

Stretch Database



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Introducing Stretch Database

Store portions of a database in the cloud

Remote Data Archive (RDA)

- Keep “hot” data in local SQL Server database (on-premises)
- Seamlessly migrate “cold” data to Azure SQL Database

Stretch Database Advisor

- Downloadable as part of the SQL Server 2016 Upgrade Advisor
- Helps identify tables that are good candidates for stretch

Enable stretch database

- Use T-SQL or the Enable Database for Stretch Wizard in SSMS



Demo



Running the Stretch Database Advisor



Download AdventureWorks

<https://www.microsoft.com/en-us/download/details.aspx?id=49502>

The screenshot shows a web browser window with the title "Download AdventureWorks". The address bar displays the URL "microsoft.com/en-us/download/details.aspx?id=49502". The page content includes a language selector set to "English" and a prominent red "Download" button. Below this, a paragraph describes the download as "AdventureWorks databases and scripts for SQL Server 2016 CTP3" and provides a link to sample databases. A "Details" section is collapsed, indicated by a minus sign icon. A note states that multiple files are available and users will be prompted to select the ones they need. A table lists the files: "AdventureWorks2016CTP3.bak" (79.2 MB), "AdventureWorksDW2016CTP3.bak" (883.3 MB), and "SQLServer2016CTP3Samples.zip" (6.4 MB). The table also shows the version as "CTP3" and the date published as "12/2/2015". A "Site feedback" button is visible on the right side of the page.

Language: **English** **Download**

AdventureWorks databases and scripts for SQL Server 2016 CTP3. The NEW Wide World Importers sample databases are at [https://msdn.microsoft.com/library/mt748083\(v=sql.1\).aspx](https://msdn.microsoft.com/library/mt748083(v=sql.1).aspx).

⊖ Details

Note: There are multiple files available for this download. Once you click on the "Download" button, you will be prompted to select the files you need.

Version:	Date Published:
CTP3	12/2/2015
File Name:	File Size:
AdventureWorks2016CTP3.bak	79.2 MB
AdventureWorksDW2016CTP3.bak	883.3 MB
SQLServer2016CTP3Samples.zip	6.4 MB

Site feedback



Stretch Database Terminology

Local database

- The on-premises SQL Server database being “stretched”
- Your responsibility to maintain and backup

