

What You'll Love in SQL Server 2019

John Morehouse

Consultant

Denny Cherry & Associates Consulting



john@dcac.com



<http://linkedin.com/in/sqlrus>



@SqlRUs



<http://www.sqlrus.com>

Who Am I?

- Leader of the Louisville SQL Server/Power BI User Group
- Organizer/Speaker of SQL Saturday's & other conferences
- Heavily involved with SQL PASS
- Microsoft Data Platform MVP
- Friend of Redgate 2015 - 2019
- Idera ACE 2016
- SentryOne Product Advisory Council





The vetted and certified experts at Denny Cherry and Associates Consulting assist companies with attaining IT goals such as HA, scalability, SQL Server virtualization, migration, and acceleration reliably while finding ways to save on costs. With clients ranging from Fortune 50 corporations to small businesses, their commitment to each is the same: to provide a deft, high-speed IT environment that leverages every aspect of their platform: from network, architecture, to infrastructure.

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Quick Check

- How many:
 - DBA's
 - Developers
 - BI/DWH
 - Other
- Please make sure to fill out evaluations
- Ask questions!!!



SQL SERVER 2019 General Availability

SECOND HALF 2019

Currently: SQL Server 2019 CTP 3.0

Released: 22-May-2019

bit.ly/SS2019RN

Its been brought...

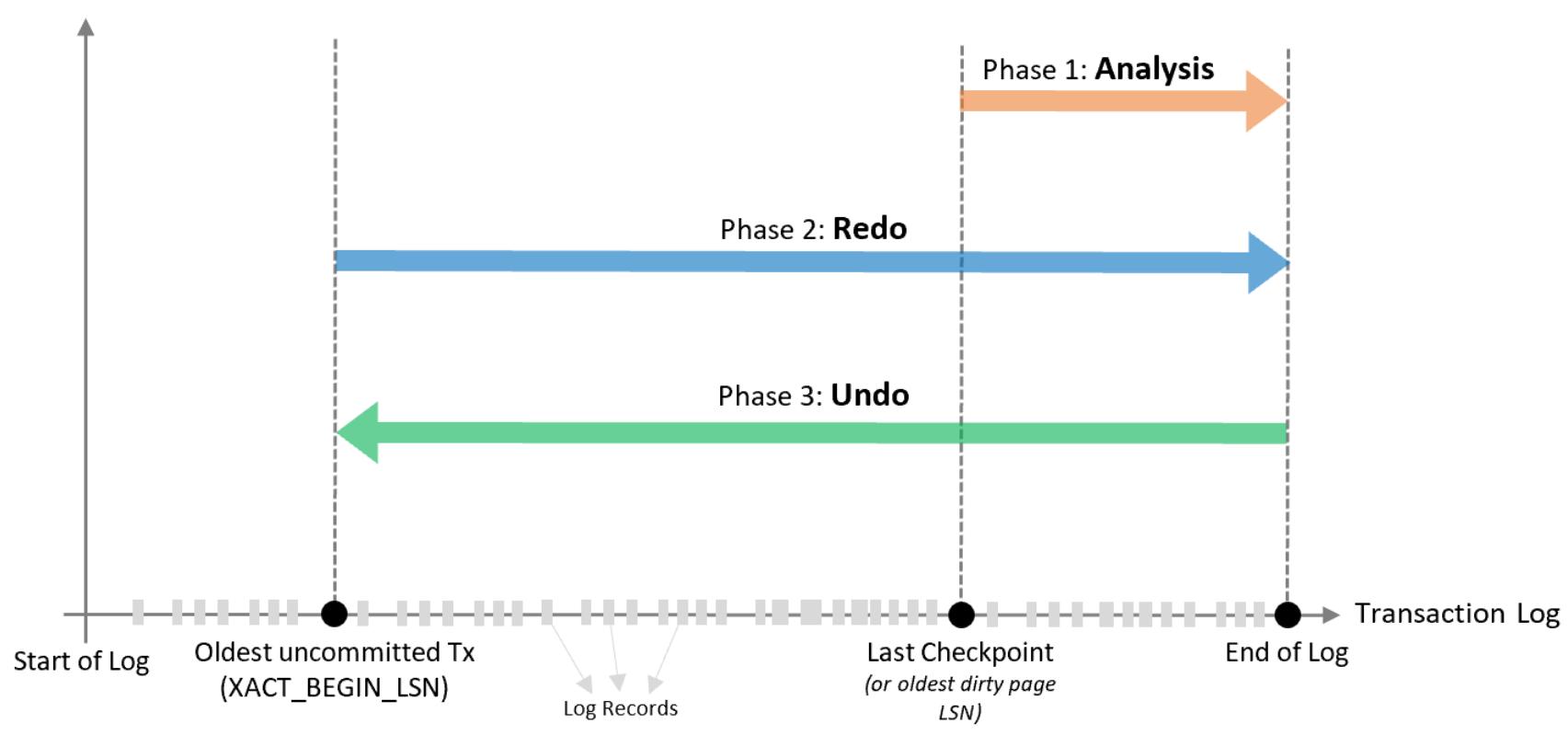
- Accelerated Database Recovery
- UTF-8 Formats
- Improved Messaging
- Intelligent Query Processing (IQP)
- Identify/Fix Page Latch Contention
- Improved Security
- Resumable Index Creation/Rebuilds
- Availability Group Enhancements
- Many Others....



