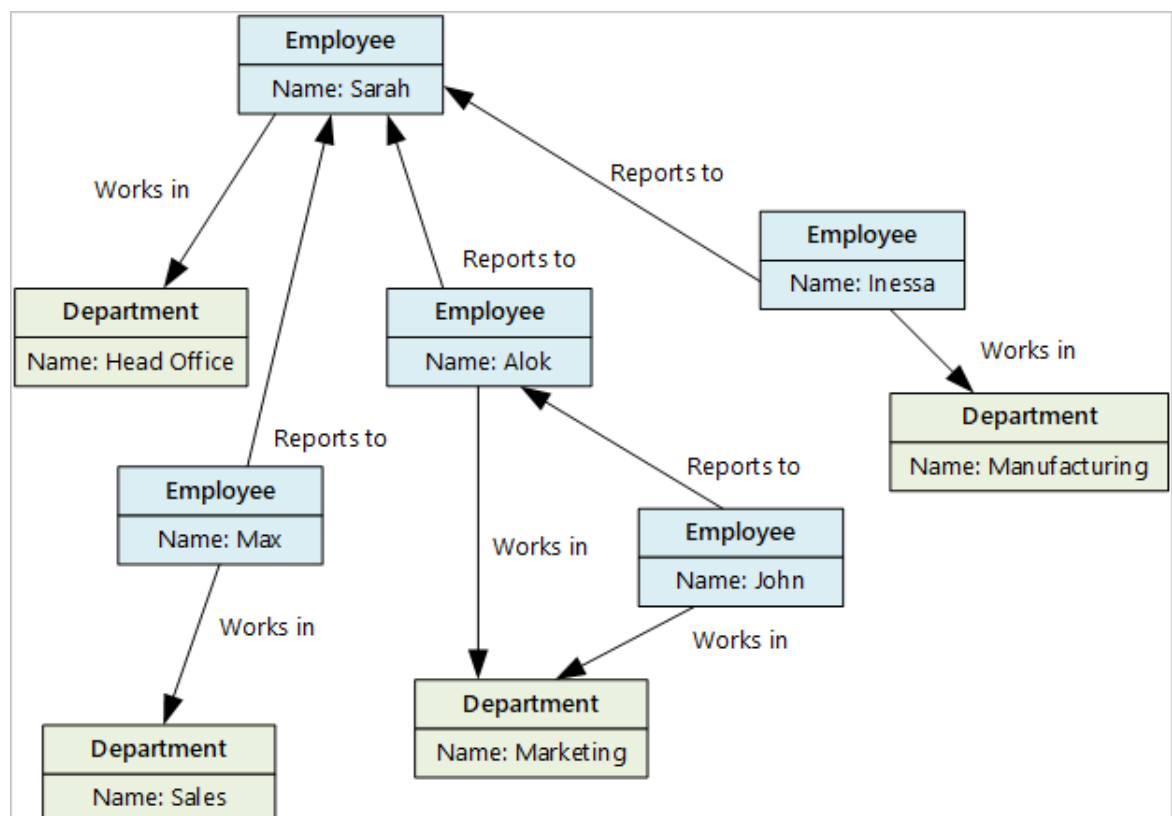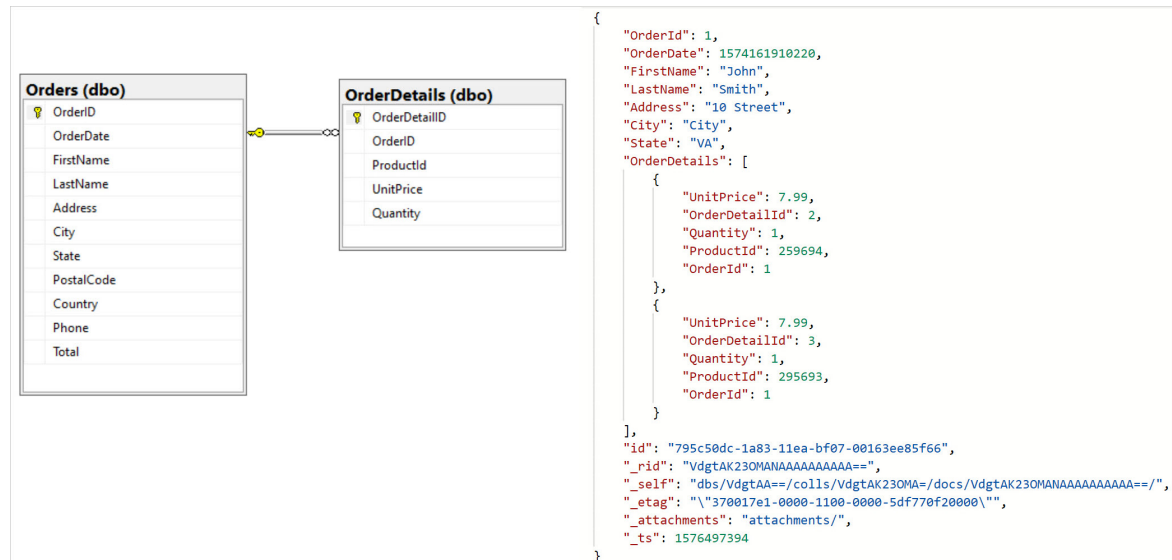# Module 01: Get started with Azure Cosmos DB SQL API
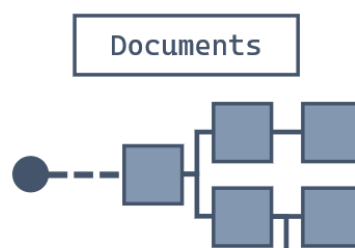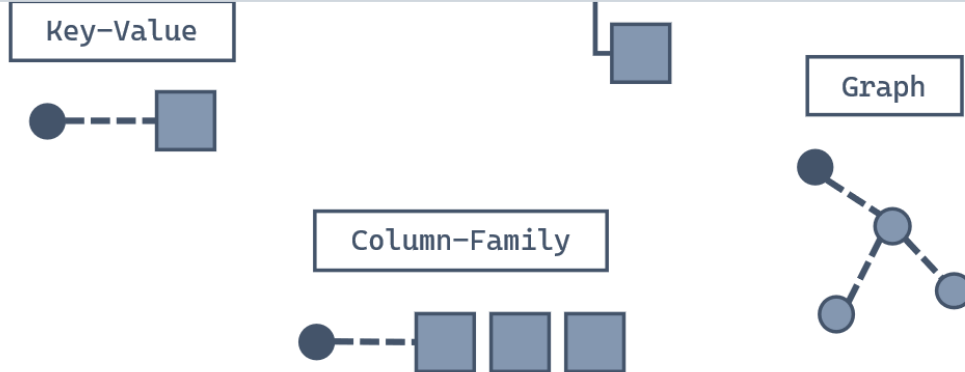
Introduction to Azure Cosmos DB SQL API