Eligible data

- Data in the local database that has not yet been moved to the cloud

Remote endpoint

- The Azure SQL Data Warehouse database in the cloud

Remote data

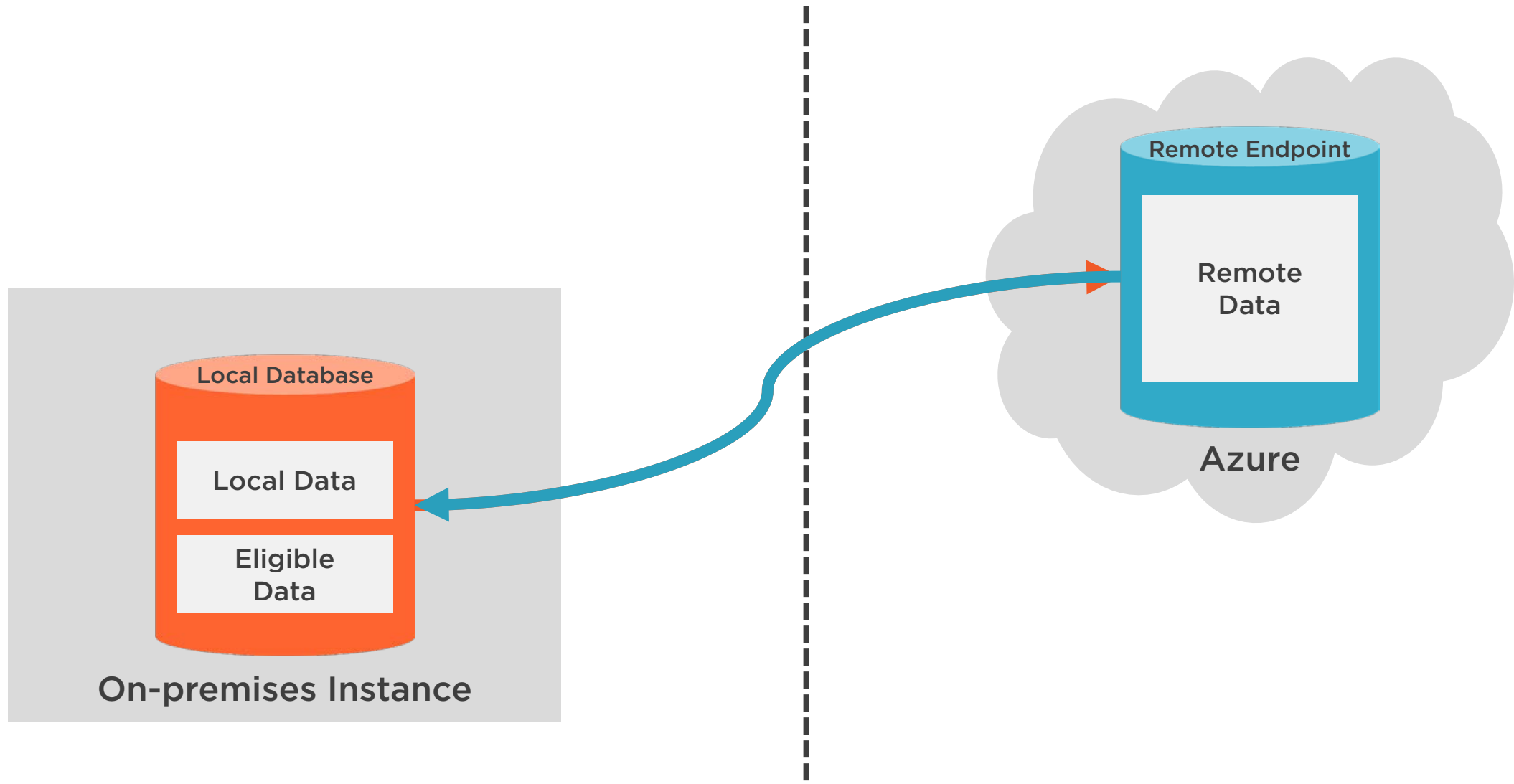
- Data that has already been moved from the local database to the cloud
- Automatic backups by the stretch database service on Azure



Stretch Database Workflow



Stretch Database Workflow



Stretch Database Workflow



Stretch Database Workflow



- `sys.sp_rda_deauthorize_db`
- `sys.sp_rda_reauthorize_db`

Demo



Preparing Azure for stretch



Demo



Stretching a table



Stretching Selected Rows

The entire table doesn't need to be stretched

- Write a predicate function to filter the rows to be migrated
- Easily filter by date, status, or other constant

Filter predicate restrictions

- Expression must be deterministic
- Can't inherently implement a sliding window function

Update filter predicates in place

- Signature must not change
- New function must be less restrictive than current one



Stretch Filter Predicate Functions

```
CREATE FUNCTION sec.fn_MyStretchPredicate(@Parm1 AS int, ...)
RETURNS TABLE
WITH SCHEMABINDING
AS
    -- SQL Server passes in column values of each row via parameters

    RETURN
        SELECT 1 AS IsEligible
        WHERE ...
            -- Custom logic here examines the parameters (column values)
            -- passed in, and determines if the row should be migrated
```



