



Windows® Azure™

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What Is Windows Azure?

- An operating system for the cloud
- Designed for utility computing
- Provides facilities to -
 - Write applications
 - Host the applications
 - Manage the applications
 - Data storage

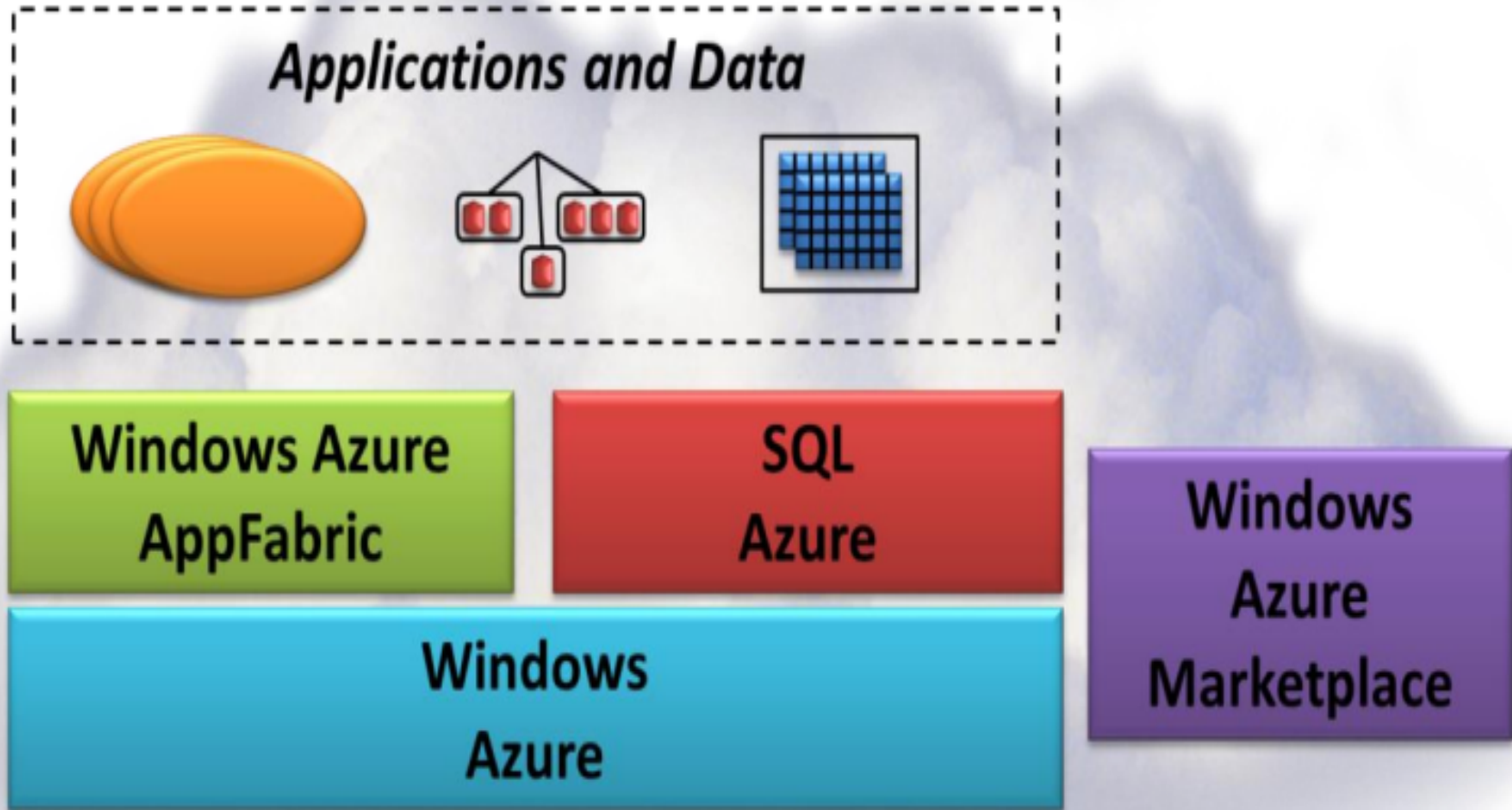
Windows Azure

- Windows Azure is an OS for the data center
 - Treats the data center as a machine
 - Handles resource management, provisioning, and monitoring
 - Manages application lifecycle
 - Allows developers to concentrate on business logic
- Provides shared pool of compute, disk and network
 - Virtualized storage, compute and network system
- Provides common building blocks for distributed applications
 - Reliable queuing, simple structured storage, SQL storage
 - Application services like access control and connectivity

Uses of Azure

- Build, modify and distribute applications to the Web with minimal resources
- Perform services such as large-volume storage, batch processing and intense high volume computations
- Reduce cost and risks of building and extending on-premise resources
- Reduce the effort and cost of IT management

Windows Azure Platform



Azure AppFabric

Three key components:

- Middleware Services
 - Service Bus
 - Access Control
 - Caching
 - Integration
- Composite applications
 - Composition Model
 - Visual Design Experience
 - Managed as a service
- Scale-out application infrastructure
 - Composition Runtime
 - Scale-out and High Availability
 - Dynamic Address Resolution and Routing

