

Public Key Infrastructure (PKI) Management Training Course

Professional Development Training Course Outline

Category	Data Security	Duration	5 Days
Base Fee	\$1,500 USD	Delivery Mode	Online / On-site Hybrid

Course Introduction

The digital landscape is undergoing a massive transformation driven by cloud migration, massive IoT and non-human identity growth, and the shift to Zero Trust architecture. At the core of securing this interconnected ecosystem is the Public Key Infrastructure (PKI). PKI is the foundational technology that enables digital trust by issuing, managing, and revoking digital certificates and key pairs, ensuring secure communication, strong authentication, and data integrity via asymmetric cryptography. Modern enterprises face the dual challenge of managing a proliferating number of TLS/SSL certificates across heterogeneous environments and mitigating the catastrophic risks associated with certificate outages and key compromises. Mastery of PKI is no longer an optional skill it is an essential competency for maintaining a robust and resilient cybersecurity posture.

Public Key Infrastructure (PKI) Management Training Course provides a deep dive into the strategic and operational aspects of PKI Management. Participants will move beyond theoretical concepts to gain hands-on experience with critical components like Certificate Authorities (CAs), Hardware Security Modules (HSMs), and advanced protocols like ACME and SCEP. The central focus is on implementing scalable solutions for Certificate Lifecycle Management, which is crucial for preventing unexpected expirations and maintaining compliance with evolving security standards. By mastering PKI automation and the architecture of both on-premise and Cloud PKI solutions, trainees will be equipped to design, deploy, and govern a secure and future-proof PKI that directly supports enterprise-wide digital transformation and meets the demands of modern machine identity management.

Programme Curriculum

Public Key Infrastructure (PKI) Management Training Course

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Course Duration

5 days

Course Objectives

1. Design and Architect a robust, secure, and highly-available PKI Hierarchy following industry best practices.
2. Implement and administer on-premise Microsoft Active Directory Certificate Services, including advanced features and configuration.
3. Utilize Hardware Security Modules for secure, tamper-proof Key Management and CA key protection.
4. Master Certificate Lifecycle Management processes, including issuance, renewal, revocation, and recovery.
5. Automate TLS/SSL Certificate deployment and renewal across diverse platforms using protocols like ACME.
6. Understand and configure modern certificate validation methods, including Online Certificate Status Protocol and Certificate Revocation Lists.
7. Integrate and manage Cloud PKI solutions, particularly for supporting DevOps and cloud-native applications
8. Design and implement PKI solutions for specialized use cases
9. Apply Zero Trust principles to access control using PKI for Multi-Factor Authentication and Non-Human Identity verification.
10. Conduct comprehensive PKI Health Checks and Audits to ensure ongoing compliance and risk mitigation.
11. Develop and enforce stringent Certificate Policies and Certificate Practice Statements for governance.
12. Plan for and execute PKI Disaster Recovery and Key Archival and Recovery procedures.
13. Evaluate and prepare for the transition to next-generation cryptography, including Post-Quantum Cryptography (PQC) readiness.

Target Audience

1. Cybersecurity Analysts/Engineers.
2. Infrastructure Architects/Engineers.
3. IT/Network Administrators.
4. Security Consultants/Auditors.
5. DevOps and Cloud Engineers
6. Identity and Access Management (IAM) Specialists.
7. Chief Information Security Officers (CISOs) / Security Managers.
8. Risk and Compliance Officers.

Course Modules

1. Cryptography and PKI Fundamentals

- Symmetric and Asymmetric Cryptography, Hashing, and Digital Signatures.
- X.509 Certificate structure and extensions
- Certification Authority, Registration Authority, Repository.
- Understanding and configuring different Trust Models
- Case Study: Analyzing a successful TLS Handshake and identifying the role of the public and private keys in establishing a secure web session.