Demo

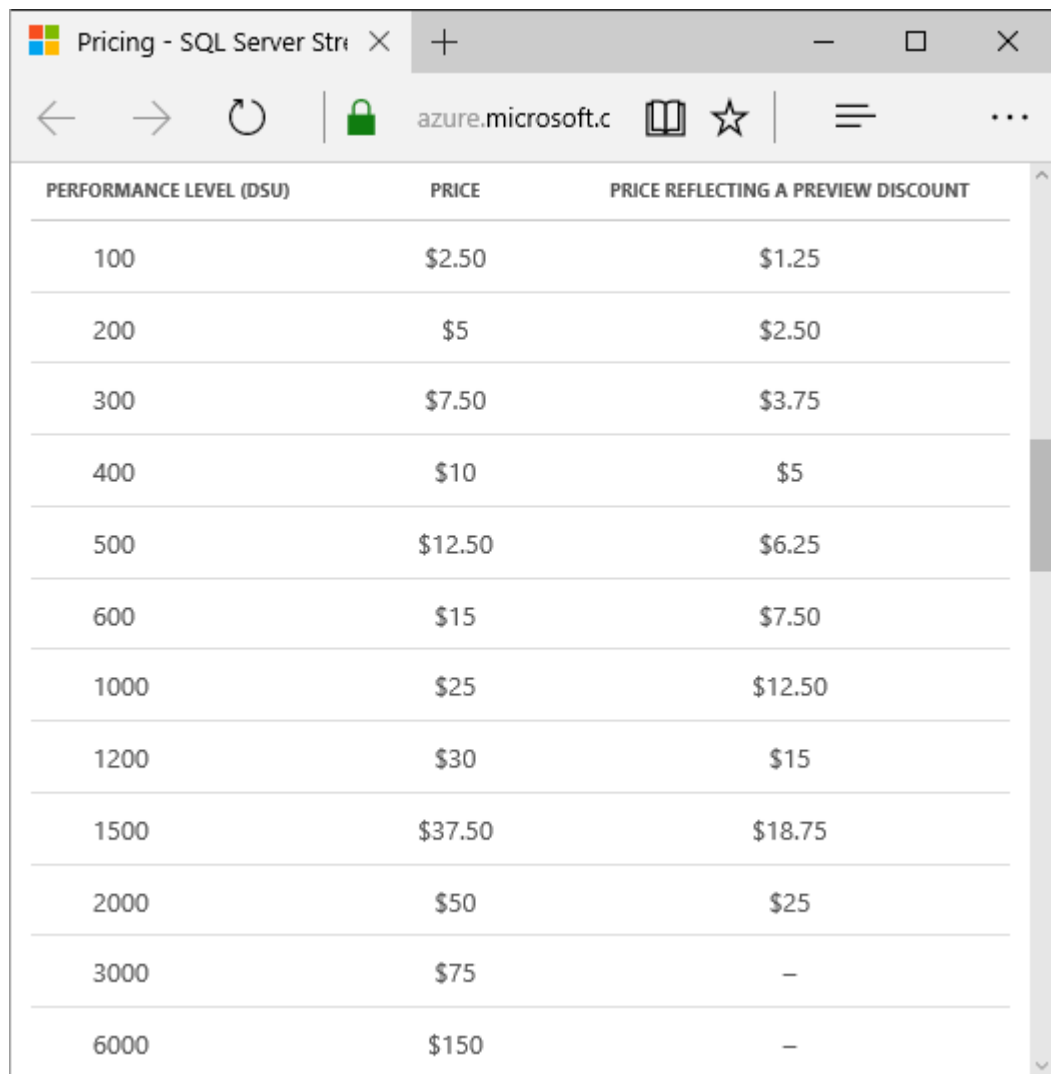


Stretching selected rows



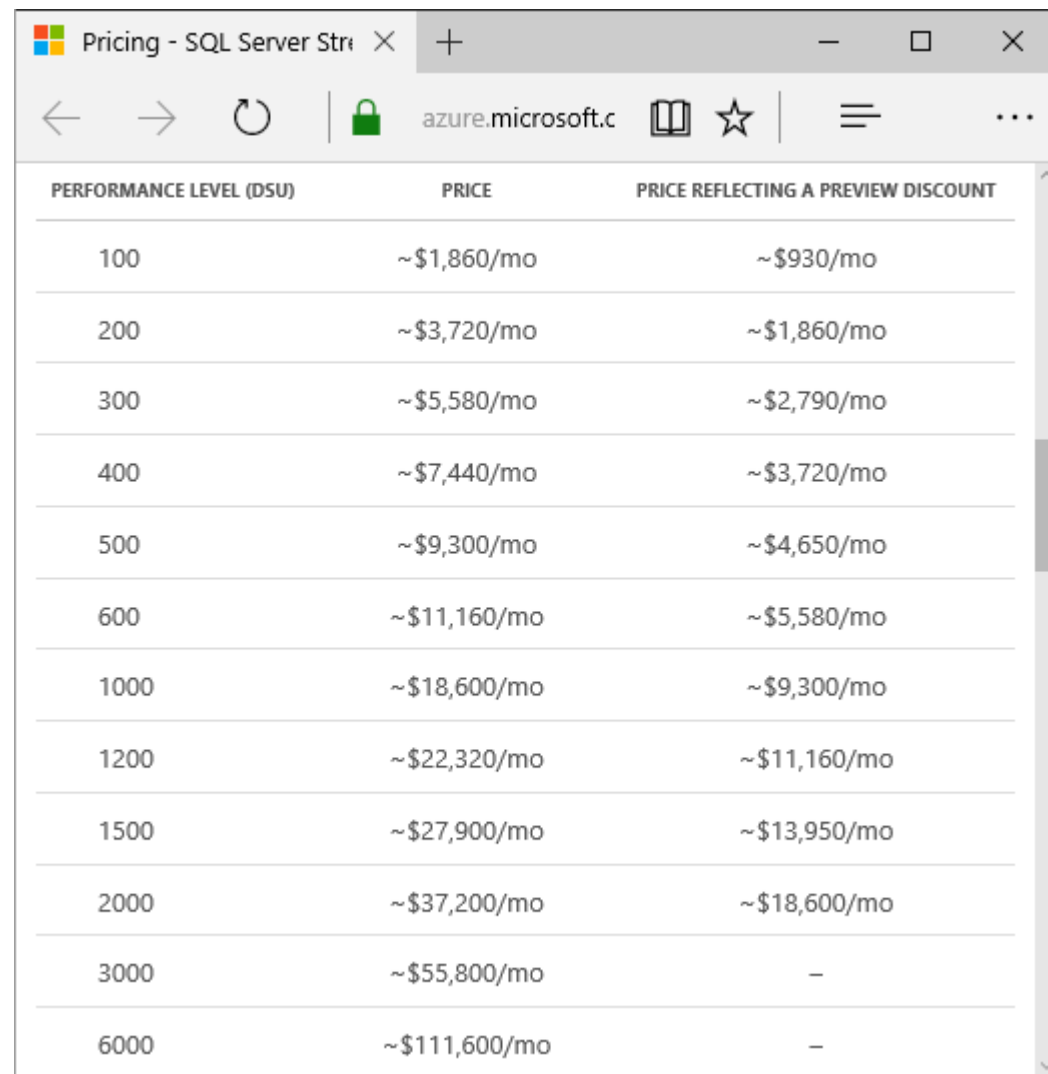
Stretch Pricing

Preview pricing through Sep 1, 2016



Browser window: Pricing - SQL Server Stri | azure.microsoft.c

PERFORMANCE LEVEL (DSU)	PRICE	PRICE REFLECTING A PREVIEW DISCOUNT
100	\$2.50	\$1.25
200	\$5	\$2.50
300	\$7.50	\$3.75
400	\$10	\$5
500	\$12.50	\$6.25
600	\$15	\$7.50
1000	\$25	\$12.50
1200	\$30	\$15
1500	\$37.50	\$18.75
2000	\$50	\$25
3000	\$75	-
6000	\$150	-



Browser window: Pricing - SQL Server Stri | azure.microsoft.c

PERFORMANCE LEVEL (DSU)	PRICE	PRICE REFLECTING A PREVIEW DISCOUNT
100	~\$1,860/mo	~\$930/mo
200	~\$3,720/mo	~\$1,860/mo
300	~\$5,580/mo	~\$2,790/mo
400	~\$7,440/mo	~\$3,720/mo
500	~\$9,300/mo	~\$4,650/mo
600	~\$11,160/mo	~\$5,580/mo
1000	~\$18,600/mo	~\$9,300/mo
1200	~\$22,320/mo	~\$11,160/mo
1500	~\$27,900/mo	~\$13,950/mo
2000	~\$37,200/mo	~\$18,600/mo
3000	~\$55,800/mo	-
6000	~\$111,600/mo	-



Stretch Database Limitations and Considerations

Unsupported table types

- Memory-optimized tables (Hekaton)
- Replicated tables
- FILESTREAM/FileTable
- Tables enabled for Change Tracking or Change Data Capture (CDC)
- Tables with more than 1023 column or 998 indexes

Unsupported data types and column properties

- timestamp, sql_variant, xml, geography, geometry, hierarchyid, CLR UDTs, COLUMN_SET, computed columns

Unsupported indexes

- XML, full-text, spatial, indexed views into the table



Stretch Database Limitations and Considerations (cont.)

Unsupported constraints

- Check constraints
- Default constraints
- Foreign key constraints out of the table (parent tables)

Uniqueness not enforced **UNIQUE** constraints

UPDATE and **DELETE** not supported

ALTER TABLE not supported

Views over stretched tables

- Can't create index on the view
- Can't update or delete from the view (but you can insert into the view)



Summary



Stretch Database Advisor

Terminology and workflow

Preparing Azure for stretch

Stretching an entire table

Stretching selected rows

Reversing migration

Pricing

Limitations and considerations