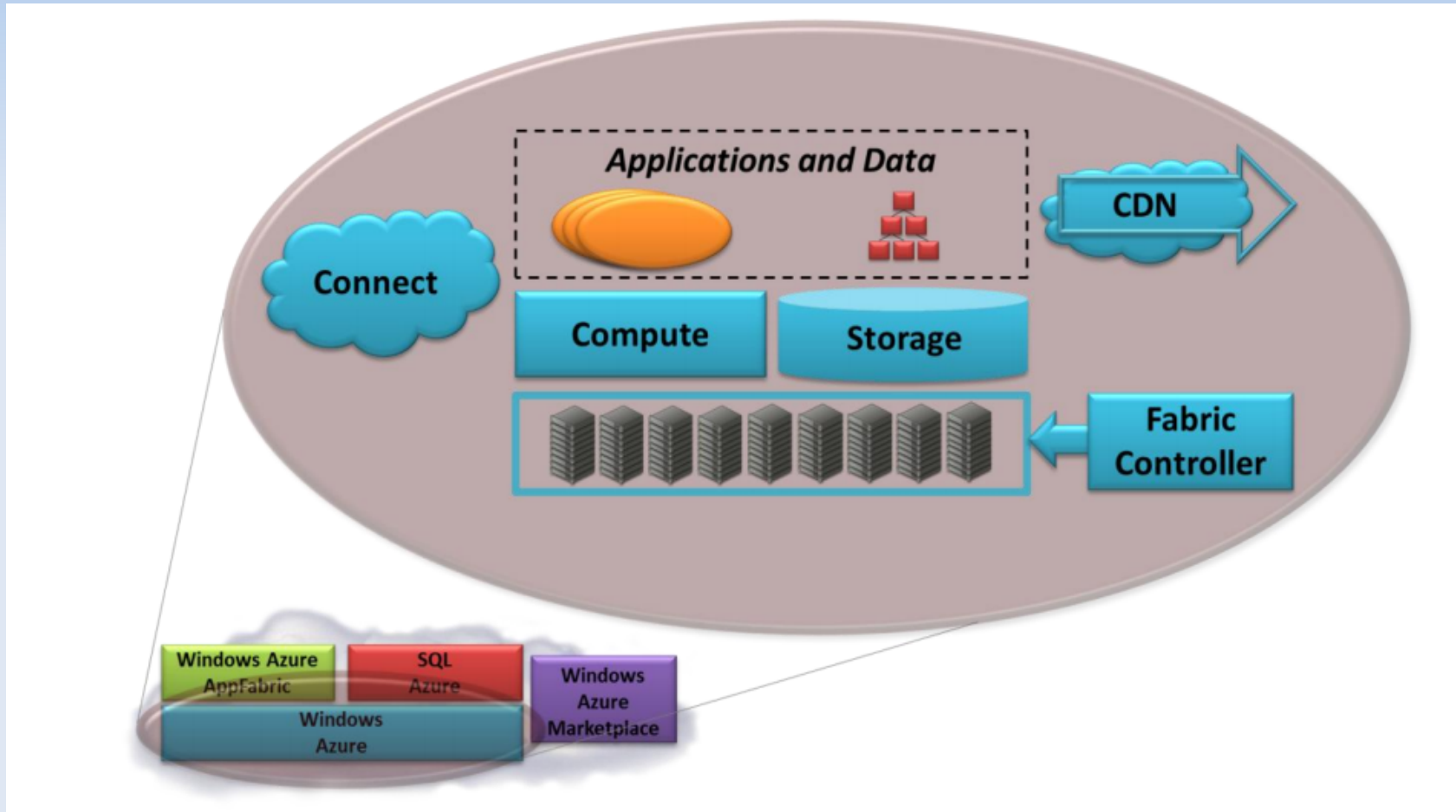
SQL Azure

- Cloud based Database Management System
- Existing Utilities - ADO.NET Entity Framework to interact with SQL Azure
- Create, manage and deliver reports using variety of data sources
- APIs to integrate or extend data and report processing in custom applications
- Create interactive, tabular, graphical or free form reports
- SQL Azure Data Sync
- Synchronize SQL Azure Databases and on-premises SQL Server Databases

Marketplace

- A Data Market
- A way for content providers to make datasets available to user
- Accessed through RESTful requests
- App Market
- Cloud applications

