

Overview

Contosos is an online training provider.

Current Environment

The company currently has Microsoft SQL databases that are split into different categories or tiers. Some of the databases are used by Internal users, some by external partners and external distributions.

Below is the list of applications, tiers and their individual requirements

Applications	Tier	Replication	Comments
Internal Contoso	1	Yes	
Internal Contoso	2	Using SQL Data Sync	
Internal Partner	3	Yes	Data is replicated to the Partner
External Contoso	4,5,6	Yes	
External Partner	7,8	No	This is a Partner managed database
Internal Distribution and Sales	9	Yes, but only when the data is ingested at one of the branch offices	Data is ingested from Contoso branch offices
External Distribution and Sales	10	Yes, but only once the data is ingested at the Contoso main office	Data is ingested from multiple sources

Below are the current requirements of the company

- The databases in Tier 3, Tier 6 to 8 must use a database density on the same server and Elastic pools in cost effective manner
- The Applications must have access to data from internal and external sources whilst ensuring data is encrypted at rest and in transit
- The databases in Tier 3, Tier 6 to 8 must have a recovery strategy for in case whenever the server goes offline
- The Tier 1 applications must have their databases stored on Premium P2 tier
- The Tier 1 applications must have their databases stored on Standard S4 tier

- Data will be migrated from the on-premise databases to Azure SQL Databases using Azure Data Factory. The pipeline must support continued data movement and migration.
- The Application access for Tier 7 and 8 must be restricted to the database only
- For Tier 4 and Tier 5 databases, the backup strategy must include the following
 - Transactional log backup every hour
 - Differential backup every day
 - Full backup every week
- Backup strategies must be in place for all standalone Azure SQL databases using methods available with Azure SQL databases.
- Tier 1 database must implement the following data masking logic
 - For Data type ContosoA – Mask 4 or less string data type characters
 - For Data type ContosoB – Expose the first letter and mask the domain
 - For Data type ContosoC – Mask everything except characters at the beginning and the end
- All certificates and keys are internally managed in on-premise data stores
- For Tier 2 databases, if there are any conflicts between the data transfer from on-premise, preference should be given to on-premise data.
- Monitoring must be setup on every database
- Applications with Tiers 6 through 8 must ensure that unexpected resource storage usage is immediately reported to IT data engineers.
- Azure SQL Data warehouse would be used to gather data from multiple internal and external databases.
- The Azure SQL Data warehouse must be optimized to use data from its cache
- The below metrics must be available when it comes to the cache
 - Metric ContosoA – Low cache hit %, high cache usage %
 - Metric ContosoB – Low cache hit %, low cache usage %
 - Metric ContosoC – high cache hit %, high cache usage %
- The reporting data for external partners must be stored in Azure storage. The data should be made available during regular business hours in connecting regions.
- The reporting for Tier 9 needs to be moved to Event Hubs.
- The reporting for Tier 10 needs to be moved to Azure Blobs.

The following issues have been identified in the setup

- The External partners have control over the data formats, types and schemas
- For External based clients, the queries can't be changed or optimized
- The database development staff are familiar with T-SQL language
- Because of the size and amount of data, some applications and reporting features are not performing at SLA levels.