



Wireless Sensor System

Automation • Monitoring • Control



EDN
2010
Hot 100



ADVANCED WIRELESS SOLUTIONS BY



Market Drivers for More Sensors

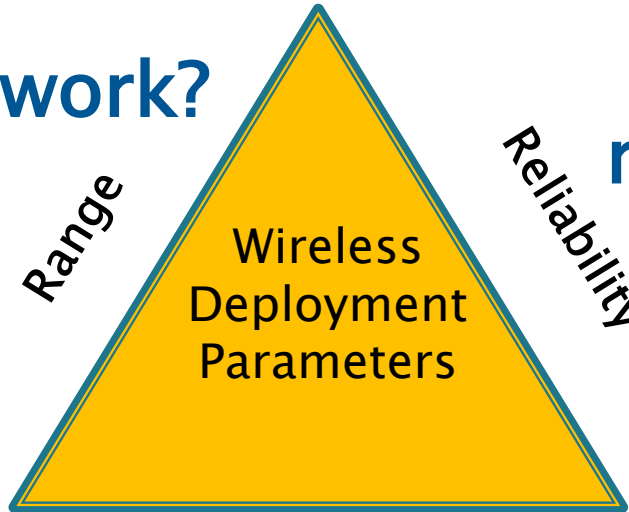
- ▶ Reduce energy consumption
- ▶ LEED certification / Green initiatives
- ▶ Regulatory requirements
- ▶ Increased automation
- ▶ Remote monitoring
- ▶ Improved occupant comfort



The benefits of wireless solutions for monitoring and control applications are well-documented, including multiple studies by the U.S. Department of Energy.

Wireless Deployment Considerations

How far will it work?



Will the data be received reliably?

Battery Life

How often do devices have to be maintained?



Can this system scale for my enterprise?

Battery Life Impacts Operating Expense and Performance

Impact of Battery Failures and Replacement

- ▶ Forgotten devices
- ▶ Sub-optimal system performance, wasted energy
- ▶ Expensive “truck roll” to replace a battery
- ▶ Manage on-going battery replacement program
- ▶ Battery recycling (and training)

**The IDEAL Wireless Sensor System
eliminates battery replacement**

IDEAL Wireless Sensor System

- ▶ Indoor environmental monitoring
 - Temp, Humidity, Light, CO₂, DP, etc...
- ▶ Completely wireless
 - Labor cost savings and rapid deployment
- ▶ Network-centric
 - Industry Standard Interoperability
 - BACnet, Modbus, LonWorks, SNMP, XML
- ▶ No/low maintenance
 - Up to 25+ year battery operation
 - Battery-powered CO₂ sensor (3.5 –15 years)



IDEAL System Benefits

- ▶ Fast installation / Easy relocation
- ▶ No wiring, network ports, or power
- ▶ Scales from 10s to 1000s of points
- ▶ Long battery life (up to 25+ years)
- ▶ Connect to any HVAC or IT network
- ▶ Unlimited Range (with repeaters)



