CLOUD SECURITY FOUNDATION

Level: Fundamental | **Duration: 3 days**

This training exposes participants with the relevant skills and knowledge in Cloud Computing Security (also known as Cloud Security) supported with the fundamental of understanding the cloud computing technology and its deployment ecosystem. Participants will have the understanding on cloud computing services (IaaS, PaaS, and SaaS) and the understanding of cloud deployment models consist of Public Cloud, Private Cloud and Hybrid Cloud.

Participants will be able to understand the security aspect, requirements, and ecosystems of cloud computing operations from the perspectives of cloud service provider and cloud service subscribers. Understanding the cloud architecture and cloud operations through the views of cloud computing security are crucial in ensuring assurance of secure cloud ecosystem in the cloud operations.

Objectives

1. To understand the cloud computing evolution, characteristic and benefit of using the cloud computing technology. This topic also covers the introduction to the cloud service models and cloud deployment models.

2. To understand the the security objective for cloud computing, the security threats in the cloud and the security model for cloud computing. This topic also covers the typical security controls, issues and security features as consideration in cloud computing implementation.

3. To understand the cloud security assessment concepts from the aspects of testing methodology and audit methodology applicable for cloud service provider and cloud service subscriber.

Target Participants

Individual may have background as IT engineers, cloud solution developers, IT security officers, security testers and anyone is concerned about cloud computing security and its ecosystem.

Modules

Module 1: Cloud Computing Fundamental

Topic 1.1: Introduction to Cloud Computing
This topic will discuss on the introduction of cloud computing evolution, characteristic and benefit of using the cloud computing technology. This topic also covers the introduction to the cloud service models and cloud deployment models. The following is the sub-topics will be covered in the training module, as follows.

- Introduction to Cloud Computing Technology:
  - What is Cloud Computing?
  - Characteristics of Cloud Computing.
  - Cloud Service Models.
  - Cloud Deployment Models.
- Exercise 1 – Quizzes.

Topic 1.2: Virtualization in Cloud
This topic will be discussing on concept of virtualization, hypervisor, virtual recourses and the component inside it that used by cloud computing.This topic will also explain on the benefit of server, desktop and application virtualization and how it can be related to cloud computing. Method of managing virtual machines, networking and storage will also be covered in this topic. Learning on the migration method from a physical server to virtualization environment. The following is the sub-topics will be covered in the training module, as follows.

- Introduction to Virtualization for Cloud Computing:
  - What is this virtualization?
  - Desktop Virtualization (VDI).
  - Application Virtualization.
  - Migrating physical server to virtual.
- Exercise 2 – Quizzes.

Topic 1.3: Cloud Networking concept and Implementation
This topic will be discussing on cloud networking concept and implementation. It will cover the concepts of cloud network configuration, cloud network optimization, basic troubleshooting network connectivity issues in the cloud. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Networking Concepts:
  - Cloud Network configuration
  - Cloud Network optimization
  - Troubleshooting basic network connectivity issues on the cloud.
- Exercise 3 – Quizzes.

Topic 1.4: Cloud Management Concept
This topic will discuss on why managing your cloud deployment is important, the CSS and CSP responsibilities and the list of remote

Modules

access tools for managing your cloud. The following is the sub-topics will be covered in the training module, as follows.

- Introduction to Cloud Management:
  - Managing the cloud deployment.
  - Understand the CSS and CSP responsibilities.
  - Remote access tools for managing the cloud.
- Exercise 4 – Quizzes.

Topic 1.5: Challenges in Cloud Security

This topic will be discussing on the challenges in the cloud services against traditional IT, case study on the challenges of cloud implementation and top security challenges on cloud ecosystem. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Security Challenges:
  - Challenges in Cloud Services against Traditional IT.
  - Case Study: Challenges of Cloud Implementation.
  - Top Challenges on Cloud Implementation.
- Exercise 5 – Quizzes.