NoSQL Concepts

NoSQL data models

Key–Value

Graph

Column–Family

```
{
  "device": {
    "type": "mobile"
  },
  "sentTime": "2019-11-12T13:08:42",
  "spoolRefs": [
    "6a86682c-be5a-4a4a-bacd-96c4d1c7ece6",
    "79e78fe2-93aa-4688-89db-a7278b034aa6"
  ]
}
```

What is Azure Cosmos DB SQL API?

- Rich querying over diverse data
- Helps deliver configurable and reliable performance
- Is globally distributed
- Enables rapid development
- Guaranteed single-digit millisecond response times
- 99.999-percent availability
- SLAs that cover throughput, consistency, availability, and latency.
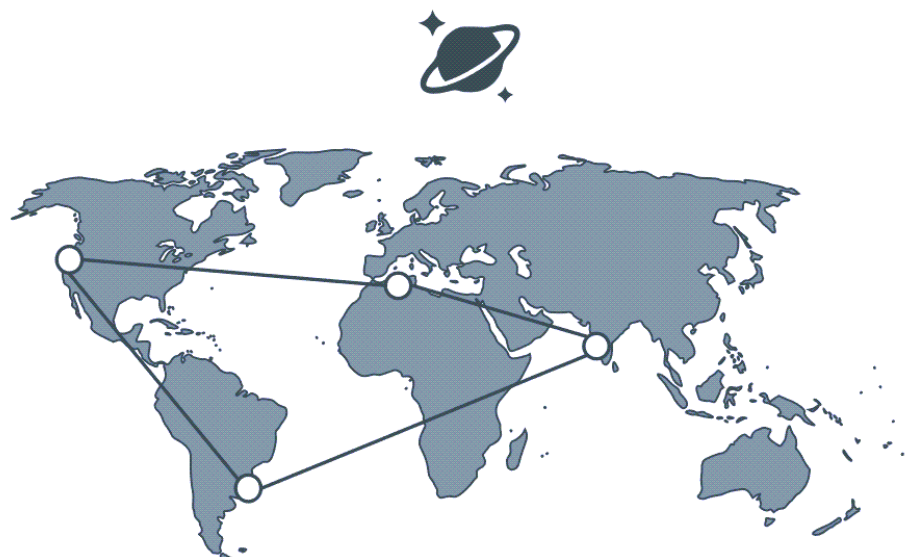
What are the components of Azure Cosmos DB SQL API?

