

In this session:

Performance optimisations and stability improvements

New UI

Moving customized fields to table extensions

Telemetry

New upgrade strategy

Plans for future



Performance optimisations and stability improvements

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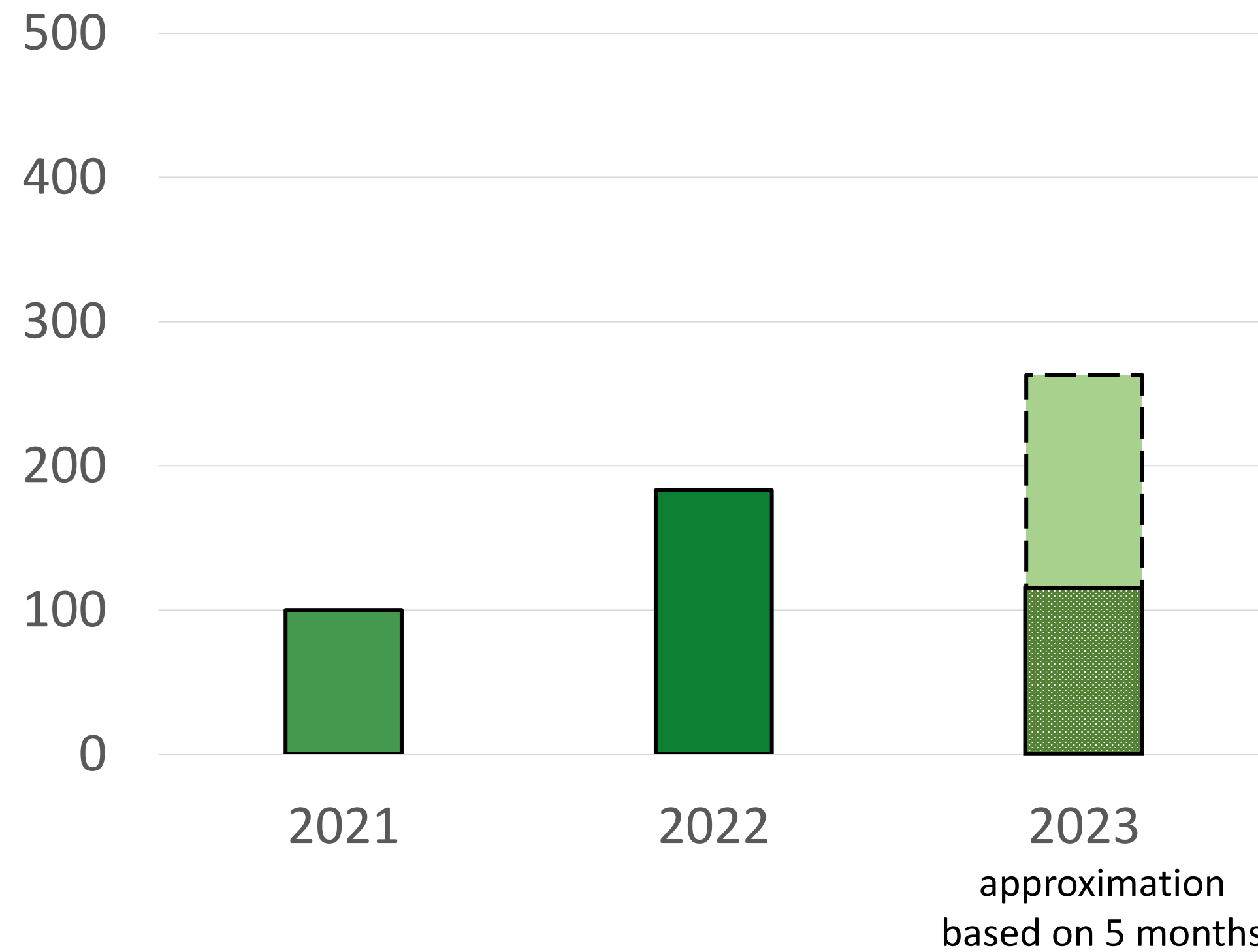
New upgrade strategy