2. PKI Design and CA Implementation

- Designing a secure PKI Hierarchy and defining an appropriate Certificate Policy
- Best practices for CA key ceremony, storage, and offline Root CA protection.
- Installing and configuring Microsoft AD CS roles
- Role separation, physical security, and principle of least privilege.
- Case Study: Migrating a single-tier legacy PKI to a modern, robust three-tier hierarchy to improve security posture and disaster recovery capabilities.

3. Key and Certificate Lifecycle Management (CLM)

- Detailed review of Certificate Enrollment methods
- Managing certificate expiration.
- Certificate Revocation processes, including managing CRLs and deploying OCSP Responders.
- Implementing Key Archival and Recovery for encryption-based certificates
- Case Study: Troubleshooting a critical service outage caused by an expired TLS/SSL certificate and implementing a preventative CLM solution.

4. Advanced PKI Security and Resilience

- Integrating Hardware Security Modules for root/issuing CA private key protection and high-volume signing operations.
- Planning and executing robust PKI Disaster Recovery and backup strategies.
- Hardening the PKI infrastructure.
- Understanding and mitigating PKI-related threats, including CA compromise and certificate spoofing.
- Case Study: Designing and deploying a geographic redundancy strategy for an Issuing CA using HSMs and load balancing to achieve five-nines availability.

5. PKI Automation and DevOps Integration

- Implementing PKI Automation for high-volume, short-lived machine identities.
- Utilizing the ACME protocol for automated Web Server TLS/SSL certificate enrollment and renewal.

- Integrating PKI with Configuration Management tools for certificate deployment.
- Managing Non-Human Identities using mutual TLS
- Case Study: Automating the deployment of hundreds of mTLS certificates for a new microservices architecture using Kubernetes and a dedicated machine identity platform.

6. Cloud and Hybrid PKI Solutions

- Differences between On-premise, Managed, and Cloud PKI
- Deploying and managing Microsoft Cloud PKI and integrating with Azure Key Vault/AWS ACM.
- Securing IoT Devices and edge computing using small-footprint certificates and PKI.
- Using PKI for securing communications in Hybrid Cloud environments.
- Case Study: Integrating an on-premise AD CS environment with a Cloud HSM to extend key protection to a public cloud application workload.

7. Specialized PKI Applications

- Code Signing PKI.
- Implementing PKI for secure email and document signing
- Deploying and managing certificates for Smart Card logon and secure 802.1X wireless/VPN authentication.
- Configuring Enterprise Trust relationships and cross-certification.
- Case Study: Establishing a secure code signing process for a major software release, including the policy for private key storage and multi-person signing requirements.

8. Governance, Auditing, and Future Trends

- Developing and maintaining the Certificate Practice Statement and Auditing/Compliance procedures.
- Compliance requirements: Mapping PKI components to mandates like NIST, PCI-DSS, and GDPR.
- PKI Health Check best practices, vulnerability scanning, and penetration testing.
- The impact of Zero Trust and the roadmap for Post-Quantum Cryptography
- Case Study: Performing an end-to-end PKI Audit for a regulated financial institution, identifying key vulnerabilities and delivering a remediation plan for compliance.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.com or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

- a. The participant must be conversant with English.
- b. Upon completion of training the participant will be issued with an Authorized Training Certificate
- c. Course duration is flexible and the contents can be modified to fit any number of days.
- d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.
- e. One-year post-training support Consultation and Coaching provided after the course.
- f. Payment should be done at least a week before commence of the training, to FINESKILL TRAINING CENTER account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
07 Sep 2026	11 Sep 2026	Online	\$1,100
14 Sep 2026	18 Sep 2026	Online	\$1,100
21 Sep 2026	25 Sep 2026	Online	\$1,100
28 Sep 2026	02 Oct 2026	Online	\$1,100
05 Oct 2026	09 Oct 2026	Online	\$1,100
12 Oct 2026	16 Oct 2026	Online	\$1,100
19 Oct 2026	23 Oct 2026	Online	\$1,100
26 Oct 2026	30 Oct 2026	Online	\$1,100

Ready to enroll or request a customized program? Book online or contact us:

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