Resource hierarchy:
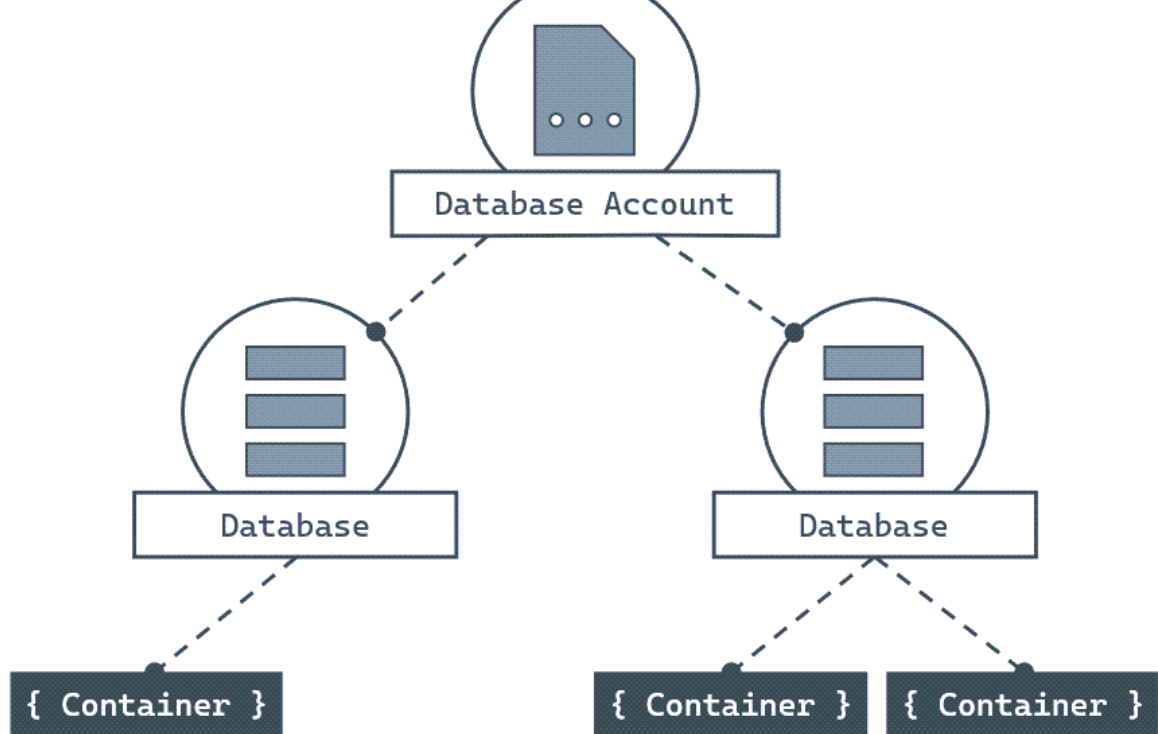
Container hierarchy:
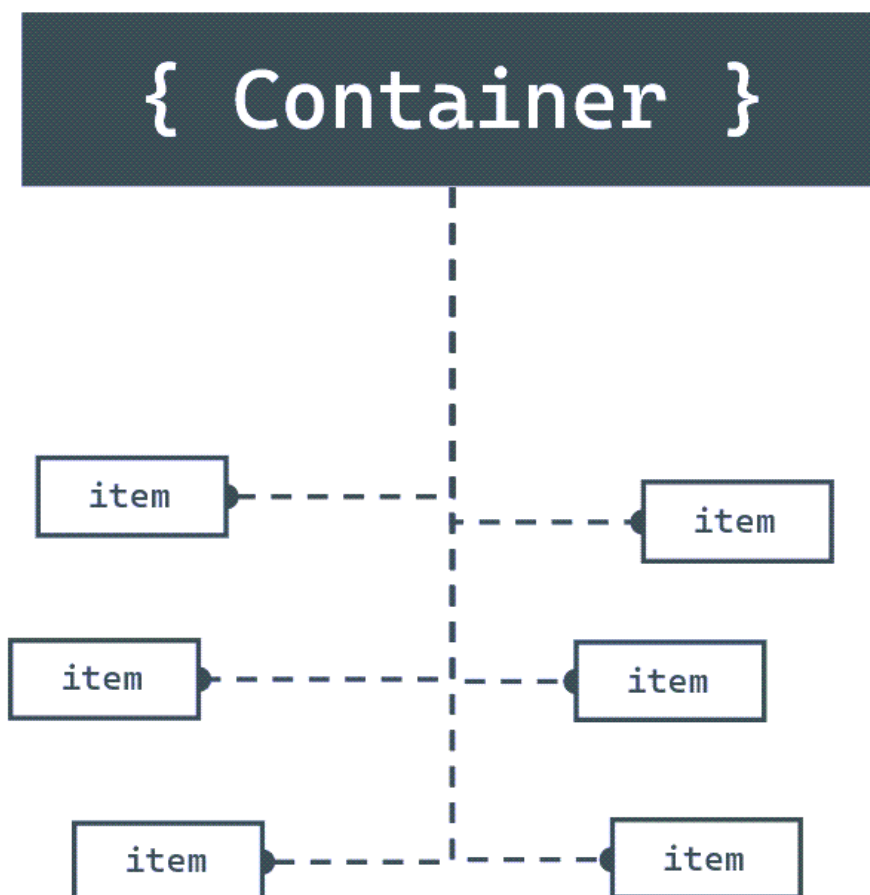
Items:

```
{
  "id": "35b5bf7d-5f0e-4209-b7cb-8c5c70c3bb59",
  "deviceDisplayName": "shared-printer",
  "acquiredYear": 2019,
  "department": {
    "name": "information-technology",
```

```json
    "metadata": {
      "location": "floor-5-unit-27"
    }
  },
  "queuedDocuments": [
    {
      "sender": "user-293749329",
      "sentTime": "2019-07-26T05:12:37",
      "pages": 5,
      "spoolRef": "3f4b759c-3230-4269-a88e-de7620ad91c0"
    },
    {
      "device": {
        "type": "mobile"
      },
      "sentTime": "2019-11-12T13:08:42",
      "spoolRefs": [
        "6a86682c-be5a-4a4a-bacd-96c4d1c7ece6",
        "79e78fe2-93aa-4688-89db-a7278b034aa6"
      ]
    }
  ]
}
```