Plans for future

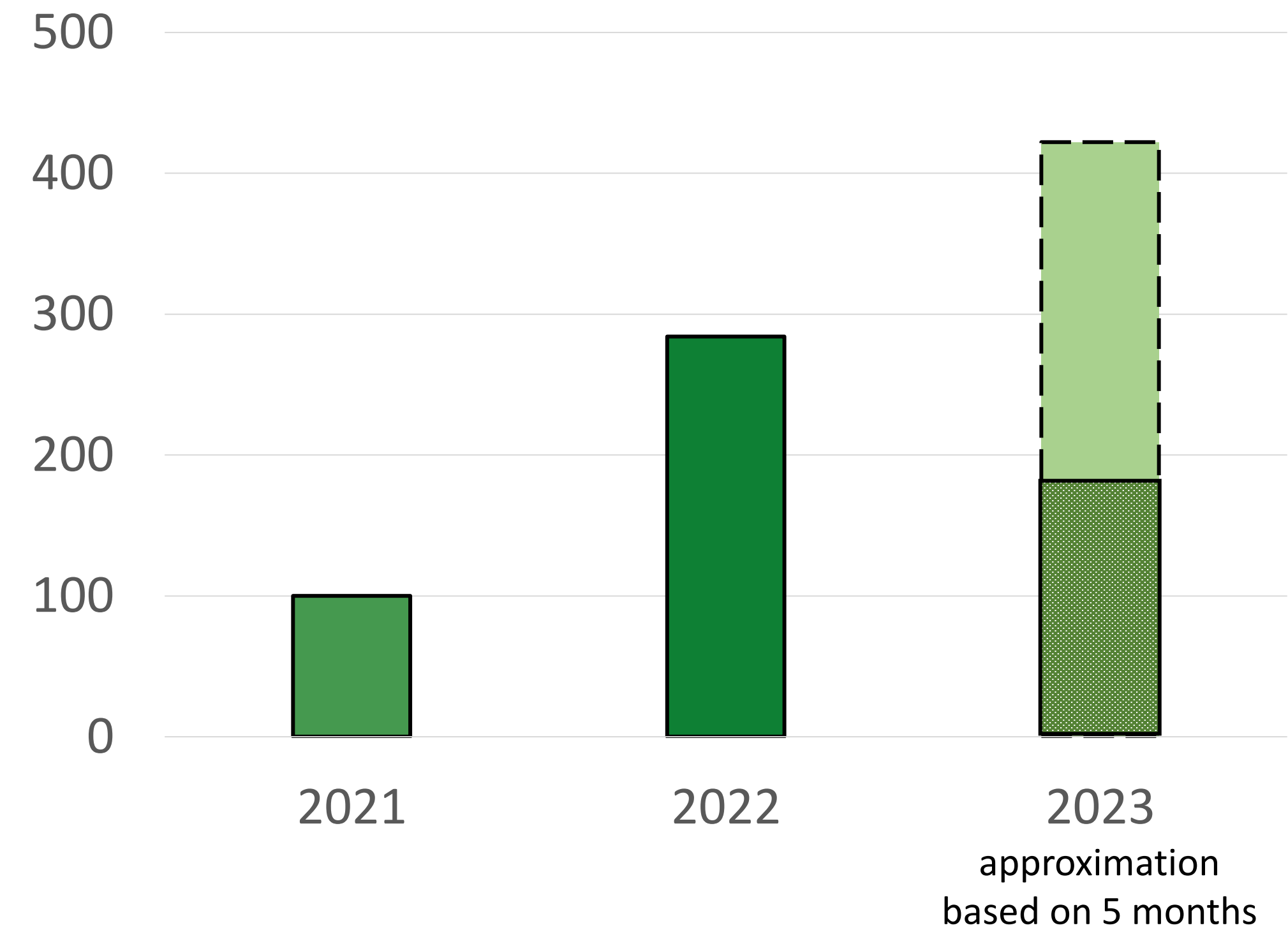


Cloud migration usage

