How To Use EZ Controller, Lay Out Wireless Networking Solutions and More!

Presented by Jeriel Tenorio
About EnGenius

EnGenius Technologies, Inc. is the industry expert in feature-rich, long-range and enhanced sensitivity wireless communications technology for voice and data. Now home users and small- to medium-sized businesses can introduce and use a wider array of devices and applications because EnGenius makes their networks bigger.
Agenda

• EZ Controller
  Access Point Management Software

• Wireless Access Points & Client Bridges

• Live Demo of EZ Controller

• Site Surveying and Deployment Considerations
EZ Controller
Access Point Management Software

- SNMP based
- Centralized monitoring and management tool
- Easy drag-n-drop configuration
EZ Controller Interface
## EZ Controller Compatibility List

<table>
<thead>
<tr>
<th>Model</th>
<th>Firmware Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAP150</td>
<td>v1.2.1</td>
</tr>
<tr>
<td>EAP300</td>
<td>v1.2.1</td>
</tr>
<tr>
<td>EAP350</td>
<td>v1.1.0</td>
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<tr>
<td>ENH200</td>
<td>v1.1.0</td>
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<tr>
<td>ENH200EXT</td>
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<tr>
<td>ENH202</td>
<td>v1.1.0</td>
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<tr>
<td>ENH500</td>
<td>v1.1.0</td>
</tr>
<tr>
<td>ENH210</td>
<td>v1.1.0</td>
</tr>
<tr>
<td>ENH210EXT</td>
<td>v1.1.0</td>
</tr>
</tbody>
</table>
High Power Indoor Wireless 11n Access Points

- 802.11bgn
- High Power 26+ dBm
- Integrated 6dBi Antenna
- AP/ WDS Mode
- Ceiling Mount
- LED On/Off Control
- 802.3af PoE Support
- MSSID/VLAN, SNMP, 802.1x

EAP350
- 2Tx / 2Rx (up to 300 Mbps)
- 10/100/1000 Gigabit Ethernet

EAP300
- 2Tx / 2Rx (up to 300 Mbps)
- 10/100 Fast Ethernet

EAP150
- 1Tx / 1Rx (up to 150 Mbps)
- 10/100 Fast Ethernet
High Power Indoor Wireless 11n Client Bridge / APs

- 802.11bgn
- High Power 29+ dBm
- 2Tx+2Rx (up to 300 Mbps)
- AP / CB / WDS Modes
- 2 SMA Connectors
- 802.3af PoE Support
- MSSIDs/VLAN
- SNMP

ECB350
- 2Tx / 2Rx (up to 300 Mbps)
- 10/100/1000 Gigabit Ethernet

ECB300
- 2Tx / 2Rx (up to 300 Mbps)
- 10/100 Fast Ethernet

ECB150
- 1Tx / 1Rx (up to 150 Mbps)
- 10/100 Fast Ethernet
Outdoor Wireless 11n Bridges

- High Power 27 dBm
- IP65 Waterproof / Dustproof
- AP / CB / CR / WDS Modes
- 24V PoE Support
- 2 x 10/100 Fast Ethernet Ports

ENH500 (802.11an / 5GHz)
- 2Tx / 2Rx (up to 300 Mbps)
- Integrated 14 dBi Antenna with Dual Polarization

ENH202 (802.11bgn / 2.4GHz)
- 2Tx / 2Rx (up to 300 Mbps)
- Integrated 14 dBi Antenna with Dual Polarization

ENH200 (802.11bgn / 2.4GHz)
- 1Tx / 1Rx (up to 150 Mbps)
High Power Outdoor Wireless 11n Access Points

**ENH210EXT 802.11bgn**
- 2Tx+2Rx: 300Mbps
- Gigabit Ethernet
- High Power: 29dBm
- 2 N-Type connectors
- 2 x 5 dBi antennas
- AP/CB/WDS Mode
- IP67 Water proof design
- 48V PoE support (802.3af/at compliant)
- MSSIDs (up to 8), VLAN
- SNMP

**ENH200EXT (2.4GHz)**
- 1Tx+1Rx: up to 150Mbps
- 10/100Mbps Fast Ethernet
- High Power 27dBm
- SMA Connector for 2.4GHz Antenna
- CB / AP / CR / WDS Modes
- IP65 Waterproof design
- 24V PoE Support
- MSSIDs / VLAN
- EAG-2408 recommended antenna (optional accessory)
- Use high gain antenna directional antenna for longer links
Live Demo

Windows OS required

Must be on the same IP subnet

Default settings
  • Read only community name: public
  • Read/write community name: private
Design Considerations

Where will the APs be located?

How will they be mounted and aesthetics?

How do they connect to the LAN?

Where do you need to install cables and power?

What antennas to use and where to mount?

What configuration parameters that result in coverage factors such as power and data rate?

What channel settings should be used?

What type of applications and wireless clients?

What level or security?
Wireless Site Survey

Should be considered mandatory when multiple APs are required.

Identify non-wifi sources of interference with a spectrum analyzer

Identify dead potential dead spots and estimate the wireless network performance
Building Materials Are a Function of the Wireless Environment

- Attenuation varies with different types of materials
RSSI varies with Client Devices

• Not all wireless clients behave the same

• This affects DRS (Dynamic Rate Switching)

• Roaming is determined by the client device even with APs with a central controller.

15 mW Tx Power  
0 dBi Gain Antenna

vs.

30 mW Tx Power  
2 dBi Gain Antenna
Coverage-Oriented Planning

A typical coverage-oriented network provides a user to AP ratio of 25 to 1.

Low bandwidth requirements, allowing data rate scaling down to lower data rates such as 1 or 2 Mbps.

Warehouse environments or retail environments where WLANs are used for inventory control and just-in-time purchasing.
Capacity-Oriented Planning

Designed to provide maximum throughput and packet rate for each client. Cell sizes are smaller than coverage-oriented cells, requiring a higher AP density. Required for areas that have the following characteristics:

- Smaller-sized subnet deployments (or multiple subnets per coverage area)
- Latency-sensitive applications such as VoIP
- High packet rate applications
- Dense client population
Minimize Co-Channel Interference

FCC only allows channels 1-11. Each channel is 22 MHz wide but separated by only 5 MHz, allowing only 3 non-overlapping channels.
40 MHz Channel in 2.4 GHz

While using a wider channel can result in double the wireless throughput. The drawback to enabling this option is that takes up 82% of the unlicensed band.

<table>
<thead>
<tr>
<th>Channel</th>
<th>20 MHz</th>
<th>40 MHz above</th>
<th>40 MHz below</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Blocks</td>
<td>Center</td>
<td>Blocks</td>
</tr>
<tr>
<td>1</td>
<td>1-3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>1-4</td>
<td>6</td>
<td>4</td>
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<tr>
<td>3</td>
<td>1-5</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>2-6</td>
<td>8</td>
<td>6</td>
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<tr>
<td>5</td>
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<td>7</td>
<td>5-9</td>
<td>11</td>
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<tr>
<td>8</td>
<td>6-10</td>
<td>12</td>
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<td>9</td>
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<td>8-12</td>
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</tr>
<tr>
<td>11</td>
<td>9-13</td>
<td>N/A</td>
<td>N/A</td>
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</tbody>
</table>
Avoid Stacking APs Between Floors

APs with omni-directional antennas also radiate energy in the vertical plane.
Real Use Case Scenario
10th Floor Site Survey
9th Floor Site Survey
8th Floor Site Survey
Recommendation After Site Survey
Thank You!

Questions / Answers