**Chapter 16**

**Cloud and IoT Operating Systems**

**TRUE/FALSE QUESTIONS:**

T F 1)  There is an increasingly prominent trend in many organizations to move a substantial

portion or even all IT operations to an Internet-connected infrastructure known as

enterprise cloud computing.

T F 2)  Cloud computing gives you the ability to expand and reduce resources according to

your specific service requirement.

T F 3)  With PaaS the customer has access to the resources of the underlying cloud infrastructure.

T F 4)  The major advantage of the public cloud is security.

T F 5)  With a hybrid cloud solution, sensitive information can be placed in a private area of the

cloud, and less sensitive data can take advantage of the benefits of the public cloud.

T F 6)  The NIST cloud computing reference architecture focuses on the requirements of “how to”

design cloud solutions and implementations.

T F 7)  The cloud OS is the software that implements IaaS.

T F 8)  The virtual storage component of the cloud OS provides data storage services for the cloud

infrastructure.

T F 9)  With file-based storage systems, data are stored on hard disk as fixed-size blocks.

T F 10)  Nova is the management software that controls virtual machines within the IaaS cloud

computing platform.

T F 11)  The main elements of a RFID system are tags and readers.

T F 12)  The hardware abstraction layer (HAL) is the same for each hardware platform.

T F 13)  One notable feature of RIOT is that it uses a tickless scheduler.

T F 14)  Network connectivity is essential for data collection, development of distributed IoT

applications, and remote system maintenance.

T F 15)  The term *constrained device* is used to refer to the vast majority of IoT devices.

**MULTIPLE CHOICE QUESTIONS:**

1. \_\_\_\_\_\_\_\_\_ is a model for enabling ubiquitous, convenient, on-demand network access to a shared

pool of configurable computing resources.

A)  IaaS B)  Service aggregation

C)  Resource Pooling   D)  Cloud computing

1. \_\_\_\_\_\_\_\_\_ provides service to customers in the form of software, specifically application software,

running on and accessible in the cloud.

A)  IaaS  B) SaaS

C)  RaaS   D) PaaS

1. \_\_\_\_\_\_\_\_\_ cloud provides service to customers in the form of a platform on which the customer’s

applications can run.

A)  PaaS  B)  IaaS

C)  SaaS  D)  CaaS

1. A \_\_\_\_\_\_\_\_\_ cloud infrastructure is made available to the general public or a large industry group,

and is owned by an organization selling cloud services.

A)  data   B)  public

C)  private D)  traditional

1. \_\_\_\_\_\_\_\_\_\_ clouds are a way to leverage existing infrastructure and deliver and chargeback for

bundled or complete services from the privacy of the organization’s network.

A)  Community   B)  Public

C)  Hybrid   D)  Private

1. The \_\_\_\_\_\_\_\_\_ cloud infrastructure is a composition of two or more clouds that remain unique

entities but are bound together by standardized or proprietary technology that enables data and

application portability.

A)  public   B)  traditional

C)  community   D)  hybrid

1. A \_\_\_\_\_\_\_\_\_\_ is an entity that manages the use, performance, and delivery of cloud services, and

negotiates relationships between CSPs and cloud consumers.

A)  cloud carrier  B)  cloud auditor

C)  cloud broker   D)  cloud provider

1. The \_\_\_\_\_\_\_\_\_ is a networking facility that provides connectivity and transport of cloud services

between cloud consumers and CSPs.

A)  cloud service provider   B)  cloud carrier

C)  cloud auditor   D)  cloud broker

1. A \_\_\_\_\_\_\_\_\_\_ is a dedicated network that provides access to various types of storage devices

including tape libraries, optical jukeboxes, and disk arrays.

A)  CSP   B)  DAS

C)  SAN  D)  NAS

10)  The \_\_\_\_\_\_\_\_\_\_ of the cloud OS provides networking services for the cloud infrastructure.

A)  virtual network component  B)  routing process

C)  infrastructure addressing scheme   D)  bandwidth allocation process

11)  \_\_\_\_\_\_\_\_\_ is the protocol you most commonly use when using a Web browser.

A)  NFS   B)  HTTP

C)  CIFS   D)  SMB

12)  \_\_\_\_\_\_\_\_ storage uses a flat address space instead of the hierarchical, directory-based scheme.

A)  Block   B) File-based

C)  Object  D) Network Attached

13)  The \_\_\_\_\_\_\_\_\_ is software that presents a consistent API to the upper layers and maps upper-layer

operations onto a specific hardware platform.

A) HAL   B) GPIO

C) SPI  D) I2C

14)  RFC 7228 (Terminology for Constrained-Node Networks) defines \_\_\_\_\_\_\_\_ classes of constrained

devices.

A)  two  B)  three

C)  four  D)  five

15)  Evaluation, formatting, expanding/decoding, distillation/reduction, and assessment are

examples of \_\_\_\_\_\_\_\_ computing operations.

A)  OpenStack   B)  cloud

C)  fog   D)  RFID

**SHORT ANSWER QUESTIONS:**

1. The two most significant developments in computing in recent years are cloud computing and

the \_\_\_\_\_\_\_\_\_\_.

1. The essential characteristics of cloud computing include broad network access, rapid elasticity,

measured service, on-demand self-service, and \_\_\_\_\_\_\_\_\_\_.

1. A \_\_\_\_\_\_\_\_\_\_ cloud has restricted access like a private cloud and shared cloud resources among

a number of independent organizations like a public cloud.

1. A \_\_\_\_\_\_\_\_ is a party that can conduct independent assessment of cloud services, information

system operations, performance, and security of the cloud implementation.

1. A \_\_\_\_\_\_\_\_\_\_ is a person or organization that maintains a business relationship with, and uses

service from, cloud providers.

6)  Storage comes in the following topologies: Direct Attached Storage, Storage Area Network, and \_\_\_\_\_\_\_\_.

7)  The most widely deployed protocol for large-scale virtualization environments is \_\_\_\_\_\_\_\_\_\_.

8)  \_\_\_\_\_\_\_\_\_ is an open-source software project of the OpenStack Foundation that aims to produce

an open-source cloud operating system.

1. The \_\_\_\_\_\_\_\_\_\_ is a term that refers to the expanding interconnection of smart devices, ranging from

appliances to tiny sensors.

1. \_\_\_\_\_\_\_\_\_ is an open-source OS designed specifically for constrained IoT devices.
2. The main components of a typical IoT OS are: system and support libraries, device drivers and

logical file system, low-power network stack, kernel, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. \_\_\_\_\_\_\_\_ is a serial computer bus typically used for attaching lower-speed peripheral ICs to processors

and microcontrollers in short-distance, intra-board communication.

1. In an IoT, a \_\_\_\_\_\_\_\_\_ is a device with limited volatile and nonvolatile memory, limited processing

power, and a low-data-rate transceiver.

1. \_\_\_\_\_\_\_\_\_\_ technology uses radio waves to identify items.
2. A \_\_\_\_\_\_\_\_\_ measures some parameter of a physical, chemical, or biological entity and delivers

an electronic signal proportional to the observed characteristic, either in the form of an analog

voltage level or a digital signal.