Partition keys
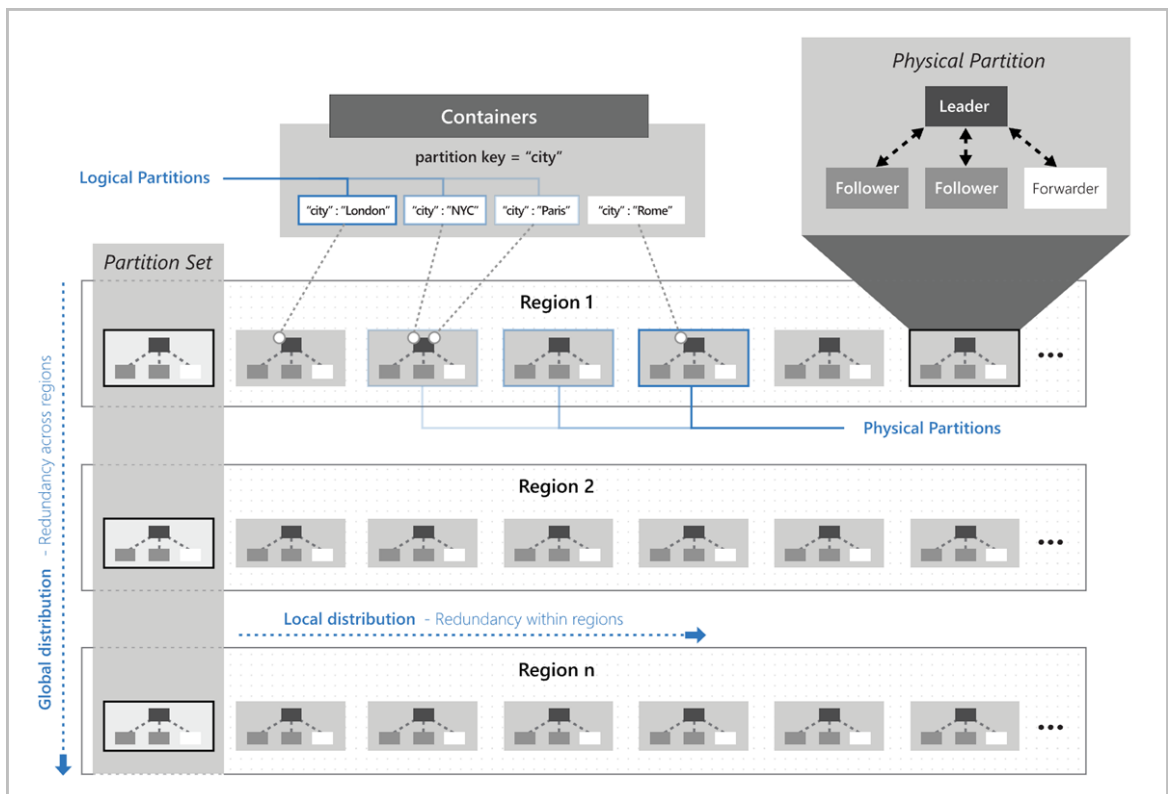
When should you use Azure Cosmos DB SQL API?

IoT/Telemetry

Retail/marketing

Azure App Services

Azure Cosmos DB

Browser

Azure Search

Containers

Azure Blob Storage

Web/mobile

Azure App Services

East US

Browser

Azure Traffic Manager

Azure App Services

West US

Azure Cosmos DB
(Globally distributed)

