Certified Python Network Administrator and Engineer (CPNAE-101) Objectives

Introduction

When you pass the CPNAE-101 exam, you earn the CPNAE certification and validate your knowledge of Python related to network administration and engineering.

The Certified Python Network Administrator and Engineer (CPNAE) has the knowledge and skill set required to implement network administration and engineering using Python. This professional has sufficient knowledge of Python to understand existing code and create appropriate code for network automation, management, and engineering. The individual is aware of the networking libraries available for Python and the capabilities they offer.

The exam is taken in the CWNP Learning Management System (LMS), and the purchase of the certification kit includes the e-learning material, practice test, and final exam. The exam consists of 40 questions that must be answered within 100 minutes, requiring a score of 70% to earn the certification. At this time, the exam is offered only in English.

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

Knowledge Domain	Percentage
Requirements and Systems Engineering	20%
Python Programming Fundamentals	40%
Network Device Management	25%
Network Monitoring and Analysis	15%

1.0 Requirements and Systems Engineering – 20%

1.1 Describe requirements engineering based on IEEE 29148-2018

1.2 Describe systems concepts related to network engineering

1.3 Describe DevOps and systems development models

2.0 Python Programming Fundamentals – 40%

2.1 Plan and implement the use of data types

- 2.1.1 None
- 2.1.2 Numbers
  - Integer
  - Boolean
  - Float (Real)
  - Complex
- 2.1.3 String
- 2.1.4 List
- 2.1.5 Tuple
- 2.1.6 Dictionary
- 2.1.7 Set

2.2 Plan and implement the use of logical constructions

- 2.2.1 if, elif, else
- 2.2.2 Logical operators

2.3 Plan and implement the use of looping constructions

- 2.3.1 For loops
- 2.3.2 While loops

2.4 Plan and implement access to files for read and write operations

2.5 Plan and implement the use of built-in functions

2.6 Plan and implement the use of custom functions

2.7 Select and implement Python libraries and modules

- 2.7.1 The Python Standard Library
- 2.7.2 External libraries
- 2.7.3 Personal libraries

3.0 Network Device Management – 25%

3.1 Networking libraries and tools

3.1.1	NMAP
3.1.2	scapy
3.1.3	Paramiko/Netmiko
3.1.4	NAPALM
3.1.5	Nornir
3.1.6	NCClient
3.1.7	Genie
3.1.8	Requests
3.1.9	Impacket
3.1.10	PySNMP

3.2 Application libraries and tools

3.2.1	Beautiful soup
3.2.2	Pandas
3.2.3	Numpy
3.2.4	Matplotlib

3.3 Network Management Protocols

3.3.1	RESTCONF
3.3.2	NETCONF
3.3.3	SNMP
3.3.4	SSH

3.4 Data Structures and Formats

3.4.1	JSON
3.4.2	XML
3.4.3	YAML
3.4.4	YANG
3.4.5	CSV

4.0 Network Monitoring and Analysis – 15%

4.1 Monitor network traffic using the scapy library

4.2 Process PCAP files for network analysis

4.3 Gather performance metrics related to networking devices and system

4.4 Validate network security configuration based on policies