DIGITAL HOME SYSTEMS

ALL ABOUT Z-WAVE

WEBINAR SERIES

WHAT IS Z-WAVE?

- Z-Wave is a Low Powered, Wireless communications technology that supports mesh networks using Radio Frequency (RF)
- Z-Wave operates on a sub-GHz frequency different in different regions of the world: 921MHz in AU/NZ, 908MHs in US, 868MHz in EU
- Z-Wave is designed specifically for control, monitoring and status reading applications in residential and light commercial environments
- Z-Wave is by far the world market leader in wireless control (over 100 million products sold worldwide)

WHAT IS Z-WAVE?

- Z-Wave was developed in 1999 in Copenhagen, Denmark by Zensys.
- Brought to the US in 2001 by Zensys and continues to grow faster than any other IoT / smart home technology.
- In December 2008, Sigma Designs, a public company, purchased Zensys.
- In May 2011, Mitsumi is licensed as a second source manufacturer of Z-Wave chips.
- Early 2018, Silicon Labs ($4B+ capitalization) bought Sigma Designs to continue to develop and promote Z-Wave technology globally.

WHAT MAKES Z-WAVE DIFFERENT?

Mesh Network

Interoperability

Security

Certification

Power Consumption

Multiple Types of Devices

Open to Public

MESH NETWORK

- Z-Wave is a Wireless Mesh Network
- What does that mean?
  - Z-Wave's Mesh Network Provides The Best Scalability
  - Every powered node is a repeater
  - Extremely robust
- Because nodes in a Z-Wave network can act as a repeater, Z-Wave can provide enough range for even the largest homes, working around obstacles and wireless dead spots.
- Individual Z-Wave mesh network can consist of up to 232 devices. The primary controller always has HomeID 1 and shares its HomeID with all other devices on the network.
- Only continuously powered devices, e.g. switches and dimmers repeat the Z-Wave control messages.

INTEROPERABILITY

- You can use any Z-Wave device, for example a light dimmer, from any manufacturer and it will work exactly like any other light dimmer from any other manufacturer. This is accomplished by a well-defined standard and a strong product certification program.
- Z-Wave defines interoperability as “the successful interworking of multiple products from multiple manufacturers, for multiple applications, that may be based on multiple versions of Z-Wave.”
- Z-Wave ensures *interoperability*, even across versions, but it does not guarantee *compatibility*.
- This means, for example, that a controller which does not support the barrier operator class of commands that a garage door opener uses, is not compatible with garage door openers. A controller that does not support security or does not support door locks, is not compatible with a door lock device.

SECURITY

- Z-Wave uses industry-standard AES128 encryption, the same protocol used in online banking.
- The Z-Wave certification process ensures that Z-Wave smart devices are secure.
- The introduction of S2 eliminates risk of man-in-the-middle attacks and include industry-wide accepted security key exchange using Elliptic Curve Diffie-Hellman.
- Z-Wave is the first mesh technology awarded a certificate of compliance by UL for use in professional alarm systems.
- Beyond this, every gateway has it's own unique Home ID which it shares with devices upon inclusion, meaning no one else can control the devices.

CERTIFICATION

- Certification differentiates Z-Wave from other competitors
- What does that mean?
  - Ensures all Z-Wave products work together, creating the largest interoperable ecosystem
  - More products. More brands. More choice.
  - Keeps the brand strong in the market.
  - Ensures all Z-Wave products work together
- There are over 2100 certified products

POWER CONSUMPTION

- Z-Wave has much better energy efficiency
- What does that mean?
  - Z-Wave's power efficiency is by far the most advanced among all of today's (and tomorrow's) two-way wireless protocols.
  - Battery-operated sensors and systems need much less maintenance.

MULTIPLE TYPES OF DEVICES

- Battery Operated
  - operates on battery power and to conserve the battery, the Z-Wave Radio is turned off – it does not listen – except when it wakes up at regular intervals or to send a notification.
  - Because it is battery powered, it does *NOT* participate in routing or help the mesh network.

- Hard Wired or Constantly Powered
  - Can operate on either 240V AC or 12V DC depending on the type of device
  - Participates in routing and helps build the mesh network
  - Act as signal repeaters with a range of approximately 10m unobstructed

OPEN TO PUBLIC

- Sigma Designs opened up the Z-Wave Interoperability specification to the public
- What does that mean?
  - Anyone will now be able to understand how Z-Wave Devices “talk” together wirelessly
  - Creates a resource for any party that wants to work with smart home application, including cloud initiatives and the opportunity for the creation of plug-ins for Z-Wave technology.
  - Commercially sold products must be Z-Wave certified

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