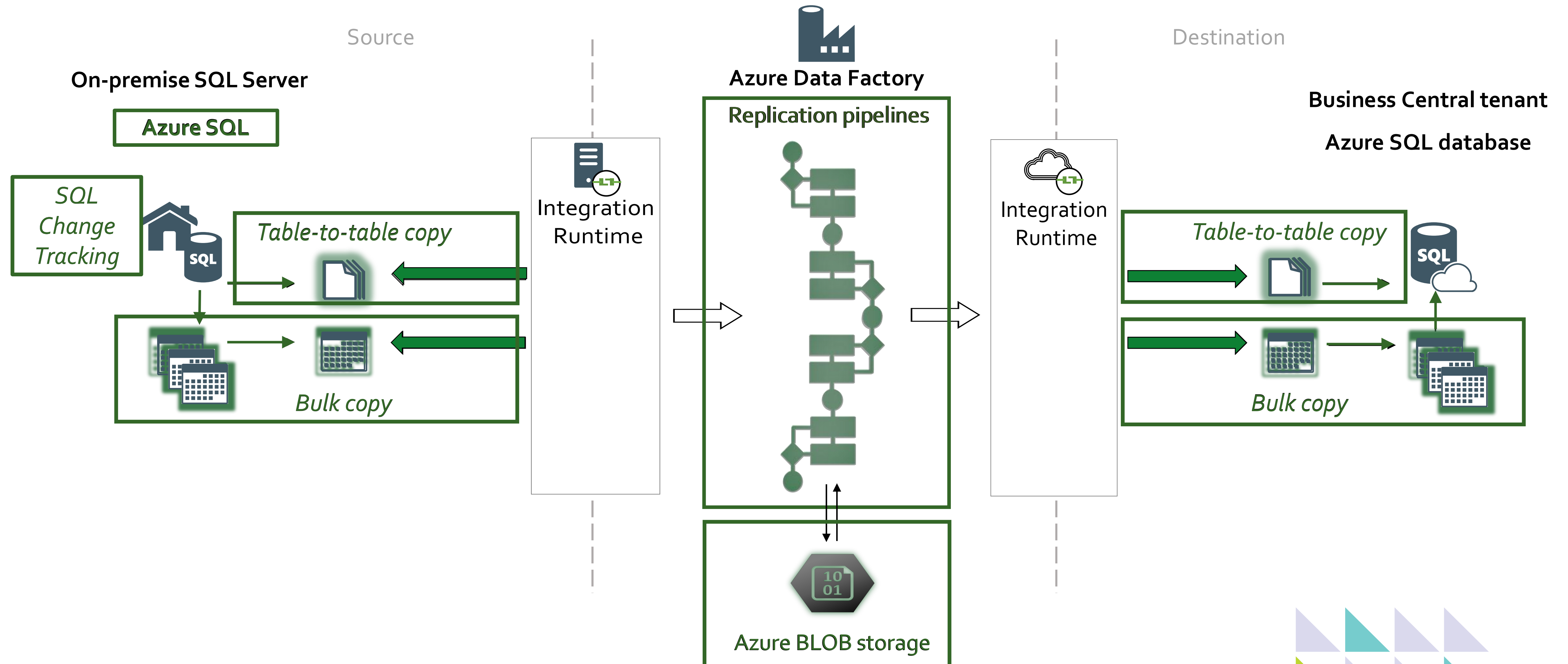
Unique BC tenants using Cloud Migration % to 2021