Module 2: Cloud Computing Security & Assessment

Topic 2.1: Introduction to Cloud Security

This topic will be discussing on the security objective for cloud computing, the security threats in the cloud and the security model for cloud computing. This topic also covers the typical security controls, issues and security features as consideration in cloud computing implementation. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Security Introduction:
  - Security objective for cloud computing.
  - Challenges in Cloud Security
  - Security Threats in Cloud Computing.
  - Security Model for Cloud.
- Exercise 6 – Quizzes.

Topic 2.2: Understanding Virtualization Security

This topic will be discussing on the virtualization security and the typical security problems with virtualization. The content will cover the virtual machine discovery and inventory, configuration management, change management and network segmentation. The following is the sub-topics will be covered in the training module, as follows.

- Virtualization Security:
  - Security Virtualization
  - Virtual machine discovery and inventory
  - Configuration management

  - Change management
  - Network segmentation
- Exercise 7 – Quizzes.

Topic 2.3: Business continuity in the Cloud

This topic will be discussing is on the business continuity aspects in the cloud. It will cover on phases of disaster recovery and the disaster recovery methods in the cloud such as failover and failback, replication, hot site etc. The following is the sub-topics will be covered in the training module, as follows.

- Business continuity in the cloud:
  - Disaster Recovery.
  - Disaster Recovery Methods in Cloud.
- Exercise 8 – Quizzes.

Topic 2.4: Cloud Network Security & Encryption

This topic will be discussing on the typical cloud encryption technology and methods. Details will cover on the public key infrastructure (PKI) components, IPSec, SSL, TLS and Ciphers.

- Cloud Network Security & Encryption: Cloud encryption technology and methods.
- Exercise 9 – Quizzes.

Topic 2.5: Cloud Application Security

This topic will be discussing on the cloud application security. It will cover the understanding of user access control, Operating System hardening via checklist, instance and image security, IAM roles and the data security in the cloud. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Application Security Concept:
  - Understanding user access control.
  - Operating System hardening.
  - Instance and image security.
  - Identity and Access Management (IAM) roles in Cloud Security.
  - Data Security.
- Exercise 10 – Quizzes.

Topic 2.6: Cloud Security Assessment

This topic will be discussing on the cloud security assessment. This will cover the vulnerability management in the cloud and the importance of cloud configuration. The content will be also discussing on the basic procedure on how to perform cloud-based penetration testing. Other typical security checking mechanism such as cloud intrusion detection in the cloud and log management will also be covered in this topic. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Security Assessment Concepts
  - Cloud Penetration Testing Methodology.

  - Intrusion detection in the cloud.
  - Log management in the cloud.
- Exercise 11 – Quizzes.

Module 3: Cloud Computing Security Audit

Topic 3.1: Introduction to Security Audit

This topic will be covering the introduction of security audit, what is IT audit and what is security audit. This topic will also explain the differences between IT audit and security audit. The following is the sub-topics will be covered in the training module, as follows.

- Security Audit Introduction:
  - IT Audit.
  - Security Audit.
  - IT Audit vs. IT Security Audit.
- Exercise 12 – Quizzes.

Topic 3.2: Cloud Security Audit

Brief Info: This topic will be covering the cloud security audit overview and the cloud security audit process flow. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Security Audit Overview:
  - Overview of Cloud Security Audit
  - Cloud Security Audit Process Flow
- Exercise 13 – Quizzes.

Topic 3.3: Cloud Security Standards & Best Practices

This topic will be covering the cloud security standards and best practices. The content will be discussing the relevant standards and best practices from existing entities such as ISO, CSA etc. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Security Standards and Best Practices: Examples.
- Exercise 14 – Quizzes.

This quiz is to measure trainees understanding on the topic

Topic 3.4: Governance in Cloud

Summary: This topic will be covering on the governance in cloud, an overview of cloud governance such as IT governance requirements, governance aspects etc. This will also cover the cloud governance and risk such as risk factor and risk list in the cloud. The following is the sub-topics will be covered in the training module, as follows.

- Cloud Security Governance and Requirements:
  - Cloud Governance Overview.
  - Cloud Governance & Risk.
- Exercise 15 – Quizzes.