1. **Device Management**

1.4 **Systems Integration**

1. Describe the technology integration processes required for IoT devices.
2. Explain the integration of hardware and software solutions.
3. Explain the role networks and network protocols play in systems integration.
4. Describe how system components are installed, integrated and optimized.

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**Systems Integration**

The term Systems Integration refers to integrating IoT devices from different manufacturers into a common environment. System Integration is highly dependent upon industry standards and protocols in collaboration between product vendors. This lesson introduces communication and security protocols that are used in both consumer and industry products. Protocols like 802.11, 802.15, 802.16, Bluetooth, ZygBee Net and other ultra wide band wireless communication protocols form the framework for communications and device management.

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The responsibility of the IoT security technician starts with the proper selection and installation of IoT devices. Responsibilities also include reliable operations, maintenance, redundancy, high availability and troubleshooting of IoT devices.
Curriculum Resources

Videos
- YouTube.com – Top 13 Arduino Projects
- Top 5 RaspberryPi Based Projects

Web Links
- NIST Special Publication 800-82 Section 6.2

Textbooks
- Practical Internet of Things Security
  Chapter 1, 3, 4
- Internet of Things
  Chapter 1, 2, 3, 4, 5, 6, 7, 10, 11
- Enterprise IoT
  Chapter 1, 2, 3, 4, 5, 6,

Quizlet.com
- Configuration Management Flashcards
- Configuration Planning and Management flashcards

Labs
- Lab 1 - What is Arduino? What is Arduino?
  Let’s get Some Clarity
- Lab 2 - Arduino R3 - An Overview

Assessment Resources

Lab 3 - Simple Labs' Arduino R3 and Arduino Uno Comparison
Lab 4 - Driver Installation
Lab 5 - The Basics of Working with Arduino R3 / Arduino
Lab 6 - Digital Outputs - What, Where & How?
  Working with the 3 on-board LEDs
  Working with the 3 on-board Push Buttons
Lab 8 - Serial Communication - What, Where & How?
Lab 9 - Analog Outputs - What, Where & How?
  Working with the RGB LED
Lab 10 - Analog Inputs - What, Where & How?
  Working with the on-board LDR
Lab 11 - Sensor Interface & Interfacing
  External Sensors Lab 14- Variable Resistors,
  LM35 & HC-SR04
Lab 12 - Interfacing a TV Remote with the on-board TSOP Remote Control Receiver
Lab 13 - Generating Remote Control Signals
  using the on-board IR LED
Lab 14 - Servo Interfacing - Working with the on-board Servo Interface
Lab 15 - LCD Interfacing - Working with the Simple Labs LCD Shield