Accelerated Database Recovery (ADR)

SQL Server Recovery and Rollback

Recovery Phase / Transaction Log (without ADR)

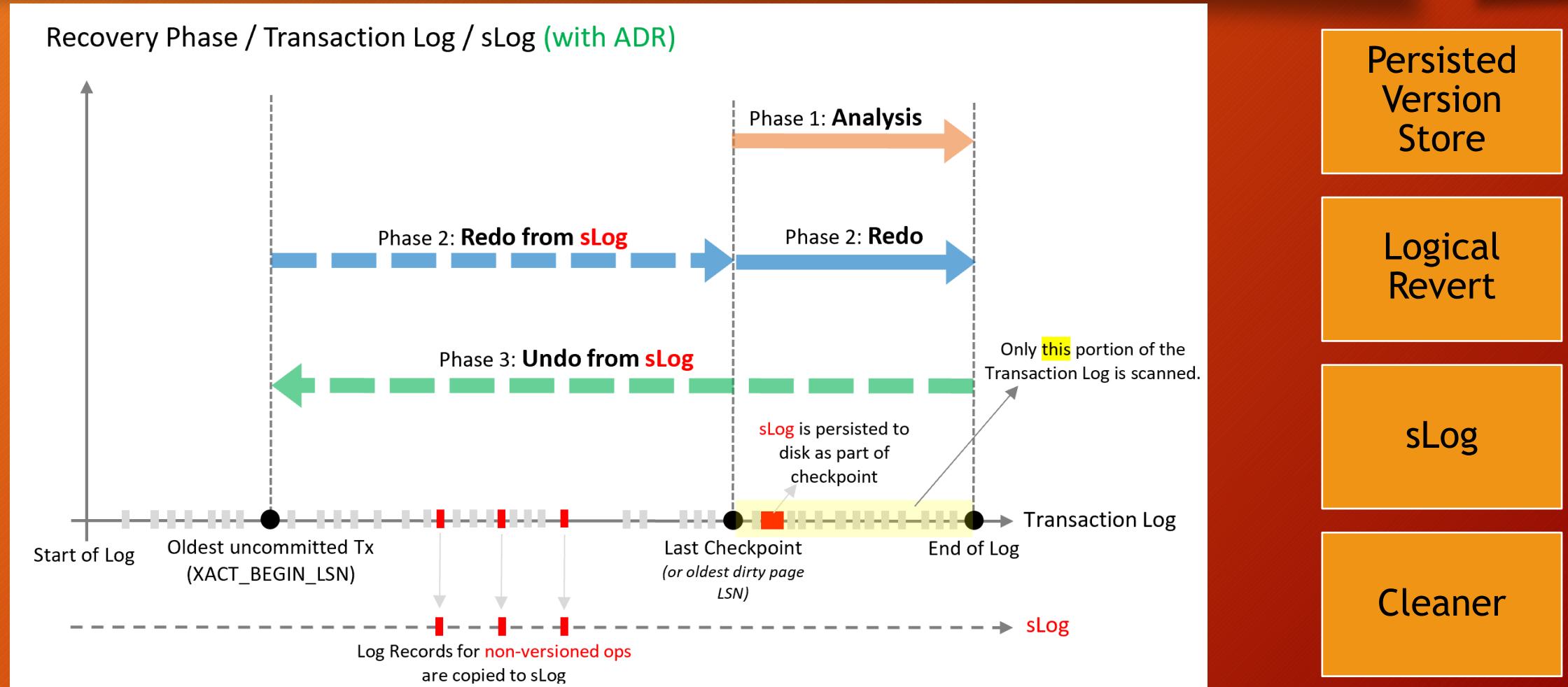