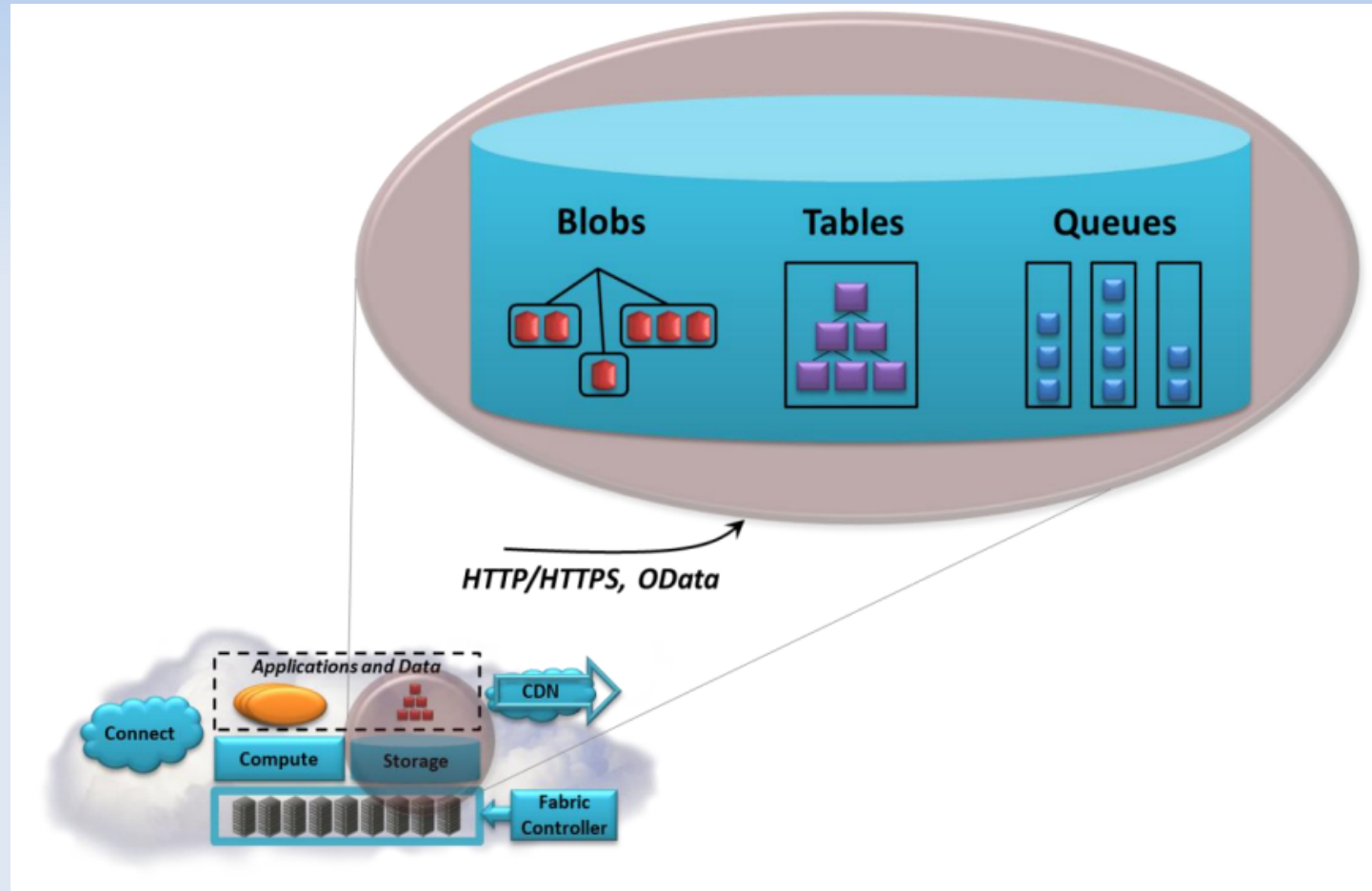
Windows Azure



Fabric Controller

- Functions as the Kernel of the Azure operating system
- Owns all the resources in the data center
- Describes the servers, high-speed connections, load balancers and switches that make up the Azure cloud computing platform
- Hardware management
- Service Modeling
- Operating system management
- Service Life Cycle

Storage



Storage - Blobs

- Stores unformatted data
- Storage Account → Containers → Blobs
- Containers control sharing policy
- Blobs inherit sharing policy from Containers
- Maximum Blob size 1TB
- Supports Metadata
- Block blobs → Optimized for streaming
- Page blobs → Random read/write operations

Tables

- Similar to BigTable, SimpleDB
- No strict schema
- Allows CRUD operations

Database term	Azure Table service term
Table	Table
Row	Entity
Column	Property
Shard/partition	Partition
Primary key	PartitionKey + RowKey

Queues

- A service for storing large numbers of messages that can be accessed via authenticated calls using HTTP or HTTPS
- Azure Queues:
 - Contains many messages.
 - Up to 100TB total capacity limit
 - Time limit - 7 days
- Messages:
 - A single queue message can be up to 64KB in size
 - Messages can be repeated
 - Out of Order
- Uses:
 - Creating a backlog of work to process asynchronously
 - Passing messages from a Web role to a Worker role

Compute

- One of the five parts of Microsoft's cloud computing service
 - We can run various types of applications using Windows Azure Compute feature.
 - Runs multiple instances of each role by using in-built load balancing to evenly distribute requests among the roles.
 - Three possible roles running in the server -
 - Web role
 - VM role
 - Worker role
- 1 Instance → 1 Role
- Controlled by Service Definition and Service Configuration

Azure Architecture Summary

- Platform as a Service is all about reducing management and operations overhead
- Fabric Controller is the foundation for Windows Azure's PaaS
- Scaling and reliability are controlled by the Fabric Controller
- Provisions the resources to applications running on top of Windows Azure
- Configures hardware for services
- Monitors service and hardware health

References

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