Wireless Sensor Options



Temperature



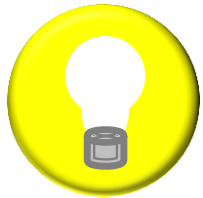
Differential Pressure



Humidity / Dew point



Carbon Dioxide



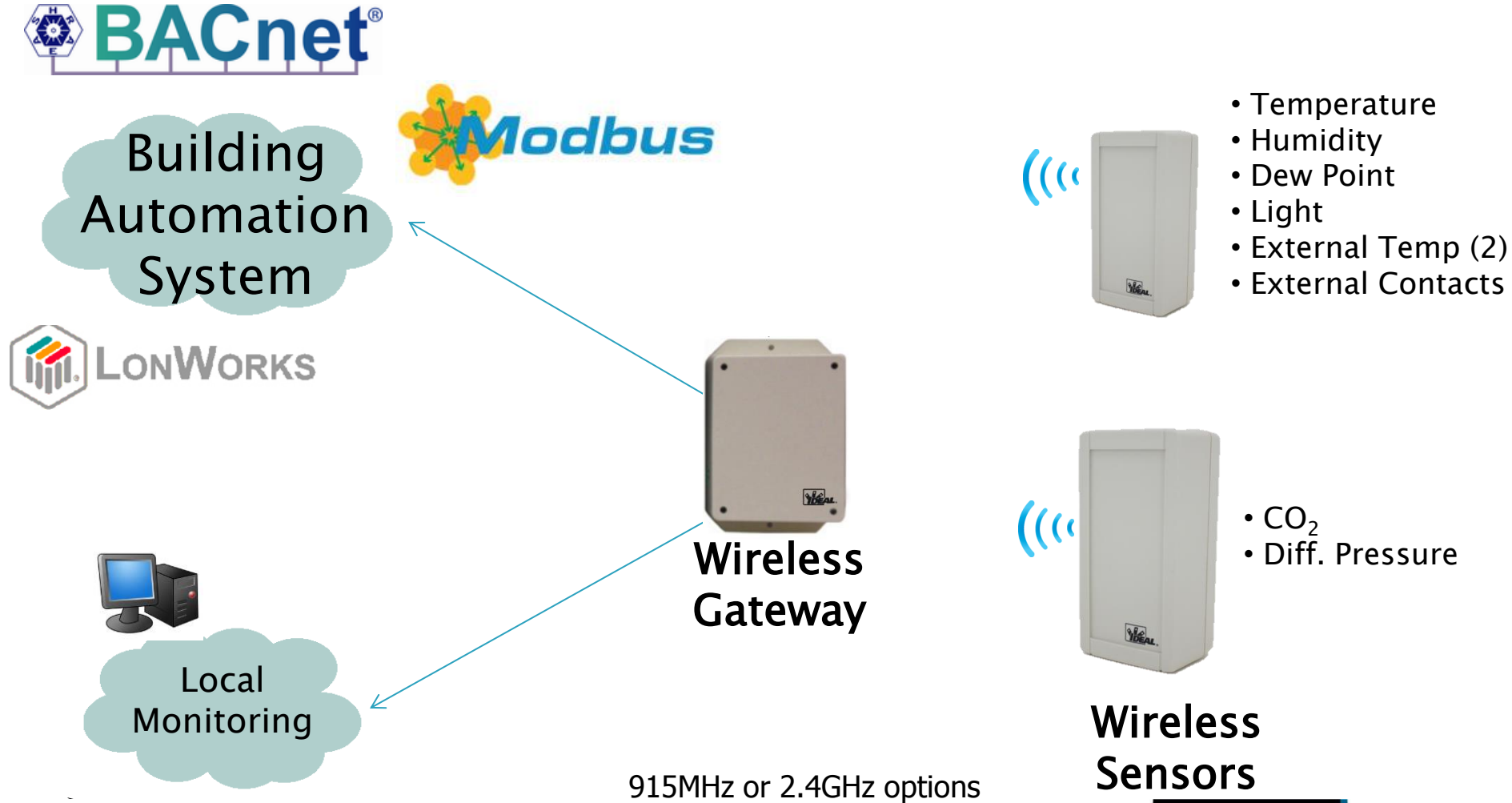
Light Level



Dry Contacts

Device size as small as 4"x2"x1"

System Overview



Multi-Function Sensor



Configurations

T	Temperature
TH	Temperature/Humidity/Dewpoint
TX	Temperature w/2 ext. 10K ports
L	Light level (lux)
C	Contact Closure / Digital Input

Packaging Option A

- 4.2" x 2.1" x 1.1" enclosure
- Non-replaceable battery (-N)

Packaging Option B

- 4.2" x 2.1" x 1.7" enclosure
- Replaceable batteries (-R)

Battery Life

**25+ years* with pre-installed battery,
15 years* with replaceable batteries
@ 1 minute intervals**

No battery replacement during typical lifecycle!

** When used under rated environmental conditions*

Wireless CO₂ Sensor



5.8" x 3.2" x 1.5" enclosure

CO₂

- ▶ Self-calibrating
- ▶ 0 – 5,000 ppm range
- ▶ Configurable intervals: 1 – 10 minutes
- ▶ Battery-life: 3.5 – 15 years*
- ▶ Internal antenna
- ▶ Wall-mount

*Easy retrofit for enabling
Demand-Controlled Ventilation (DCV)*

Battery Life

3.5 years* @ 1 minute intervals

15 years* @ 5 minute intervals

** When used under rated environmental conditions*

Wireless Differential Pressure Sensor

1102-DP1 / 1202-DP1

- ▶ Battery-life: 15 years*
- ▶ $\pm 2"$ W.C. / ± 500 pa
- ▶ 5/32" fittings (156 mils)
- ▶ Wall-mount enclosure, internal antenna



