
Certified Wireless IoT Integration Professional (CWIP-302) Objectives

Introduction

When you pass the CWIP exam and hold a valid CWISA certification, you earn the CWIP certification and credits towards the CWISE certification, should you choose to pursue it.

The Certified Wireless IoT Integration Professional (CWIP) develops and implements solutions that integrate multiple wireless-sourced management, monitoring, and control data. This professional can identify and use the appropriate tools to extract, transform, and load data to and from wireless Internet of Things (IoT) systems. The CWIP plays a crucial role in planning and delivering scalable solutions to automate the transport of and response to data throughout a heterogeneous network.

The skills and knowledge measured by this examination are derived from a Job Task Analysis (JTA) involving wireless networking experts (CWNEs) and professionals. The results of this JTA were used in weighting the subject areas and ensuring that the weighting is representative of the relative importance of the content.

Subject matter experts (SMEs) involved in the development of these and previous objectives and/or the JTA included:

Robert Bartz, Rowell Dionicio, Manon Lessard, Troy Martin, Phil Morgan, Andrew Pandalfino, and Jonathan Smith

The following table provides the breakdown of the exam as to the distribution of questions within each knowledge domain.

Knowledge Domain	Percentage
Explain and Use Integration Technologies	20%
Perform Requirements Analysis (IEEE 29148:2018)	20%
Develop IoT Integration Solutions	40%
Implement IoT Integration Solutions	10%
Maintain and Support IoT Integration Solutions	10%

1.0 Explain and Use Integration Technologies (20%)

1.1 Demonstrate proficiency in selecting the best use of integration technologies for wireless IoT solutions.

- SNMP
- Publish-subscribe network protocol (MQTT)
- Serialized structured data (gRPC)
- APIs
 - RESTful
 - Web sockets
 - Webhooks
 - Standard HTTP GET/POST/PUT/UPDATE/DELETE processing
- OpenConfig
- Location based tracking (Telematics)

1.2 Compare and contrast streaming and polling methods

2.0 Perform Requirements Analysis (IEEE 29148:2018) (20%)

2.1 Identify business requirements

- Regulatory
- Budgetary
- Legal
- Business use cases
 - Alerting
 - Reporting
 - Response
- Collaborate with internal teams and external partners

2.2 Identify System/Software requirements

- Data considerations
 - Retention
 - Capacity
 - Regulatory
 - Confidentiality, Integrity, Availability (CIA)
- Operational considerations
 - Monitoring
 - Security (Authentication and Authorization)

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- Programming languages
 - Scalability and Architecture
 - On-premises
 - Cloud
 - Hybrid

2.3 Identify Extract, Transform, and Load (ETL) requirements

3.0 Develop IoT Integration Solutions (40%)

3.1 Demonstrate proficiency with Python

- Interface with an API
- Utilize Dictionaries, Lists, Tuples, and Arrays
- Utilize libraries
- Utilize conditional loops
- Search and isolate unstructured data
 - Regular Expressions (regex)

3.2 Process data contained in commonly used IoT data structures

- JSON
- XML
- YANG
- YAML
- CSV

3.3 Understand and interact with data storage systems

- Structured
 - Big Data (Data warehouse)
 - Advantages / Disadvantages
 - SQL Queries
 - Tables
 - Primary and foreign key relationships
 - Schema on Write
- Unstructured data
 - Big Data (Data Lake)
 - Advantages / Disadvantages
 - Schema on Read
- Queries
- Collections

3.4 Understand and interact with real time data

3.5 Understand and implement security methods

- Authentication and Authorization
- Encryption

3.6 Troubleshoot problem scenarios

- Interpreting common response codes
- Error-handling and exceptions

4.0 Implement IoT Integration Solutions (10%)

4.1 Implement a method to display, monitor, and provide alerts

- Time series data visualization and dashboards
 - Business intelligence reports
 - Technical system health and performance
 - Operational state
- Mechanism for alert communication
 - SMS
 - Email
 - Team collaboration tools
 - Support ticket system

4.2 Implement automation to provision, configure, and interact with IoT devices

- API
- OpenConfig
- SNMP
- CLI

5.0 Maintain and Support IoT Integration Solutions (10%)

5.1 Utilize Git for version control

5.2 Continued software maintenance and support (package managers)

5.3 Documentation

- Develop documentation
- Documentation lifecycle

5.4 Perform validation

- Regression testing
- Unit testing

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- Refactoring
- 5.5 System lifecycle management
- Scope management
 - Change management
- 5.6 Utilize best practices and methodologies
- Understand security best practices:
 - Secure software DevOps
 - Authentication and storage of tokens & access keys
 - Encryption/Tunneling
 - Understand common software engineering methodologies
 - Agile
 - Waterfall
 - CI/CD
 - Python enhancement proposals (PEP)
- 5.7 Understand the role and function of industry organizations:
- IETF
 - 3GPP
 - Bluetooth SIG
 - Connectivity Standards Alliance (CSA)
 - FiRa Consortium for UWB
 - LoRa Alliance
 - IEEE