their placement. It'll also determine if you'll need additional wireless links, and if so, how many. Additionally, the number of slips will help indicate the average number of users that'll be on your network at a given time.

10. **Do your boaters have an on-board Wi-Fi device to connect to your wireless network?**

The success of your Wi-Fi network is often times determined by your user's experience. If they experience intermittent coverage or dead spots, then the Wi-Fi network isn't doing its job. This is why site planning for just the right amount of service is critical. In some cases, the boater's Wi-Fi device, such as their on-board Access Point may not be the best equipment to meet their needs. Marinas that offer a secondary solution to their boaters could improve their customer's overall experience, while also creating a new revenue stream for the marina.
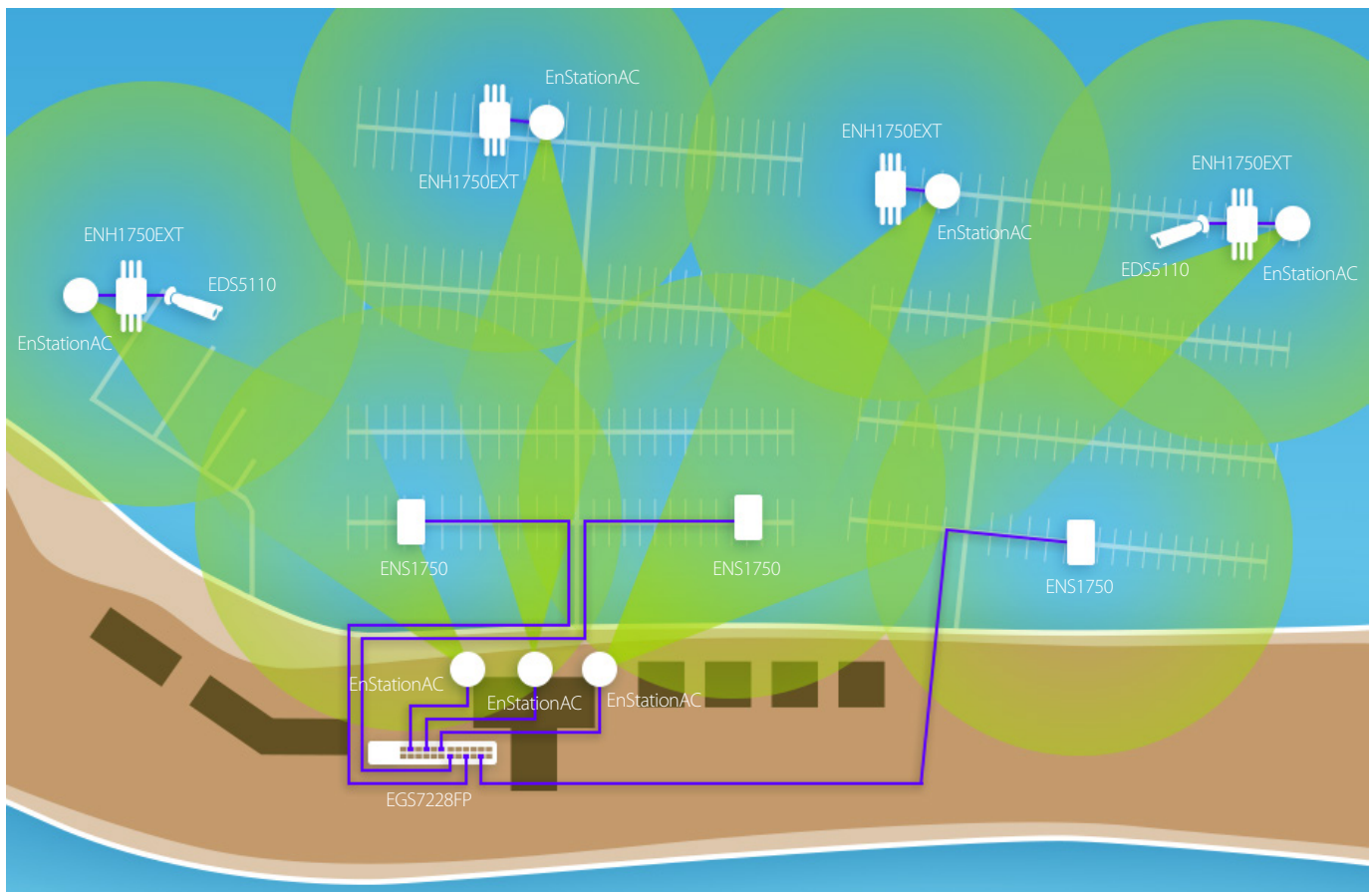
Sample Deployment Design