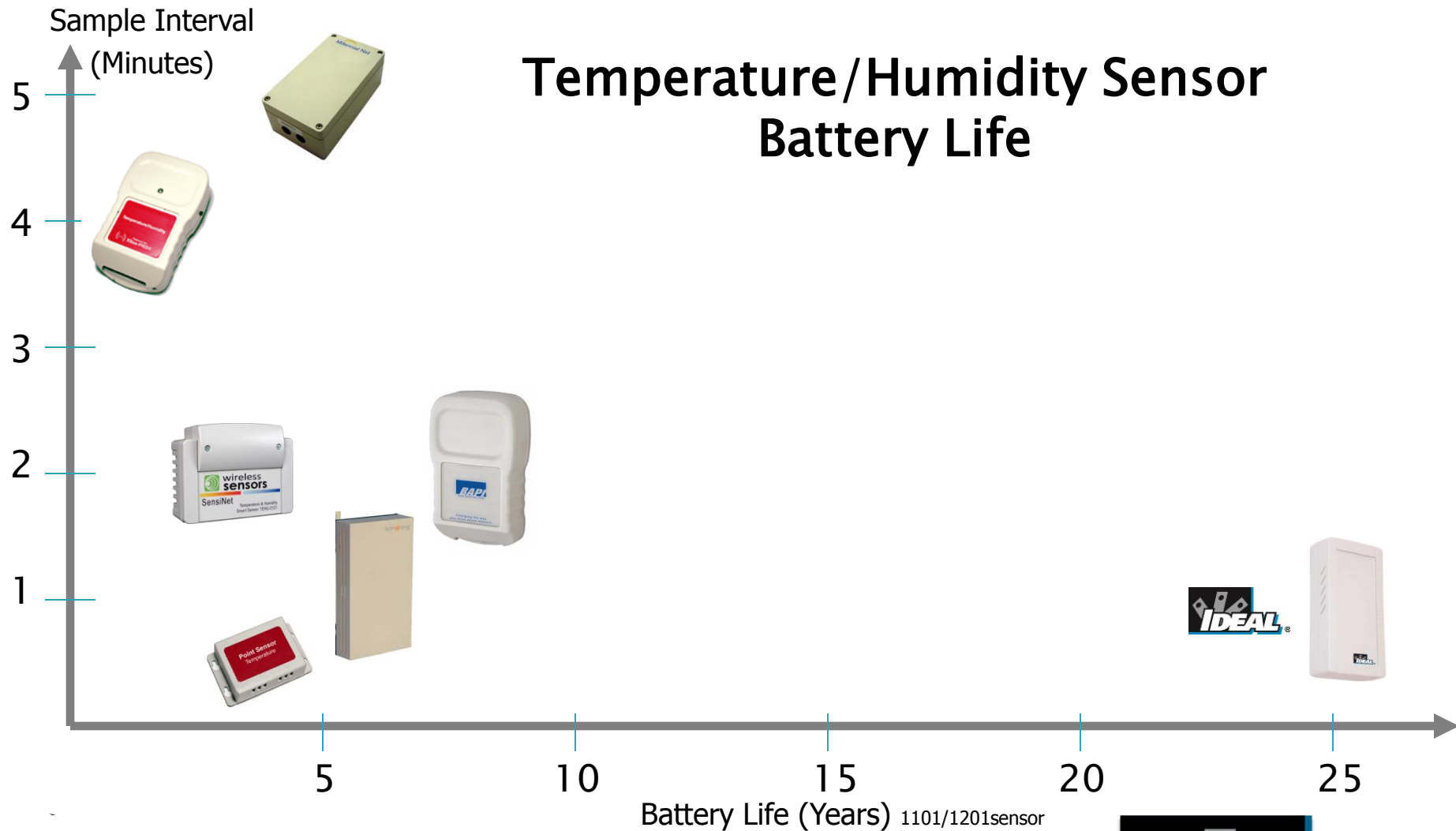
5.8" x 3.2" x 1.5" enclosure

Battery Life

3.5 – 15 years* @ 30 sec – 8 min intervals

** When used under rated environmental conditions*

IDEAL Sensors Deliver Wired-like Performance



Data obtained from published datasheets (Dec 2011)