Parallel redo can help

Undo dependent on oldest active transaction

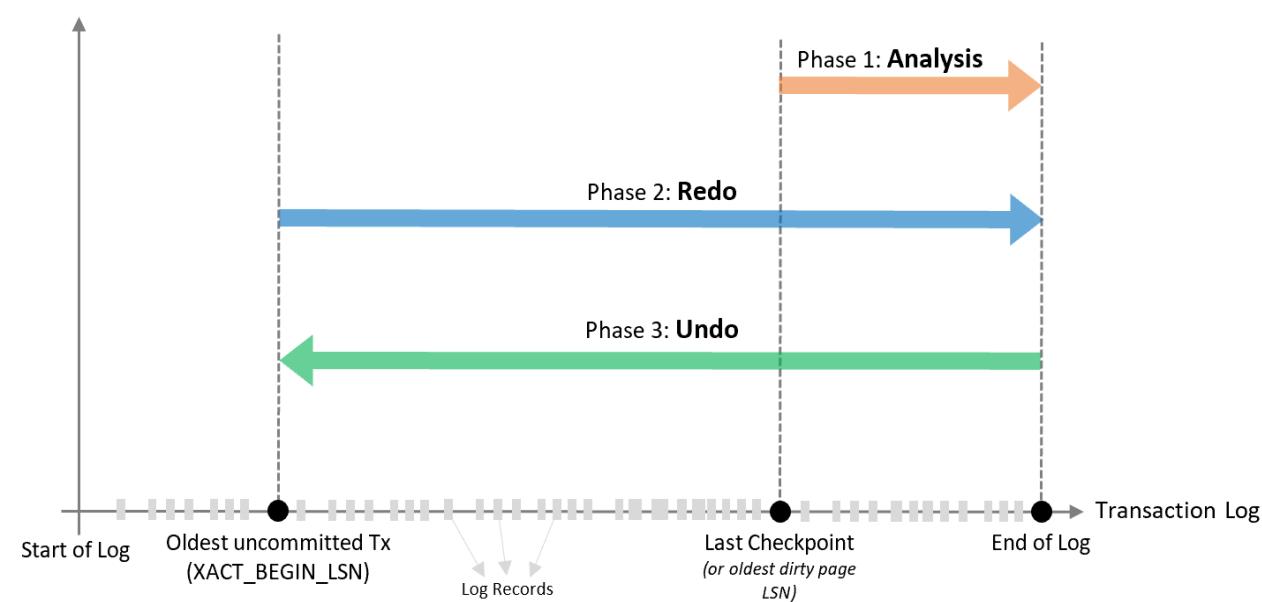
“Long” recovery usually due to long undo