Azure App Services

North Europe

Retail

Azure Synapse Analytics

Azure Synapse Link

Azure Cosmos DB

Azure Functions

Azure Logic Apps
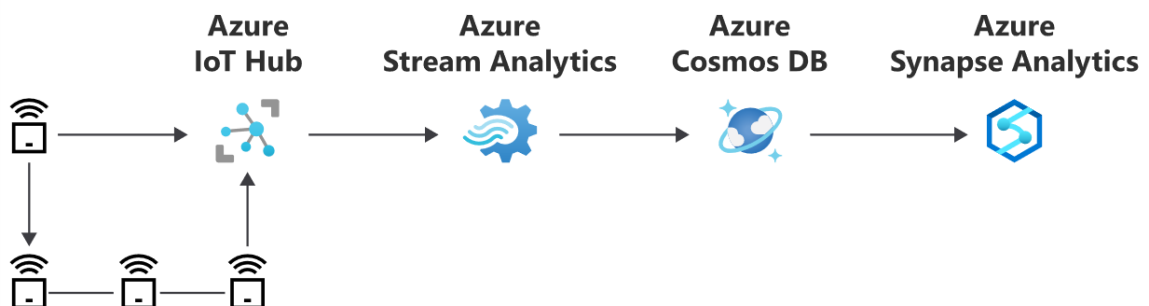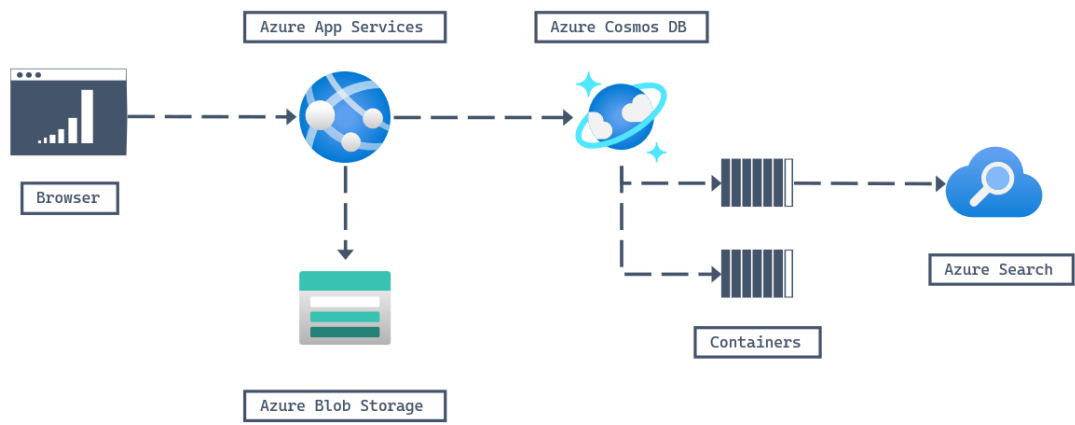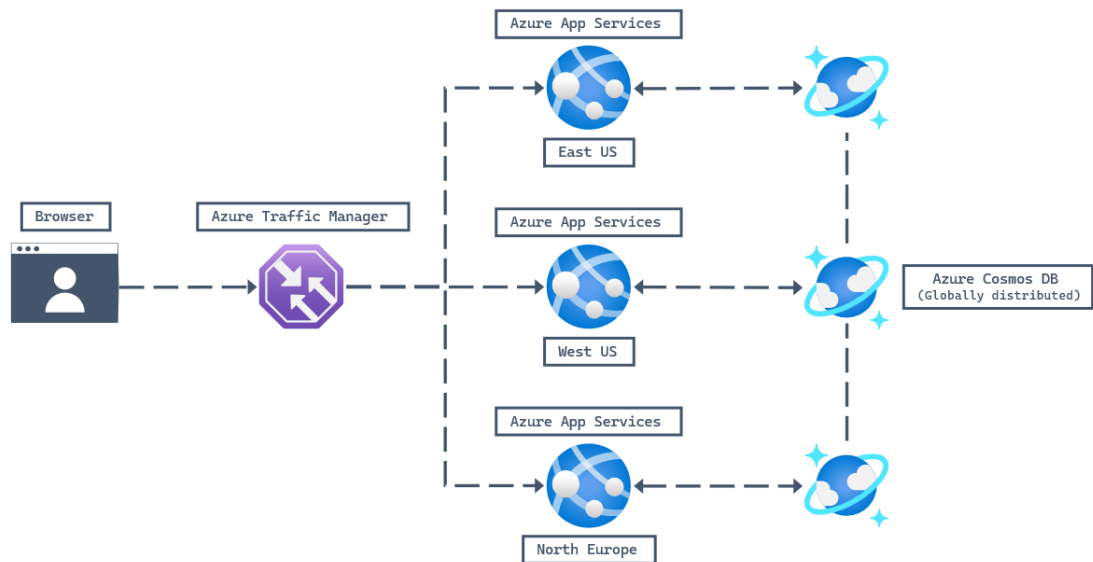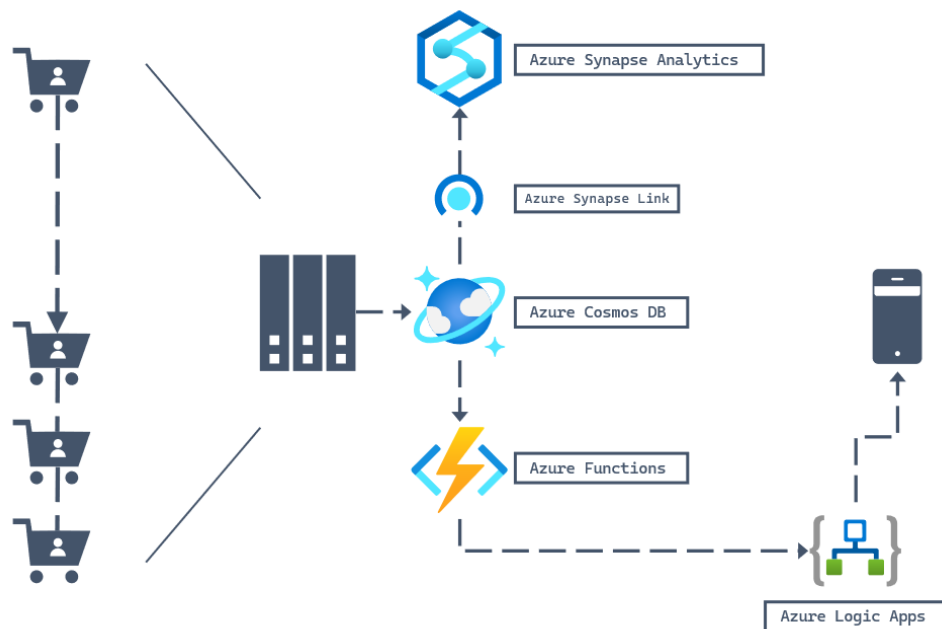
Try Azure Cosmos DB SQL API

Explore Azure Cosmos DB SQL API resources

Resource hierarchy:

Account

https://{account}.documents.azure.com/

IGeAvVUp ...

Database

```
                    ┌─ ─ ─ ─ ─ ─ ─ ┐
                                    │
           ┌────────────┴────────┬──────────────┐
           ▼                     ▼
      ┌─────────┐           ┌─────────┐
      │Container│           │Container│
      └────┬────┘           └────┬────┘
           │                     │
           │         ┌──────┐    │         ┌──────┐
           └────────▶│ Item │    └────────▶│ Item │
                     └──────┘              └──────┘
```