ADVANCED WIRELESS SOLUTIONS BY



Wireless BAS Gateway



BAS Network Interfaces and Protocols

Ethernet

- BACnet/IP
- Modbus TCP
- Ethernet/IP
- Omrin FINS
- DNP3
- SNMP
- XML

RS-485

- BACnet MS/TP
- Metasys N2
- Modbus RTU
- JBus
- DNP
- YorkTalk
- A-B DF1

FTT-10

- LonWorks

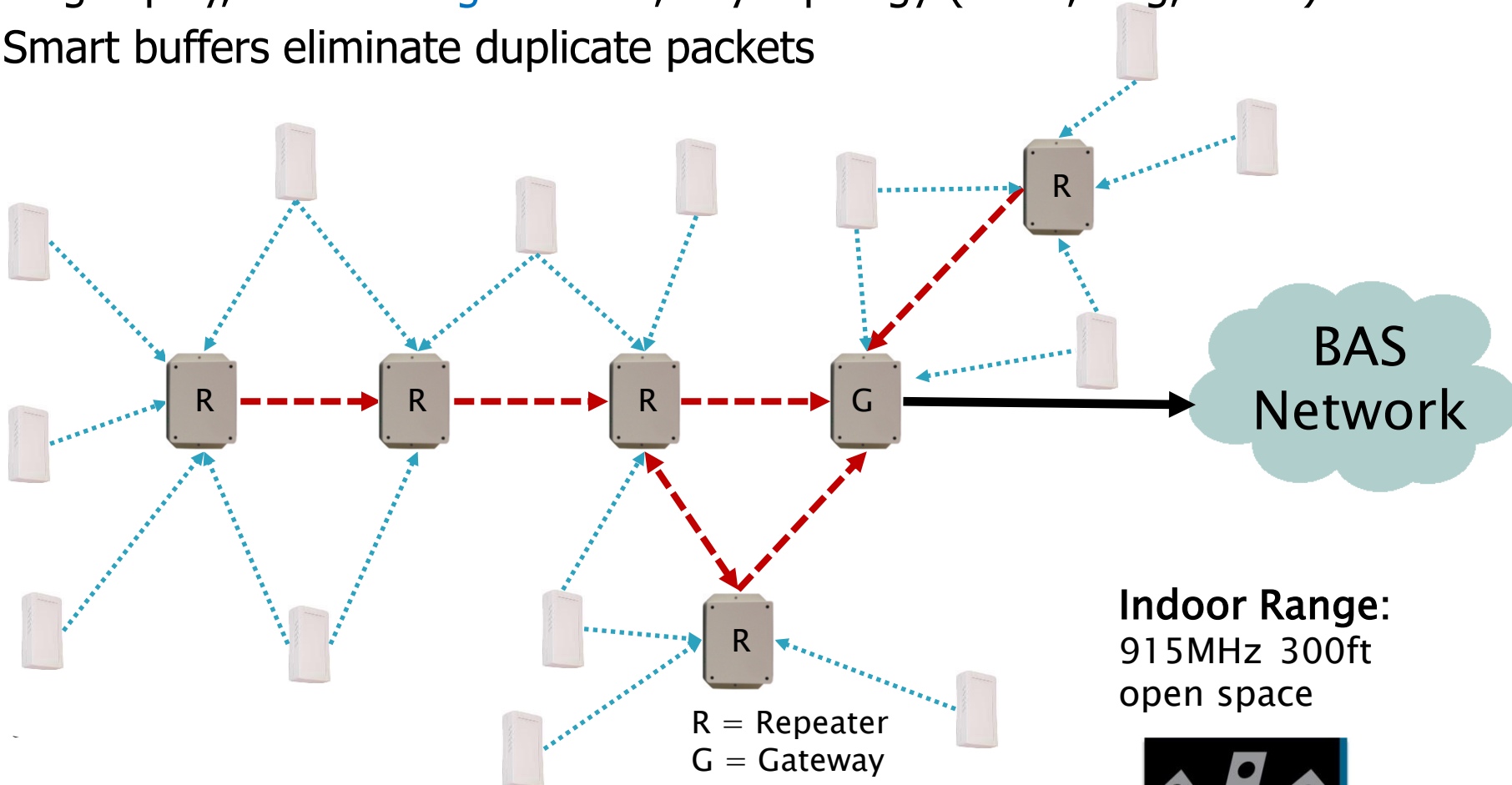
USB

- Serial Gateway/ Repeater

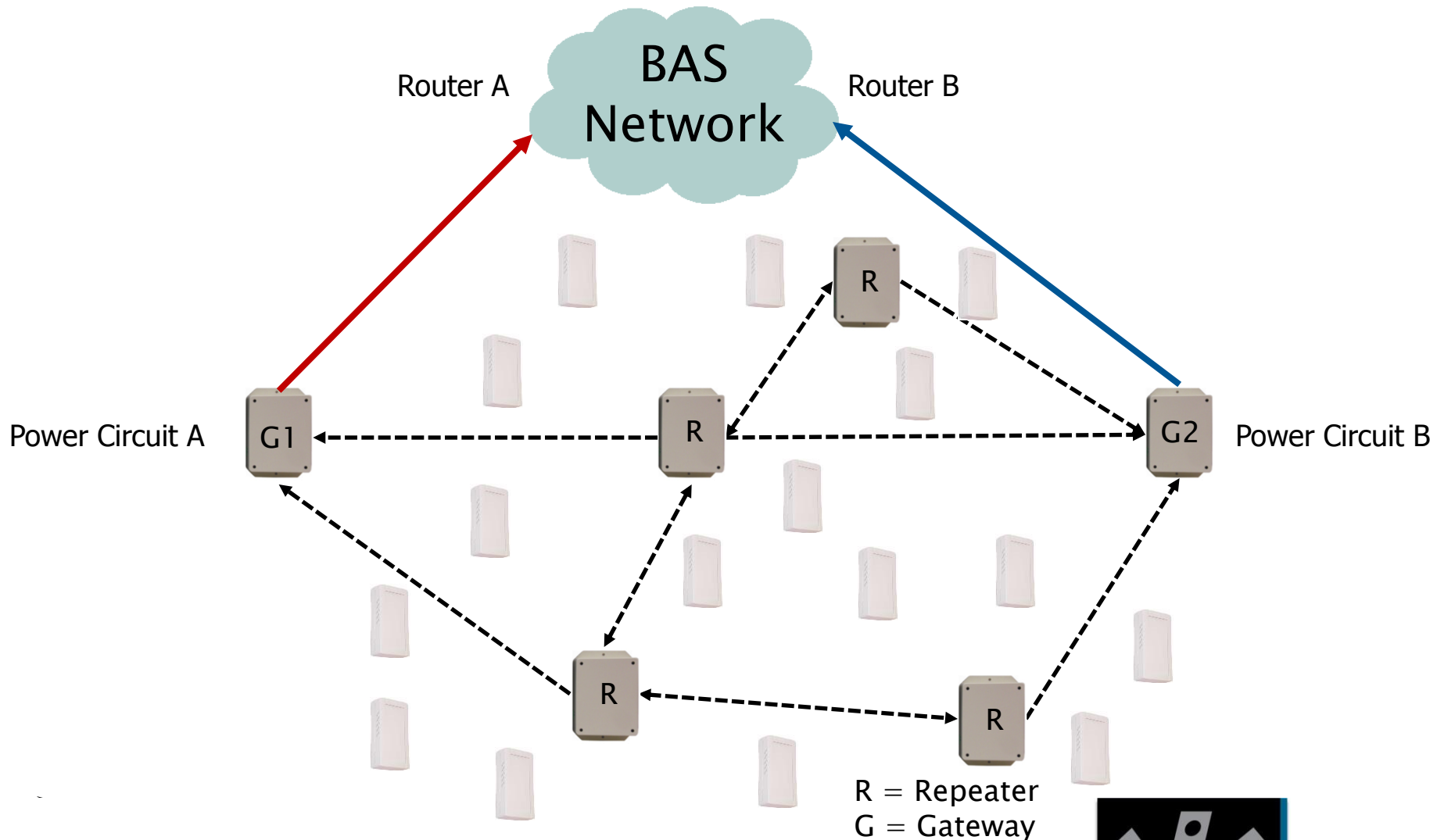
- ▶ Receives data from wireless sensors
 - Up to 100 devices
 - Up to 800 sensor points
- ▶ Interface to BAS or IT network
 - Ethernet, RS-485, FTT-10
- ▶ Maintains network performance info
 - RSSI, Hop Count, Routes, Packet Timers
- ▶ USB Interface to PC
 - Configuration
 - Local monitoring and data logging via serial / HyperTerminal connection

Wireless Repeaters Provide Extended Range

- **Real-time** repeater mesh – no multi-hop delays, no hop-count limit
- Plug-n-play, **self-forming network**, any topology (linear, ring, mesh)
- Smart buffers eliminate duplicate packets



