

# Quantum Reference Guide

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This reference is a topic-based index that links to the in-depth tutorial sections. Use it to jump directly to a subject and then explore details in context.

# Chapter 1. Platform

- Overview: [Platform overview](#)
- Project setup: [Project setup](#)

# Chapter 2. Modeling and Tenancy

- Ontologies in Quantum (deep dive): [Modeling relationships with ontologies](#)
- Concrete e-commerce example: [Orders, Shipments, Fulfillment, Returns](#)
- Integration with Morphia/permissions: [Integrating ontology with rules and repos](#)
- Domain modeling: [Domain modeling fundamentals](#)
- Tenant models and realms: [Multi-tenant model and realm separation](#)
- Domain rule context: [Domain rule context](#)

# Chapter 3. APIs and Queries

- REST CRUD: [Building RESTful CRUD APIs](#)
- Query language: [Query language and filtering](#)
- AI Agent integration: [AI Agent Integration](#) (tools discovery, schema, execute, session/trace)
- MCP Server and Client: [MCP Server and Client](#) (Claude/Cursor integration, ontology tools, end-to-end example)

# Chapter 4. Security

- Authentication: [Authentication, permissions, and annotations](#)
- JWT tokens for API access: [Generating JWT Tokens](#) (login, service tokens, key pair generation)
- Service tokens for integrations: [Service Tokens](#) (MCP servers, cron jobs, CI/CD, partner APIs)
- Multiple auth providers and OIDC: [Multiple Authentication Providers](#) (issuer resolution, per-tenant key pairs)
- Key pair management: [Key Pair Management](#) (default keys module, configurable paths, production setup)
- Permissions: [Permissions](#)
- Security annotations: [Security annotations](#)
- Permission Resource Check APIs: [Permission Resource: Check APIs and Client Usage](#)
- Label resolution and script helpers: [Labels \(SPI\) and hasLabel\(\)](#)
- Secrets and vault (global vs tenant-level): [Secrets and Vault Configuration](#)

# Chapter 5. Data Seeding

- Seed packs (tutorial): [Seed packs: Declarative tenant seeding](#)
- Seed packs (deep dive document): [Seed packs and declarative tenant seeding](#)



# Chapter 6. Operations

- Migrations: [Migrations](#)
- Testing: [Testing](#)
- Usage metering and token allocation: [Usage Metering and Token Allocation](#) (API/LLM usage, token pools per tenant, scoped to APIs and Tools/LLM configs)

# Chapter 7. Samples

- Supply Chain tutorial: [Supply Chain](#)

# Chapter 8. Appendix

For configuration, Quarkus integration details, and glossary, see the Appendix in the main index.