Appendix 1: Elapsed Time for Time Series Charts, Regular Charts and D3 Charts

Goal

These timings illustrate the loading performance based on the number of rows. In this test, the nature of the data and the number of columns were the same. The only variable was the date range.

Factors

The graph's performance can be influenced by:

- The number of rows being processed.
- The number of columns.
- The frequency of the data.
- ADX query optimization (using query parameters, materialized queries, etc.)
- ADX Hot Store vs Cold Store. Hot Store duration needs to be at least the maximum data range required on the TS Chart. This is one of the factors that improve query performance.
- If relevant, where, and how aggregation is processed.

ADX Hot Store	90 days
Browser	Edge
Data scanned 90 days	1.39 GB
Data scanned 60 days	1.11 GB
Data scanned 30 days	640 MB

Resource Configuration

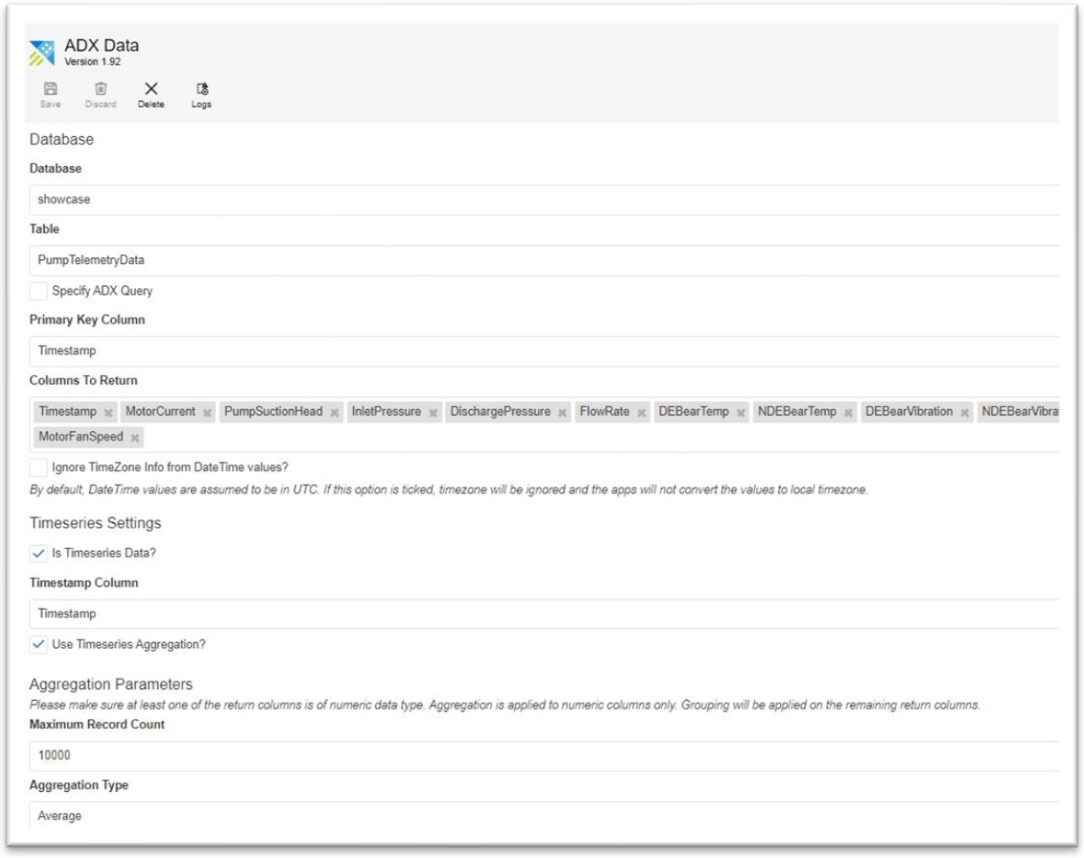
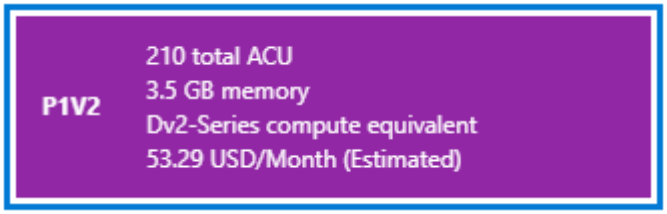