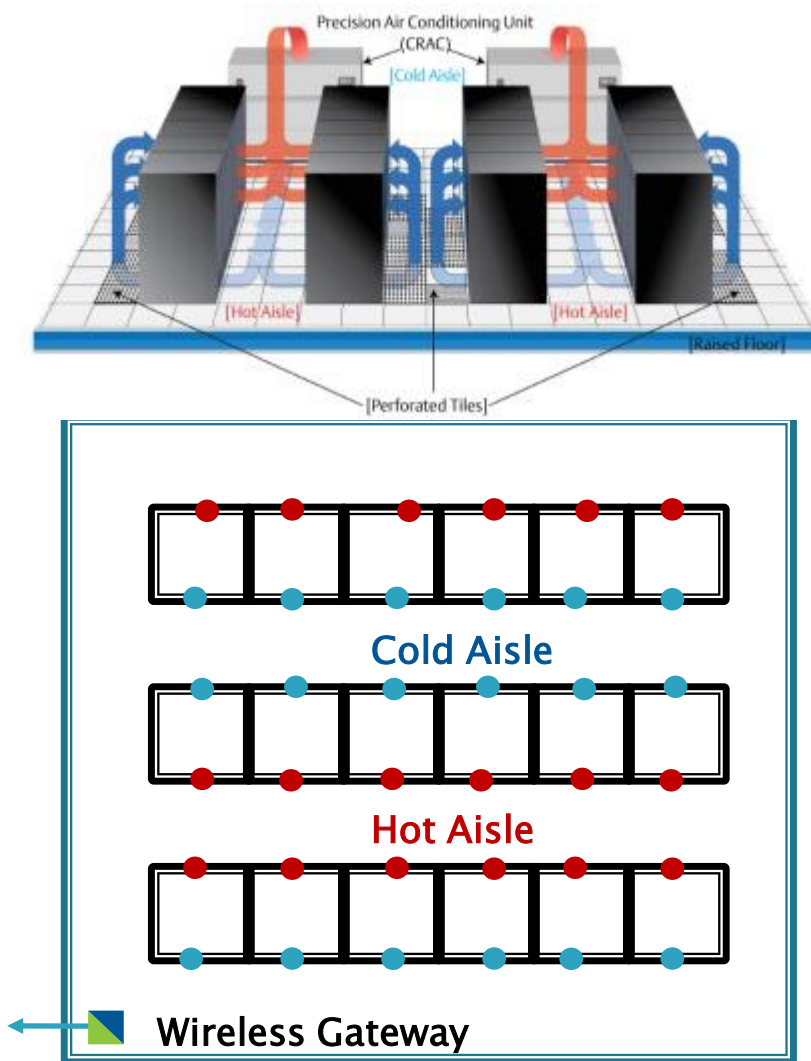
Gateway Redundancy Protects Against Failures



Applications

- ▶ Data Center Monitoring
- ▶ Building Automation / HVAC control
- ▶ Energy Management
- ▶ Data Logging (real-time, cloud-based)
- ▶ Compliance Monitoring
 - Medical/JHACO, Food/FDA, etc.
- ▶ More...

Data Center Monitoring



- Measure server intake and exhaust temperature
- Reduce energy consumption
- No wiring, easy deployment
- No maintenance
- Real-time data

Demand-Controlled Ventilation

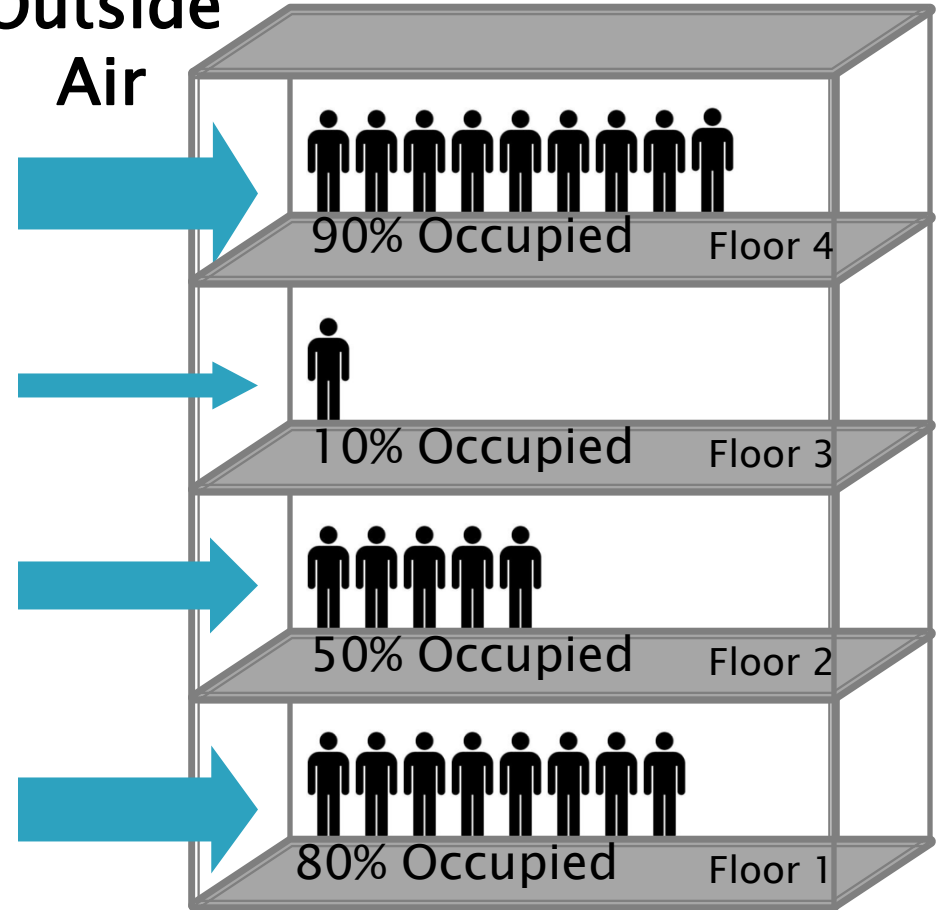
DCV Benefits

- Reduced energy cost by avoidance of over-ventilation
- Improved IAQ and humidity control, minimized moisture intake
- Qualifies for LEED rating points
- Reduced operational running times for major HVAC equipment