Transactions Accelerated

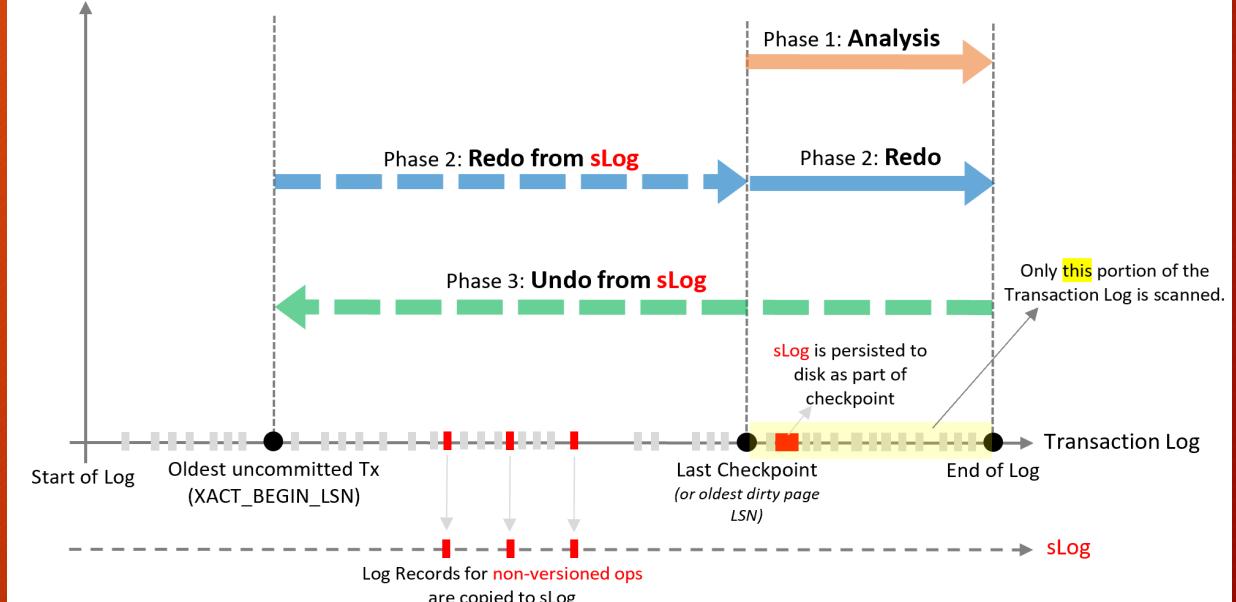


Side by side

Recovery Phase / Transaction Log (without ADR)



Recovery Phase / Transaction Log / sLog (with ADR)



Watch Your Checkpoints

Potential Gotchas

- Watch database size/resources
- Page Splits
- Checkpoints on large memory systems

UTF-8 Encoding

Unicode Transformation
Format (UTF)

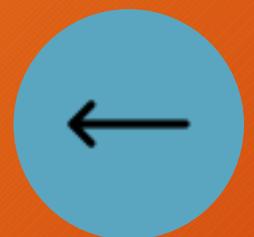
The old hotness - UTF-16

The new hotness - UTF-8

Storage Implications

UTF-8 Gotchas

Won't work on....



COMPUTED
COLUMN



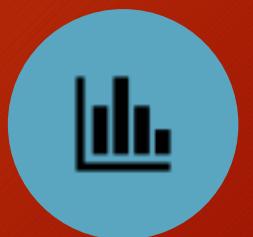
INDEX



FOREIGN KEY
CONSTRAINT



CHECK
CONSTRAINT



DISTRIBUTION
STATISTICS

UTF-8 Encoding

- In-memory OLTP
- External Table for PolyBase
- Always Encrypted



UTF-8 Encoding



Page Latch Contention Waits

- New DMF function - sys.fn_pagerescracker
- Will only work if there is a wait on a page
- Identify which page SQL Server is waiting on

```
19 select page_resource, * from sys.dm_exec_requests  
20 where page_resource is not null
```

RESULTS

	page_resource	session_id	request_id	start_time	status	command
1	0x5001000001000600	61	0	2019-03-16 01:...	suspended	SELECT

Page Latch Contention Waits

- Returns database id, file id, and page id

```
6   SELECT page_info.*  
7   FROM sys.dm_exec_requests AS d  
8   CROSS APPLY sys.fn_PageResCracker (d.page_resource) AS r  
9   CROSS APPLY sys.dm_db_page_info(r.db_id, r.file_id, r.page_id, 'DETAILED') AS page_info  
10  
11
```

RESULTS

database_id	file_id	page_id	page_header_ver...	page_type	page_type_c...
1	6	1	336	1	DATA_PAC...