Table 1 shows the recommended Bill of Materials (BoM) for this design. Please verify actual pricing with your distributor, as there are often applicable discounts, promotional offers, and/or bundled kits when purchasing quantity.

Sample Bill of Materials

EnGenius PN	Description	Quantity
EGS7228FP	24-Port 1U Rack-mount Gigabit Ethernet Layer 2 PoE+ Switch with 4 Dual-Speed SFP ports for fiber uplink. Supports IEEE 802.3at/af PoE and can supply up to 30 Watts per port for a total PoE budget of 370 Watts.	1
ENS1750	802.11 a/b/g/n/ac 1750 Mbps (450 Mbps 2.4GHz + 1300 Mbps 5GHz) Outdoor High Power 500mW Access Point/Bridge. With Integrated Omni-directional High Gain 5 dBi Antenna for both 2.4GHz and 5GHz. It features 8 SSID, IP55-rated Waterproof Enclosure, WPA2/WPA/WEP encryption, Gigabit Ethernet ports, Signal Strength LED Indicators. Accessory Kit, PoE Injector & Pole Mount Strap Included.	3
ENH1750EXT	IEEE 802.11a/b/g/n/ac Outdoor High-powered Ruggedized IP68-rated Waterproof Enclosure, 3x3:3 Dual-Band Wireless Access Point, Mesh, WDS, with Speeds up to 1300 Mbps on 5 GHz and 450 Mbps on 2.4 GHz, 3x 5dBi 2.4 GHz and 3x 7dBi 5 GHz Omni-directional Antennas, Accessory Kit, PoE (48V) Injector, Wall-Mount Kit and Pole-Mount Bracket Included.	4
EnStationAC	802.11 ac 867 Mbps Outdoor High Power 400mW Access Point/Bridge. Features multiple SSID, IP55-rated Waterproof Enclosure, WPA2/WPA/WEP encryption, Signal Strength LED Indicators, Internal High Gain Directional Antenna (19 dBi), PoE 802.3at-compliant, includes a secondary Gigabit PoE-802.3af-compliant port for extending power to compliant devices such as IP surveillance cameras and Pole-Mount Strap Included.	6
EDS5110	1-Megapixel Indoor/Outdoor Day/Night Bullet IP Surveillance Camera featuring Power-over-Ethernet, remote viewing and 720P high definition dual-stream video up to 30 fps. Includes 16-Channel Video Management Software for quick interaction with the camera's scheduling and recording features.	2

Sample Deployment Notes:

The **EGS7228FP** PoE Switch will be connected to the Internet Service Provider's equipment located in the main building to provide power and data to all or most of the connected devices.

EnStationAC wireless bridge will be utilized as point-to-point wireless link to extend the ENH1750EXT Access Points out to the end of the docks without running cabling, avoiding extra costs and permits. The EnStationAC wireless bridges will be connected to the EGS7228FP PoE Switch at the main building. At each ENH1750EXT Access Point an EnStationAC wireless bridge will be connected to provide a wireless pipeline back to the main building.

ENH1750EXT and **ENS1750** units will be programmed in wireless access point mode and offer Wi-Fi to the staff, boaters and visitors.

Two **EDS5110** Cameras will be connected to the second port of two ENH1750EXT Access Points. The EDS5110 Camera will utilize the ENH1750EXT Access Point's secondary PoE pass-through port for a power source and to pass data. The EDS5110 Camera will use the existing wireless pipeline to send data back to the main building.

Note: The number of ENH1750EXT or ENS1750 Access Points may need to increase to effectively cover the amount of users.

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