IDEAL System Benefits

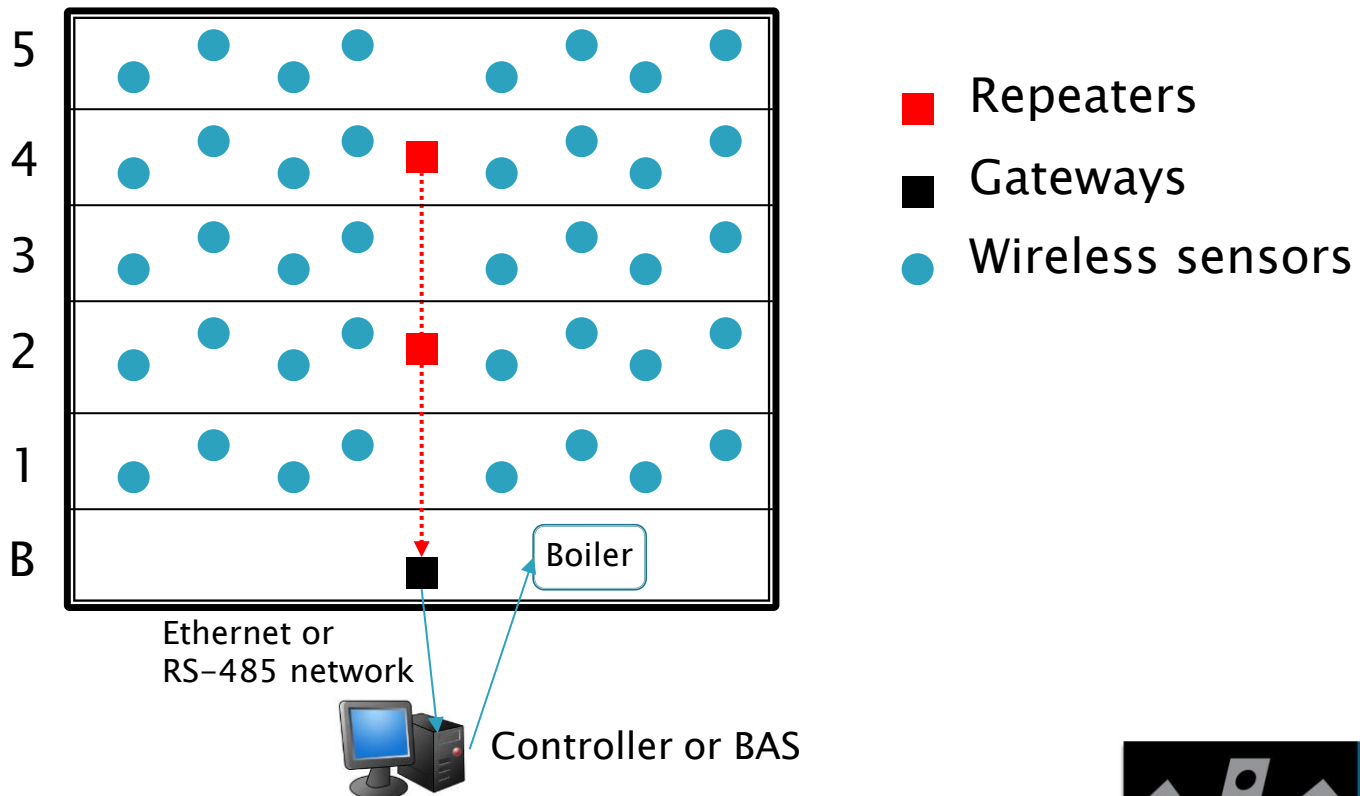
- Reduced installation cost
- Low maintenance with long battery life and self-calibration
- Add to any BAS network
- Data-logging of air quality data

