

Tech Skills for TPM (Cloud, system design)

Course Description:

This course equips Technical Program Managers with foundational knowledge of cloud computing, system design, and distributed architectures. Through hands-on labs and real-world scenarios, TPMs will learn to evaluate technical trade-offs, collaborate effectively with engineering teams, and contribute to architectural decisions. Ideal for TPMs seeking to bridge the gap between business needs and technical execution.

Course Learning Objectives:

By the end of this course, Technical Program Managers (TPMs) will be able to:

- Understand key cloud computing concepts (IaaS, PaaS, SaaS) and major cloud platforms.
- Grasp fundamentals of system design and distributed architectures.
- Collaborate effectively with engineering teams using architectural thinking.
- Evaluate trade-offs in design decisions (scalability, availability, consistency)
- Contribute to planning, estimation, and risk management with technical insight.
- Map business requirements to technical solutions.

Pre-Requisite:

- Familiarity with software development life cycle (SDLC)
- Basic understanding of cloud concepts (nice to have)
- Comfort with reading diagrams and technical documentation.

Category	Course Level	Region (IDC/US)	Duration
DS/AI/ML	Intermediate	IDC	16 Hours 4 hrs. * 4 days

Agenda:

Day	Module Name	Topics Covered	Total Duration	Any Use Cases (If Applicable during this day)
1	Cloud Computing Foundations for TPMs			
	Cloud 101: Core Concepts	What is the cloud? IaaS, PaaS, SaaS Providers: Azure, GCP Regions, Zones, and Global Infrastructure	1 hour	
	Key Cloud Services	Compute: GCE, App Engine: Azure Blob, GCS Databases: RDS, DynamoDB, Cloud SQL	1.5 hour	
	Cloud-Native vs On-Prem vs Hybrid	When to use what: trade-offs and examples Cloud cost considerations and pricing models	1.5 hours	Hands-On Lab: Design a basic web app architecture on a chosen cloud (GCP/Azure)
2	Introduction to System Design Principles			
	System Design Basics	Monolith vs Microservices Scalability, Reliability, Availability CAP Theorem and its impact	1 hour	
	Key Components of System Design	Load balancers, databases, queues, caches. Stateless vs stateful services API gateways and service mesh	1.5 hours	

	Metrics and SLAs for TPMs	Latency, Throughput, Uptime SLAs, SLOs, SLIs — What TPMs should monitor	1.5 hours	Workshop: Whiteboard a basic system for an online file storage/sharing platform
3	Designing Scalable Systems and Cloud Integration			
	Design Patterns for Scale	Horizontal scaling, partitioning, and replication Caching strategies (CDNs, Redis, Memcached) Event-driven systems (Pub/Sub, Kafka)	1 hour	
	Designing for Failures and Resilience	Circuit breakers, retries, rate limiting. High availability and multi-region design	1.5 hours	
	Security and Compliance Basics	Identity & access (IAM, RBAC) Secure design practices Compliance: GDPR, SOC2, HIPAA (overview)	1.5 hours	Hands-On Case Study: Design a real-time collaborative document editing service (Google Docs-like)
4	TPM-Focused Planning, Communication & Trade-offs			
	Evaluating Tech Decisions	Cost vs Performance vs Maintainability Build vs Buy decisions. Dependency and integration risks	1 hour	
	Technical Communication for TPMs	Writing technical specs & PRDs with architectural alignment Effective diagramming: sequence, component, deployment diagrams	1.5 hours	

		Communicating with engineers, architects, and leadership		
	Final Capstone Design Project	TPMs design & present a system (e.g., ride-sharing backend, video streaming platform) Evaluate trade-offs and prepare a technical narrative Peer review session	1.5 hours	

Daily Learning Outcomes:

Day	Learning Outcomes
1	Participants will be able to Understand core cloud concepts, key services, and how to design basic cloud architectures.
2	Participants will be able to Learn foundational system design principles and whiteboard scalable, reliable system architectures.
3	Participants will be able to Apply design patterns for scalability, resilience, and security in cloud-integrated systems.
4	Participants will be able to Evaluate technical trade-offs and enhance communication through diagrams, specs, and a capstone design project.