Resumable Index Creation



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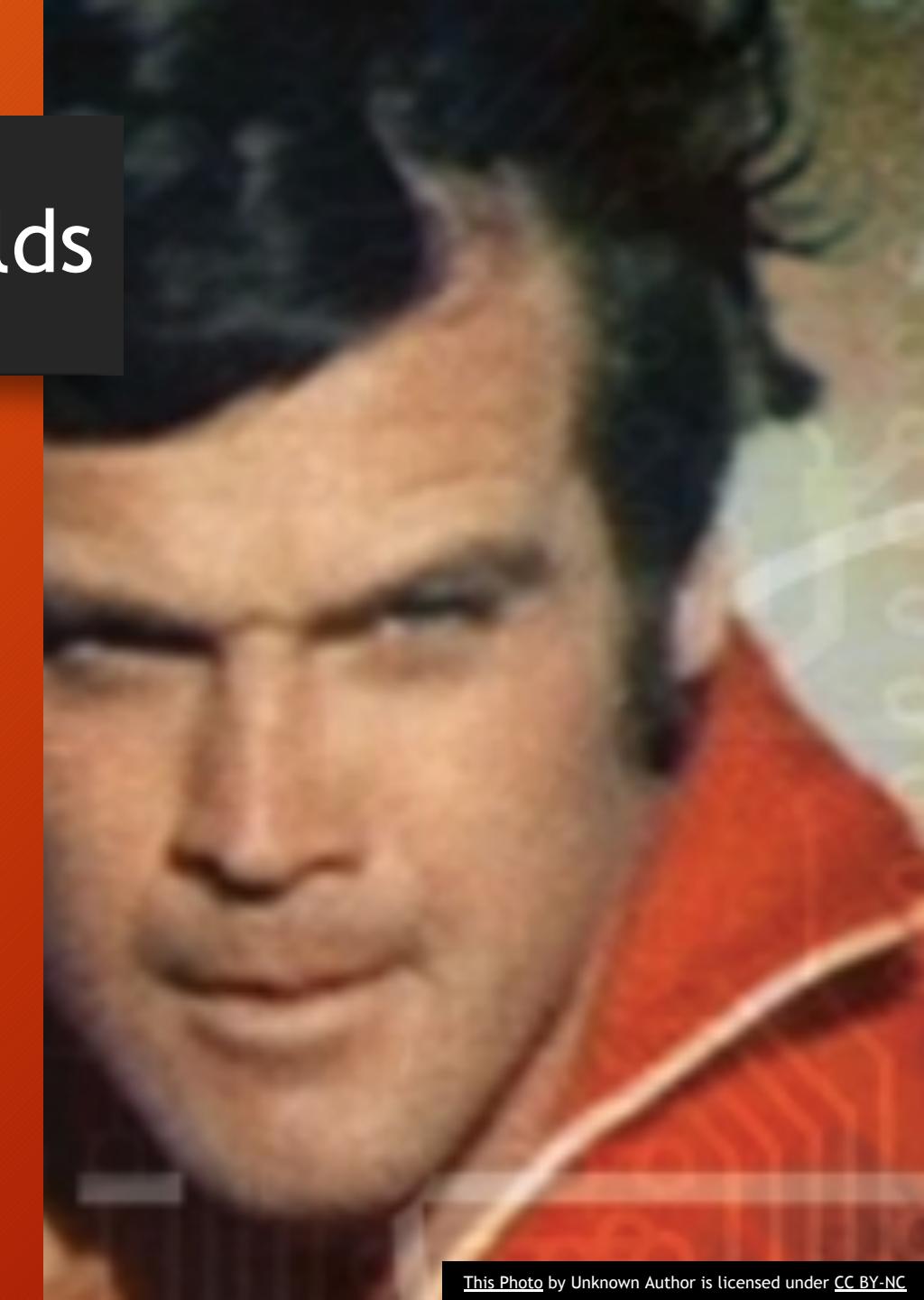
- `Sys.index_resumable_operations` (SQL 2017)
- Currently marked as Enterprise Edition
- `MAX_DURATION {time [MINUTES]}`
- `RESUMABLE {ON | OFF}`

WE CAN REBUILD HIM!!!