Container

```
      ┌──────────────┐
      │              │
      │   Account    │
      │              │
      └──────┬───────┘
             │
             │         ┌──────────┐
             │         │ Database │
             └────────▶│          │
                       └────┬─────┘
                            │
                            │    ┏ ━ ━ ━ ━ ━ ━ ━ ┓
                            │    ┃ ┌───────────┐ ┃
                            │    ┃ │           │ ┃
                            └───▶┃ │ Container │ ┃
                                 ┃ │           │ ┃
                                 ┃ └─────┬─────┘ ┃
                                 ┗ ━ ━ ━ ┿ ━ ━ ━ ┛
                                         │
                                         │   ┌────────┐
                                         │   │        │
                                         └──▶│  Item  │
                                             │        │
                                             └────────┘
```
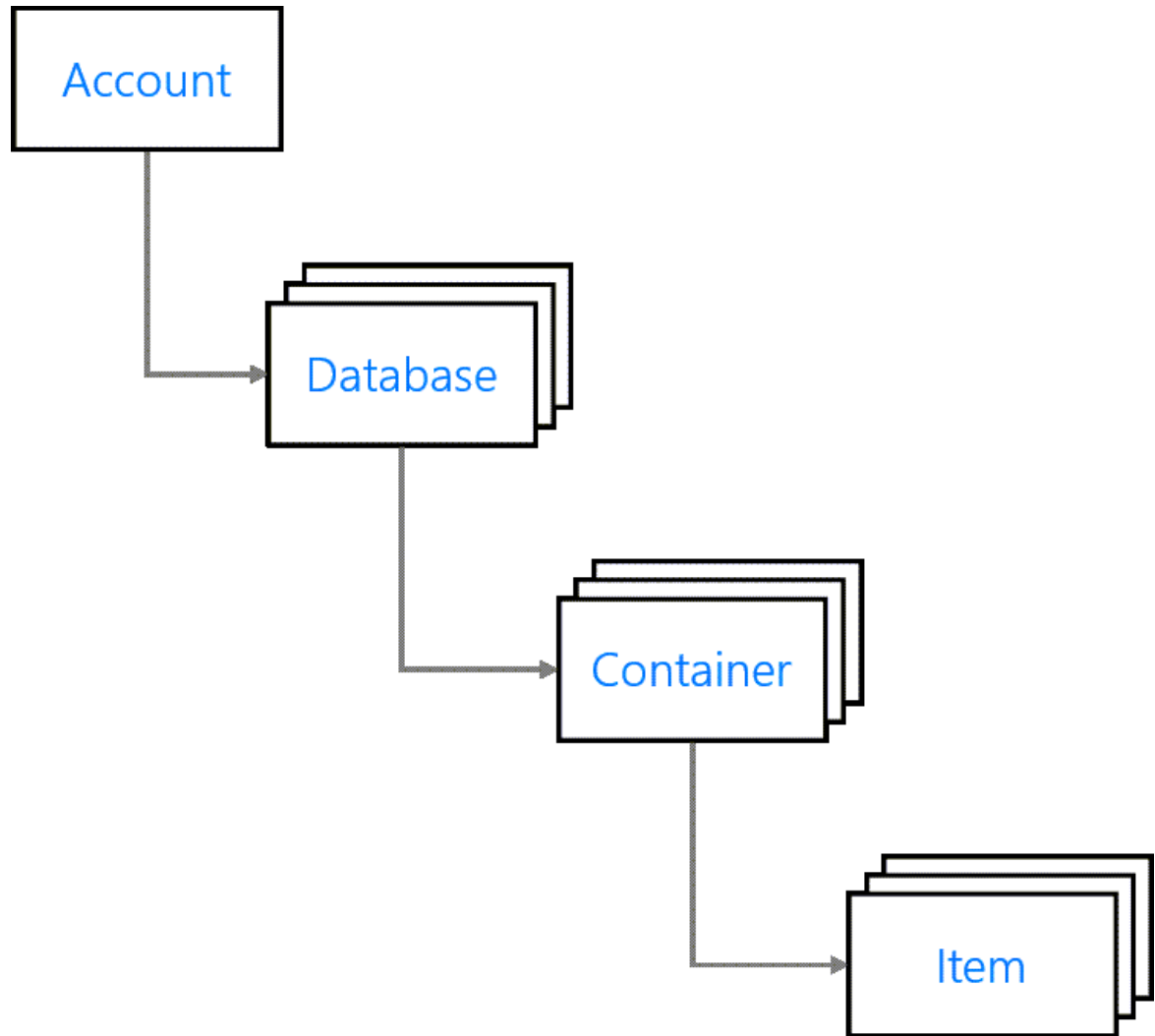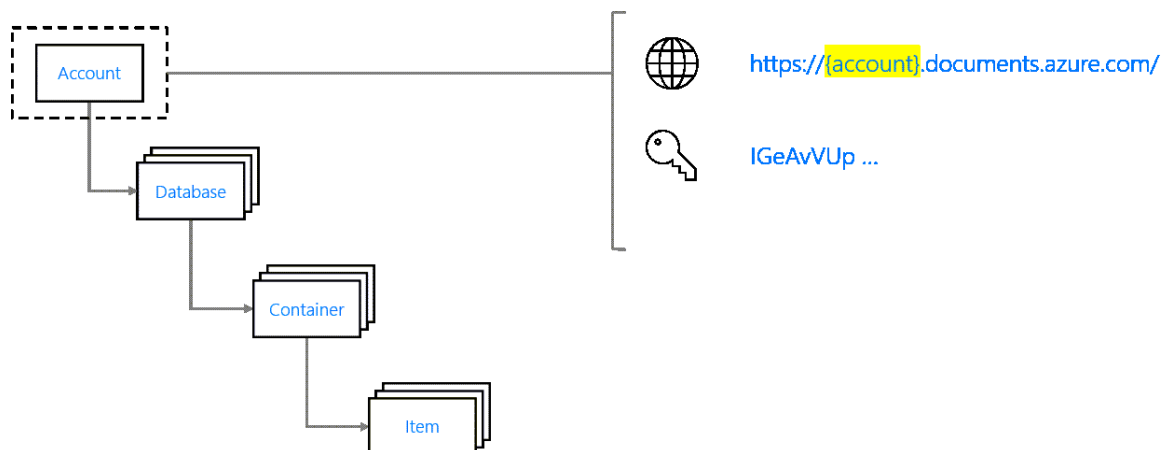
Items

```
 ┌─────────┐
 │ Account │
 └────┬────┘
      │   ┌──────────┐
      └──▶│ Database │
          └────┬─────┘
               │   ┌───────────┐
               └──▶│ Container │
                   └─────┬─────┘
        ┌───────┬────────┼────────┬────────┐
        ▼       ▼        ▼        ▼        ▼
    ┏━━━━━━┓┏━━━━━━┓ ┏━━━━━━━┓┏━━━━━┓ ┏━━━━━━━━┓
    ┃ Item ┃┃Sproc ┃ ┃Trigger┃┃ UDF ┃ ┃Conflict┃
    ┗━━━━━━┛┗━━━━━━┛ ┗━━━━━━━┛┗━━━━━┛ ┗━━━━━━━━┛
```
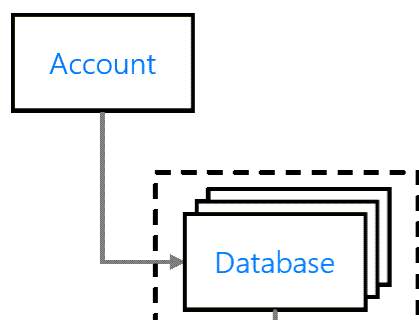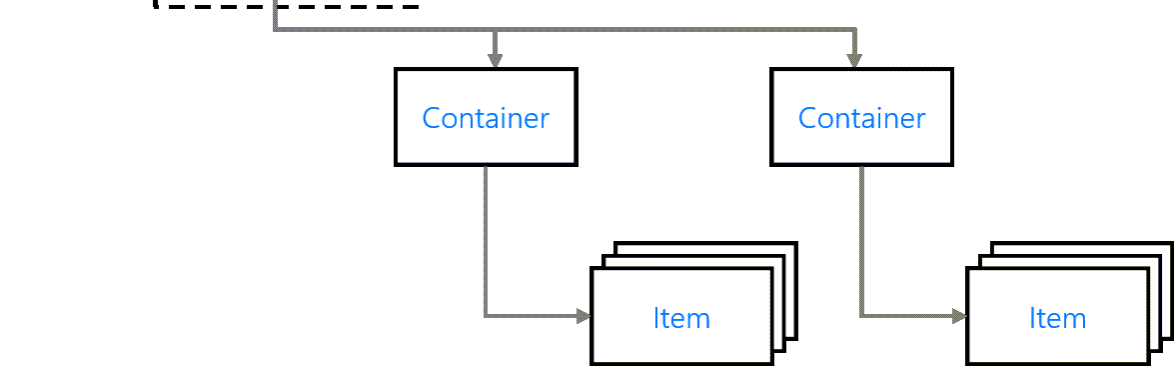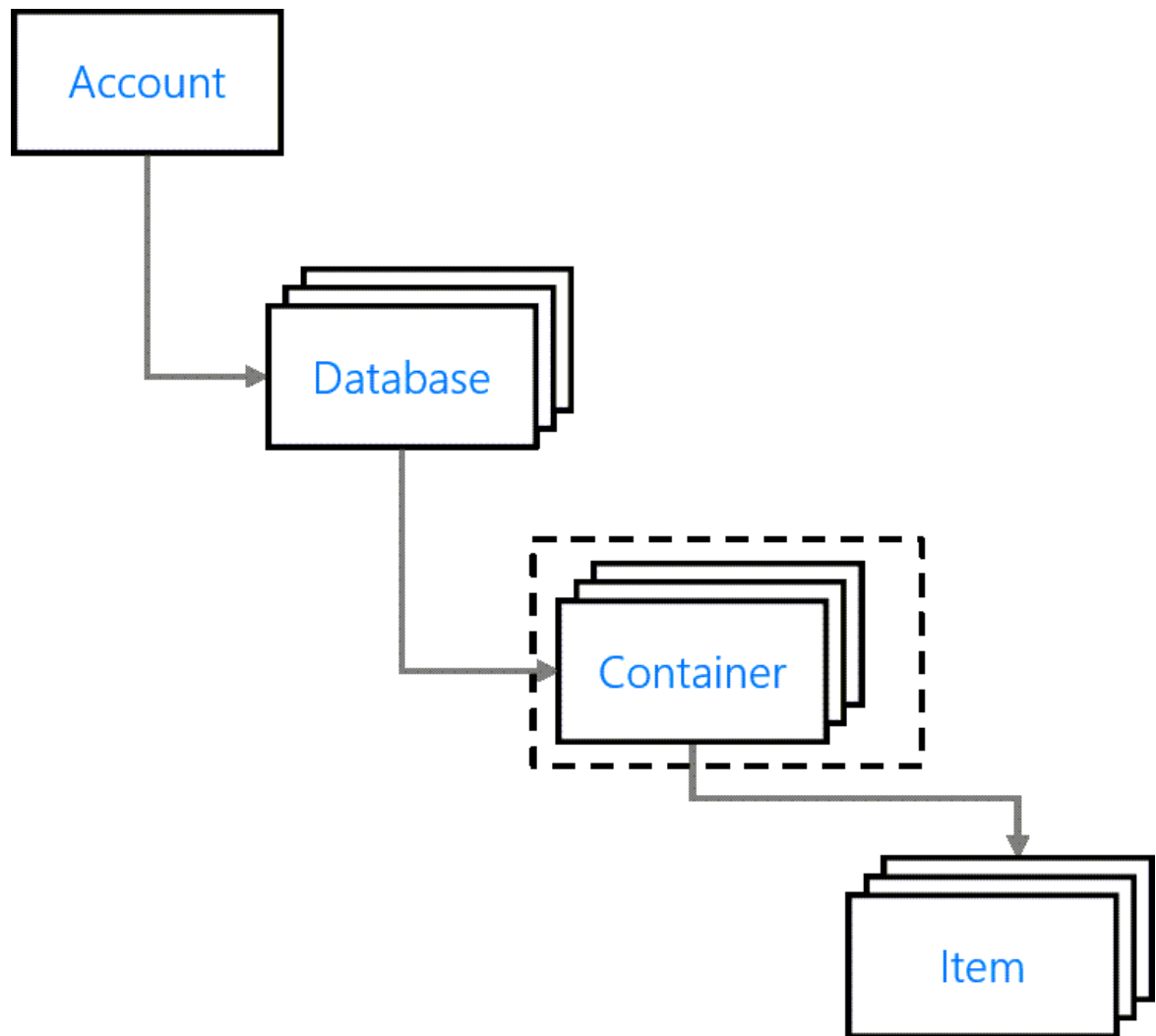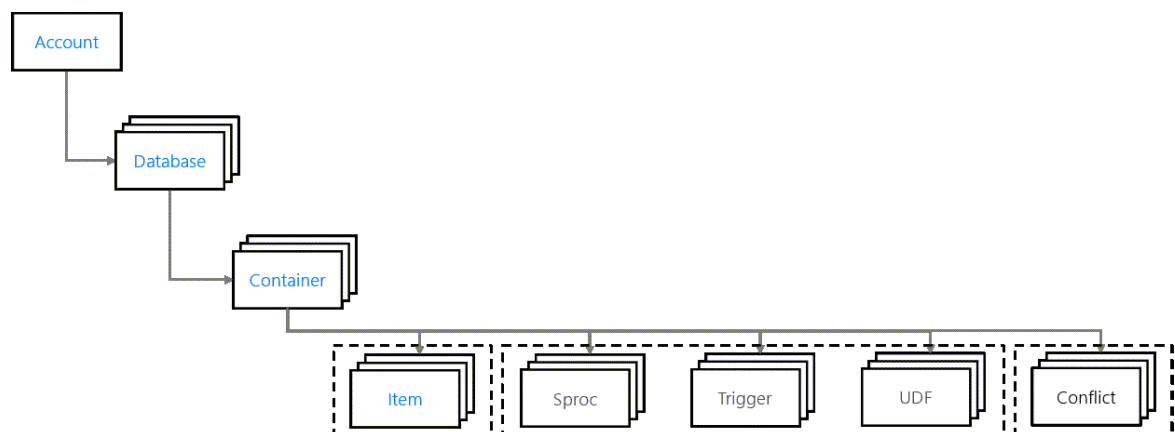
Creating a new Azure Cosmos DB SQL API account