Figure 1 - ADX Connector Configuration

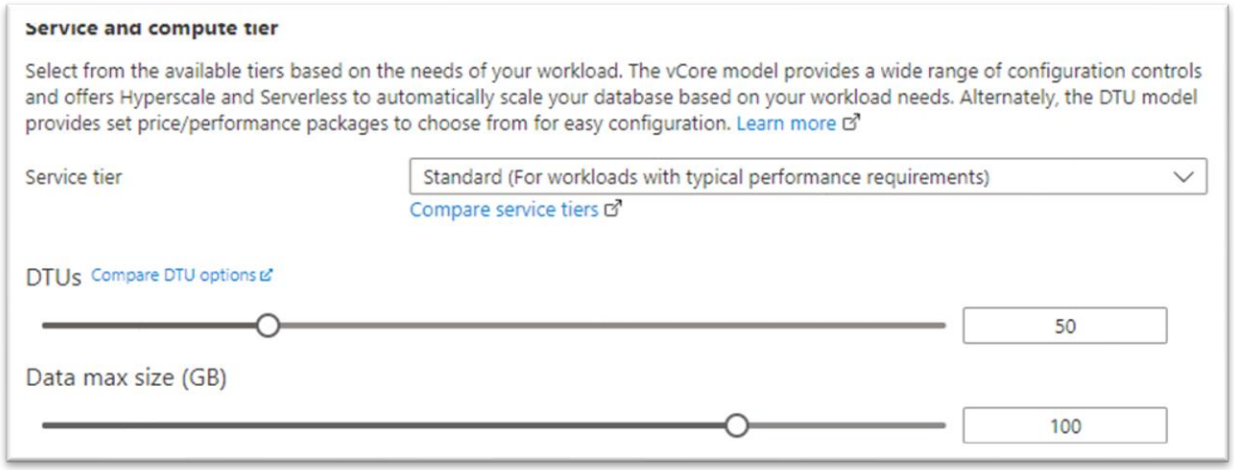
XMPro Environment consists of 4 components.

- Subscription Manager (SM)
- Data Stream Designer (DS)
- Application Designer (AD) V4.1.13.3 using the XMPro ADX Connector V1.92
- Stream Host (SH)

SM, DS, and AD each require Application Services and SQL databases.
SM, DS, AD and SH app service plans are configured at P1V2

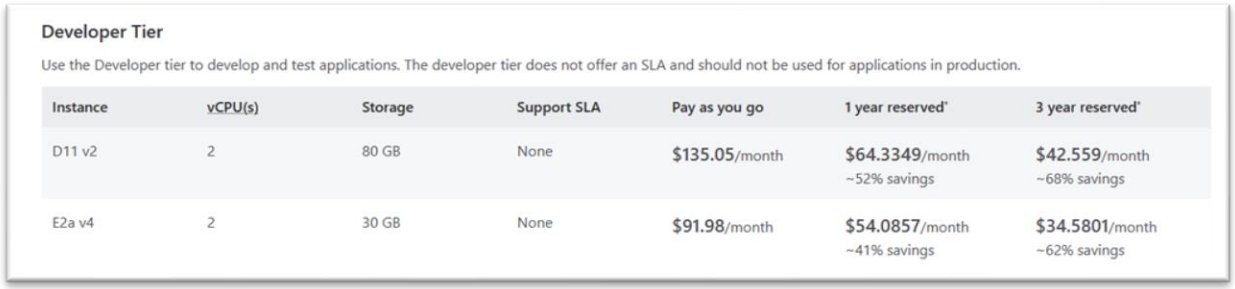


SQL Databases are configured as Standard service Tier and DTU's 50 with Data Max size set to 100GB



ADX Cluster

- Engine type – V3
- Compute Specifications – Dev (No SLA)_Standard_E2a_v4



ADX Database

- Retention Period – Unlimited
- Cache Period – 90 days
- Database kind – Read-Write
- Shared with others – No
- Relationship – None

Response Times – Single Chart versus Multiple Charts on a page

The 'single' vs 'multiple' timings seek to illustrate the compounding effect of adding multiple charts to a single App Page.

Single Time Series Chart

Aggregation Size 10,000
Aggregation Type Any

* Notice the 'No. of Records after Aggregation' column. Irrespective of the count of records in ADX for the specified duration, ADX connector is applying dynamic aggregation to limit the rows to the Aggregation Size specified which is 10,000 in this case.

Duration (Days)	No. of Records before Aggregation	No. of Records after Aggregation	Query Exec Time (In ADX Explorer Stats)	Rendering (sec)	Total Time (sec)
90	11,024,694	8,488	3.59	2.41	**6**
60	8,876,316	9,985	3.05	1.95	**5**
30	5,043,638	9,961	2.50	2.50	**5**
7	1,181,126	9,915	1.95	2.05	**4**
1	168,928	9,599	1.81	2.19	**4**
			Average Time to render	3	5

Four Time Series Charts

* Average Query Exec Time is average of execution time of 4 queries that get executed, 1 for each chart. Queries are triggered asynchronously.