Online Columnstore Create/Rebuilds

- Non-clustered
- Create & Rebuild
- Not Resumable

WE CAN REBUILD HIM
TOO!!!



How many times have you seen this?

String or binary data would be truncated

Truncation Messages

String or binary data would be truncated
in table '%.*ls', column '%.*ls'.
Truncated value: '%.*ls'

Back Ported to 2016/2017!

Truncation Messages

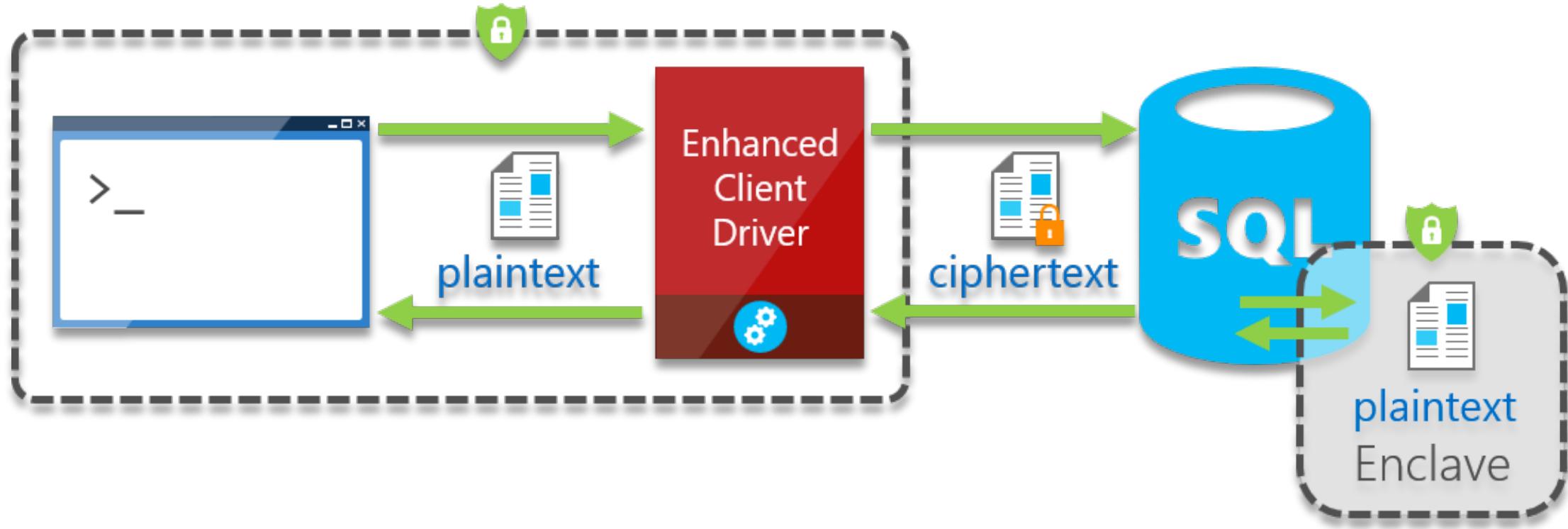
New & Improved Messaging

Always Encrypted with Secure Enclaves

- Requires .NET 4.7.2 & Framework Data Provider for SQL Server
- Allows data to be manipulated inside the database



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Always Encrypted with Secure Enclaves

Intelligent Query Processing

- New cardinality estimator
- Deferred compilation for table variables
- Allows SQL Server to pick a different/better plan
- Controlled solely via compatibility level (150)

$$E=mc^2$$

Demo



Questions

THANK YOU!!!!



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