Which API best suits your workload?

Azure Cosmos DB is a fully managed NoSQL database service for building scalable, high performance applications. Learn more

To start, select the API to create a new account. The API selection cannot be changed after account creation.

Azure Cosmos DB for NoSQL	Azure Cosmos DB for MongoDB	Azure Cosmos DB for Apache Cassandra
Azure Cosmos DB's core, or native API for working with documents. Supports fast, flexible development with familiar SQL query language and client libraries for .NET, JavaScript, Python, and Java.	Fully managed database service for apps written for MongoDB. Recommended if you have existing MongoDB workloads that you plan to migrate to Azure Cosmos DB.	Fully managed Cassandra database service for apps written for Apache Cassandra. Recommended if you have existing Cassandra workloads that you plan to migrate to Azure Cosmos DB.
Create Learn more	**Create** Learn more	**Create** Learn more

Azure Cosmos DB for Table	Azure Cosmos DB for Apache Gremlin	Azure Cosmos DB for PostgreSQL
Fully managed database service for apps written for Azure Table storage. Recommended if you have existing Azure Table storage workloads that you plan to migrate to Azure Cosmos DB.	Fully managed graph database service using the Gremlin query language, based on Apache TinkerPop project. Recommended for new workloads that need to store relationships between data.	Fully-managed relational database service for PostgreSQL with distributed query execution, powered by the Citus open source extension. Build new apps on single or multi-node clusters—with support for JSONB, geospatial, rich indexing, and high-performance scale-out.
Create Learn more	**Create** Learn more	**Create** Learn more

Create Azure Cosmos DB Account - Azure Cosmos DB for NoSQL

Basics   Global Distribution   Networking   Backup Policy   Encryption   Tags   Review + create

Azure Cosmos DB is a fully managed NoSQL database service for building scalable, high performance applications. Try it for free, for 30 days with unlimited renewals. Go to production starting at   /month per database, m

Project Details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *   Concierge Subscription

Resource Group *
                          Create new

Instance Details

Account Name *   Enter account name

Location *

Capacity mode ⓘ   ⦿ Provisioned throughput ◯ Serverless
                          Learn more about capacity mode

With Azure Cosmos DB free tier, you will get the first 1000 RU/s and 25 GB of storage for free in an account. You can enable free tier on up to one account per subscription. Estimated   /month discount per account.

Apply Free Tier Discount ◯ Apply ⦿ Do Not Apply

Limit total account throughput ☑ Limit the total amount of throughput that can be provisioned on this account

                          ⓘ This limit will prevent unexpected charges related to provisioned throughput. You can update or remove this limit after your account is created.

Creating a database, container and item

```json
{
  "id": "0012D555-C7DE",
  "type": "customer",
  "fullName": "Franklin Ye",
  "title": null,
  "emailAddress": "fye@cosmic.works",
  "creationDate": "2014-02-05",
  "addresses": [
    {
      "addressLine": "1796 Westbury Drive",
      "cityStateZip": "Melton, VIC 3337 AU"
    },
    {
      "addressLine": "9505 Hargate Court",
      "cityStateZip": "Bellflower, CA 90706 US"
    }
  ],
  "password": {
    "hash": "GQF7qjEgMk=",
    "salt": "12C0F5A5"
  },
  "salesOrderCount": 2
}
```