No. of Records after Aggregation	Average Query Exec Time (In ADX Explorer Stats) *	Rendering (sec)	Total Time (sec)
33,952	5.76	10.24	**16**
39,940	3.73	9.27	**13**
39,844	1.76	9.24	**11**
39,660	0.56	7.44	**8**
38,396	1.81	5.19	**7**
	Average Time to render	9	11

Single Time Series Chart

Aggregation Size 50,000
Aggregation Type Any

Duration (Days)	No. of Records before Aggregation	No. of Records after Aggregation	Query Exec Time (In ADX Explorer Stats)	Rendering (sec)	Total Time (sec)
90	11,024,694	42,310	4.47	5.53	**10**
60	8,876,316	49,794	4.11	5.89	**10**
30	5,043,638	49,772	3.55	6.45	**10**
7	1,181,126	46,523	2.87	6.13	**9**
1	168,928	43,192	2.67	6.33	**9**
			Average Time to render	7	10

Single Regular Chart

Aggregation Size 10,000
Aggregation Type Any

Duration (Days)	No. of Records before Aggregation	No. of Records after Aggregation	Query Exec Time (In ADX Explorer Stats)	Rendering (sec)	Total Time (sec)
90	11,024,694	8,488	3.59	7.47	**11**
60	8,876,316	9,985	3.05	6.98	**10**
30	5,043,638	9,961	2.50	7.53	**10**
7	1,181,126	9,915	1.95	8.11	**10**
1	168,928	9,599	1.81	7.25	**9**
			Average Time to render	8	10

Four Regular Charts

* Average Query Exec Time is average of execution time of 4 queries that get executed, 1 for each chart. Queries are triggered asynchronously.

No. of Records after Aggregation	Average Query Exec Time (In ADX Explorer Stats) *	Rendering (sec)	Total Time (sec)
33,952	5.46	18.54	**24**
39,940	4.72	21.28	**26**
39,844	2.83	23.17	**26**
39,660	0.97	24.03	**25**
38,396	0.35	23.65	**24**
	Average Time to render	23	25

Single Regular Chart

Aggregation Size 50,000
Aggregation Type Any

Duration (Days)	No. of Records before Aggregation	No. of Records after Aggregation	Query Exec Time (In ADX Explorer Stats)	Rendering (sec)	Total Time (sec)
90	11,024,694	42,310	4.38	45.62	**50**
60	8,876,316	49,794	4.30	42.70	**47**
30	5,043,638	49,772	3.39	43.61	**47**
7	1,181,126	46,523	2.90	43.10	**46**
1	168,928	43,192	2.63	40.37	**43**
			Average Time to render	44	47

Single D3 Chart

Aggregation Size 10,000
Aggregation Type Any

Duration (Days)	No. of Records before Aggregation	No. of Records after Aggregation	Query Exec Time (In ADX Explorer Stats)	Rendering (sec)	Total Time (sec)
90	11,024,694	8,488	3.58	3.42	**7**
60	8,876,316	9,985	3.06	3.94	**7**
30	5,043,638	9,961	2.50	3.50	**6**
7	1,181,126	9,915	1.92	3.08	**5**
1	168,928	9,599	1.78	3.22	**5**
			Average Time to render	4	6

Four D3 Charts

* Average Query Exec Time is average of execution time of 4 queries that get executed, 1 for each chart. Queries are triggered asynchronously.

No. of Records after Aggregation	Average Query Exec Time (In ADX Explorer Stats) *	Rendering (sec)	Total Time (sec)
33,952	5.94	9.06	**15**
39,940	3.43	12.57	**16**
39,844	2.83	9.20	**12**
39,660	0.97	10.74	**12**
38,396	0.35	10.11	**11**
	Average Time to render	11	14

Single D3 Chart

Aggregation Size 50,000
Aggregation Type Any

Duration (Days)	No. of Records before Aggregation	No. of Records after Aggregation	Query Exec Time (In ADX Explorer Stats)	Rendering (sec)	Total Time (sec)
90	11,024,694	42,310	4.42	14.58	**19**
60	8,876,316	49,794	4.13	12.87	**17**
30	5,043,638	49,772	3.40	13.60	**17**
7	1,181,126	46,523	2.83	13.17	**16**
1	168,928	43,192	2.63	13.37	**16**
			Average Time to render	14	17