# Architecture Matrices

## Component Overview

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| Component | Function(s) | High-Level Requirement | Status |
| On-Premises Application | Consumes API services via API-C | Should communicate securely with AWS APIs via API Connect | Amended |
| API Connect (On-Premises) | Routes API requests to AWS API Gateway | Acts as a gateway between on-prem and AWS, ensuring security & governance | Amended |
| AWS Direct Connect | Provides dedicated network link between on-prem and AWS | Ensures secure and low-latency communication | New |
| API Gateway | Manages and routes API requests to AWS Lambda | Exposes API endpoints for CRUD operations | New |
| AWS Lambda (Create) | Handles document creation and metadata storage | Generates GUID, stores file in S3, and saves metadata in DynamoDB | New |
| AWS Lambda (Read) | Retrieves document metadata from DynamoDB | Fetches S3 URL using GUID and returns it | New |
| AWS Lambda (Update) | Updates document metadata | Modifies S3 URL or timestamp in DynamoDB | New |
| AWS Lambda (Delete) | Deletes document and metadata | Removes file from S3 and deletes metadata entry from DynamoDB | New |
| Amazon DynamoDB | Stores metadata (GUID, S3 URL, timestamp) | Maintains structured metadata for document tracking | New |
| Amazon S3 | Stores document content securely | Ensures high availability and durability of stored documents | New |

## Error Handling Principles

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| Component | Description | Possible Implications |
| API Gateway | Returns standardized error responses (HTTP codes) | Clients can handle errors consistently; incorrect mapping may cause failures |
| AWS Lambda | Implements try-catch for error handling | Unhandled exceptions can cause function failures and retries |
| DynamoDB | Handles conditional writes and throttling errors | Failed writes may lead to data inconsistency or retries |
| S3 | Manages access control errors and file not found issues | Unauthorized access can lead to security risks; missing files impact availability |
| API Connect (On-Premises) | Logs and transforms error responses from AWS | Misconfigured error mappings may lead to incorrect client responses |
| Direct Connect | Handles network disruptions with failover strategies | Connectivity issues can cause API downtime or degraded performance |