Outside
Air

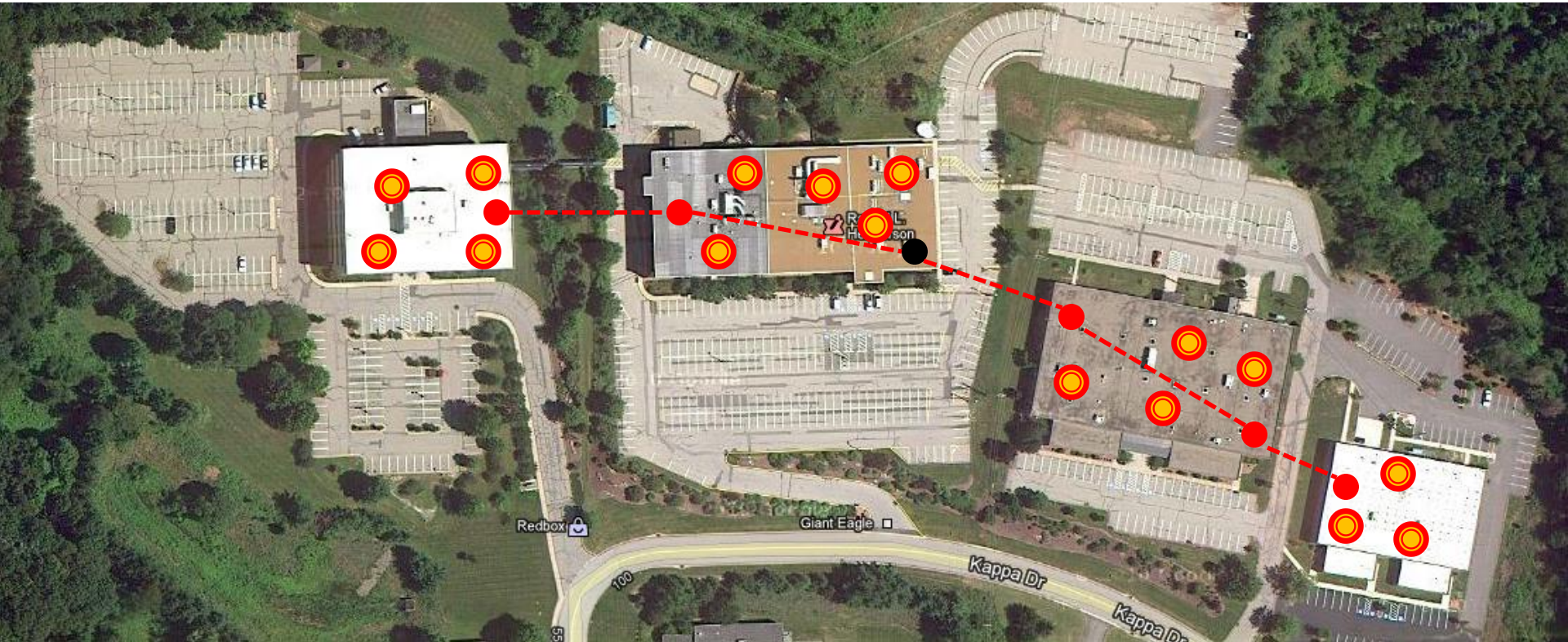


Multi-Story Apartment Buildings

- Monitor every apartment to obtain building thermal footprint
- Use controller to intelligently control boiler system



Multi-Building Monitoring



● Wireless Sensor ● Wireless Repeater ● Wireless Gateway

Rapid deployment across multiple buildings, single network termination

ADVANCED WIRELESS SOLUTIONS BY



Products

Type	915MHz System	2.4GHz System	Description
Temperature	58-N-1201-T 58-N-1201-TX	58-N-1101-T 58-N-1101-TX	Temperature Temperature w/2 External Inputs (10K Type II)
Humidity & Dew Point	58-N-1201-TH	58-N-1101-TH	Temperature, Humidity & Dew Point
Light	58-N-1201-L	58-N-1101-L	Light level (lux) 0-1000 lux
Contact Closure	58-N-1201-C	58-N-1101-C	Dry Contacts/Digital Input (2 channels)
Carbon Dioxide (CO ₂)	58-N-1202-CO2	58-N-1102-CO2	0 - 5,000ppm CO ₂
Differential Pressure	58-N-1202-DP1	58-N-1102-DP1	± 2" W.C. / ± 500pa
Wireless Gateways and Repeaters	58-G2	58-G1	Options for BACnet, Modbus, LonWorks, Metasys N2, SNMP, XML, etc. See datasheets for more details.

SENSORS: See suffixes below Add -N suffix for pre-installed, 25+ year battery
Add -R suffix for replaceable battery. CO₂ & DP only Avail in -R



For more information, please visit
www.idealwirelessensors.com

