MERCURY

Application Programming Interfaces API Management

7 – 11 June 2027
Paris (France)



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Introduction:

In today's interconnected digital landscape, APIs Application Programming Interfaces are the foundation for seamless integration between systems, applications, and platforms. As organizations increasingly adopt microservices, cloud computing, and DevOps, API management has become a critical skill for ensuring secure, scalable, and efficient API ecosystems. The Application Programming Interfaces API Management course provides in-depth knowledge of API development, security, deployment, and lifecycle management.

Participants will explore real-world practices in API versioning, throttling, analytics, and monetization strategies. The Application Programming Interfaces API Management program delves into leading API gateways and management tools used in enterprise environments. Through a practical and structured approach, learners will gain both the technical and strategic understanding required for effective API governance. Attendees will build robust API architectures that align with business objectives and compliance requirements.

Targeted Groups:

This Application Programming Interfaces API Management training course targets professionals seeking specialized knowledge and skills:

- IT managers are responsible for system integration.
- Software developers are designing scalable APIs.
- Enterprise architects are optimizing API infrastructures.
- DevOps engineers are implementing CI/CD for APIs.
- Security analysts monitor API access and threats.
- Cloud engineers manage API gateways in cloud environments.
- Product managers oversee digital services.
- System analysts are involved in enterprise application frameworks.
- Technical project leaders coordinating multi-service platforms.
- Data engineers manage APIs for data pipelines.

Targeted Competencies:

Participants will gain the following competencies during the Application Programming Interfaces API Management program:

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- Mastery in designing and managing RESTful and SOAP APIs.
- Proficiency in API security frameworks like OAuth 2.0 and JWT.
- Strategic thinking in API-first development.
- Competence in configuring API gateways and proxies.
- Skill in monitoring and analyzing API traffic patterns.
- Ability to implement lifecycle governance.
- Knowledge of scalability and load-balancing principles.
- Capability to create API documentation and developer portals.
- Analytical thinking for performance optimization.

Course Objectives:

Participants will achieve the following objectives by the completion of the Application Programming Interfaces API Management course:

- Understand the core concepts and lifecycle of APIs.
- Identify and classify different types of APIs and their protocols.
- Design APIs using industry best practices and open standards.
- Secure APIs with modern authentication and authorization mechanisms.
- Deploy APIs using scalable API management tools.
- Monitor API usage with metrics and analytics dashboards.
- Control access through API rate-limiting and throttling techniques.
- Implement versioning strategies to ensure backward compatibility.
- Integrate APIs into existing enterprise applications and services.
- Establish monetization models for public and partner APIs.
- Optimize the performance and scalability of API services.
- Apply governance and compliance frameworks to API management.
- Collaborate across teams using API documentation tools.
- Troubleshoot API lifecycle issues through hands-on exercises.
- Evaluate different API gateways for enterprise deployment.

Course Content:

Unit 1: API Fundamentals and Architectural Concepts:

- Introduction to APIs and digital transformation.
- Types of APIs: Open, Internal, Partner, and Composite APIs.
- REST vs. SOAP vs. GraphQL protocols.
- Understanding API lifecycle stages.
- Role of APIs in microservices and service-oriented architecture SOA.
- Principles of API-first design and modular development.
- Overview of synchronous and asynchronous API communication.
- Concepts of loose coupling and scalability.
- Best practices in choosing API design patterns.

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Unit 2: API Design, Documentation, and Standards:

- Designing RESTful APIs using OpenAPI/Swagger.
- Creating schema definitions using JSON and XML.
- Path structures, query parameters, and HTTP methods.
- Status codes and error handling conventions.
- Designing for backward compatibility and version control.
- Creating developer-friendly API documentation.
- Tools for documentation: Swagger UI, Redoc, Postman.
- Utilizing API mocking and testing environments.
- Incorporating HATEOAS and Hypermedia in API responses.

Unit 3: API Security, Governance, and Compliance:

- Introduction to API security fundamentals.
- Authentication methods: API keys, OAuth 2.0, JWT.
- Authorization scopes and access control.
- Threat detection and mitigation strategies.
- API governance: policies, quotas, and rate limiting.
- Data protection and encryption in API flows.
- Role-based access and identity management in APIs.
- Compliance with regulations: GDPR, HIPAA, and PCI-DSS.
- Auditing and logging API transactions securely.

Unit 4: API Management Tools and Platforms:

- Overview of API gateways and management platforms.
- Comparative analysis: Apigee, AWS API Gateway, Azure API Management, Kong, MuleSoft.
- Deployment models: on-premises, cloud-native, hybrid.
- Setting up usage plans and developer portals.
- API traffic control and throttling mechanisms.
- Analytics and monitoring dashboards for real-time performance.
- API monetization and developer subscription models.
- CI/CD pipelines integration with API deployment.
- Managing multi-environment API lifecycles dev, staging, prod.

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Unit 5: Enterprise Integration and Future Trends:

- Connecting APIs with ERP, CRM, and cloud services.
- API orchestration and service mesh integration.
- Role of APIs in digital platforms and open banking.
- Event-driven architecture and Webhooks.
- API marketplaces and partner enablement strategies.
- Emerging trends: GraphQL federation, gRPC, async APIs.
- AI and machine learning APIs for intelligent applications.
- Sustainability and green APIs in modern enterprises.
- Building API-centric business models and strategies.

Final Insights & Key Takeaways:

This course provides a strategic and technical roadmap to mastering modern API management in today's digitally connected enterprises. Participants leave with actionable knowledge in API architecture, governance, and scalability. The course also fosters hands-on skills in integrating, securing, and optimizing APIs across business systems. By mastering API design and management, professionals can accelerate digital transformation and drive innovation in their organizations.