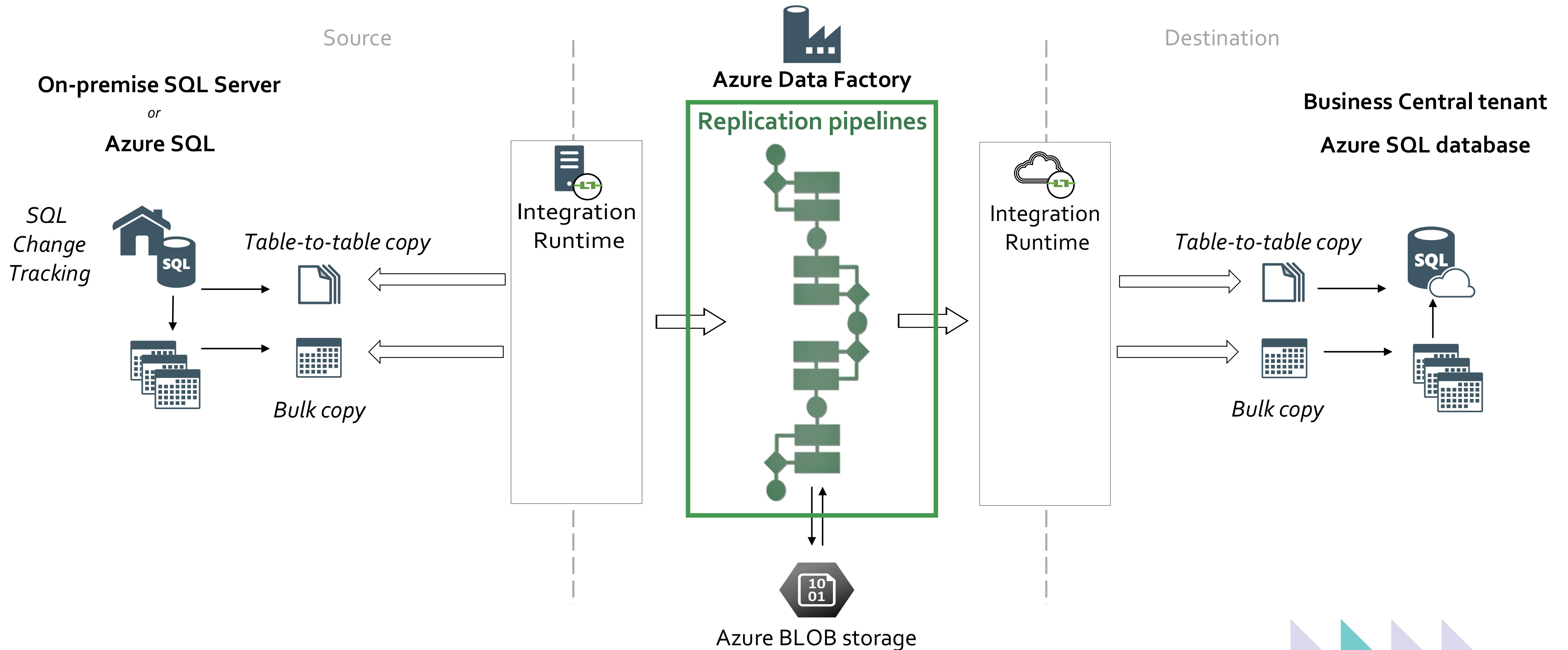
Total migrated data size % to 2021



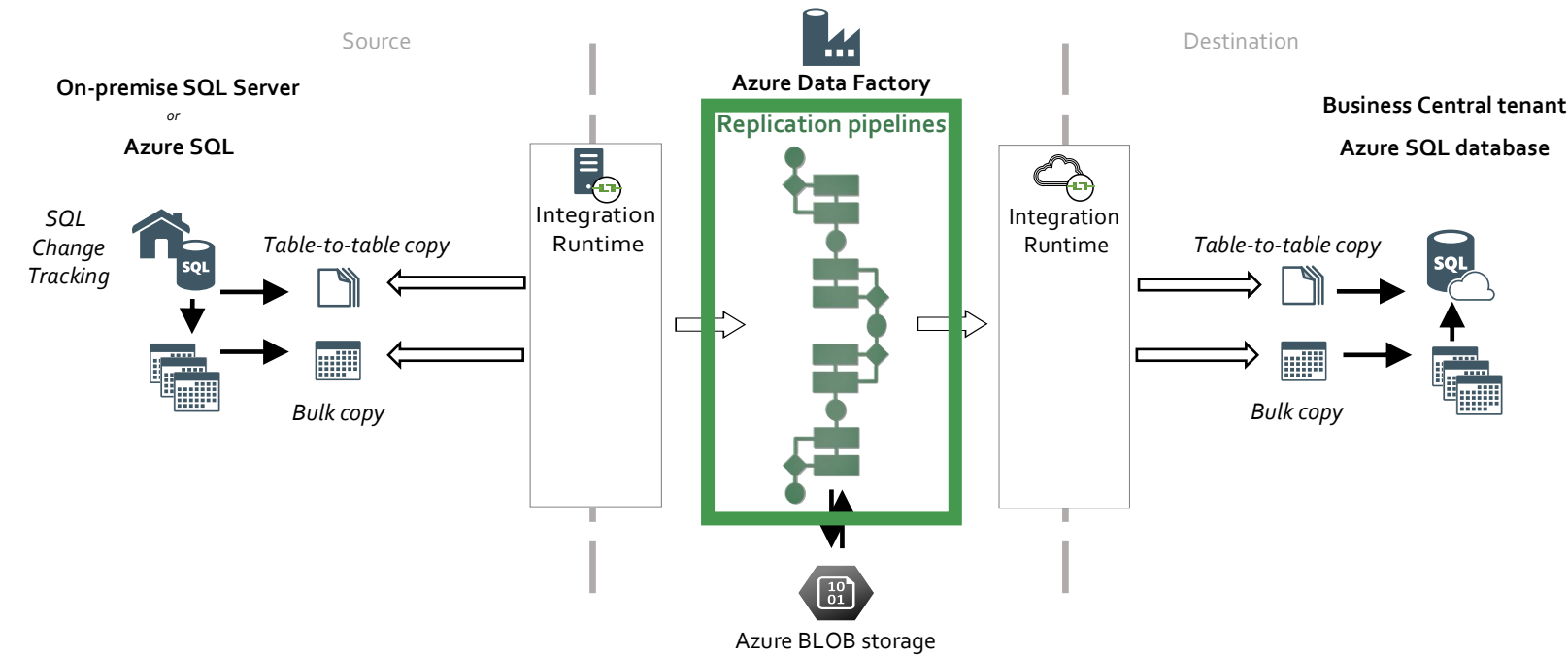
Optimizing for high volume migrations



Optimizations for replication pipelines



Optimizations for replication pipelines



- Changed:

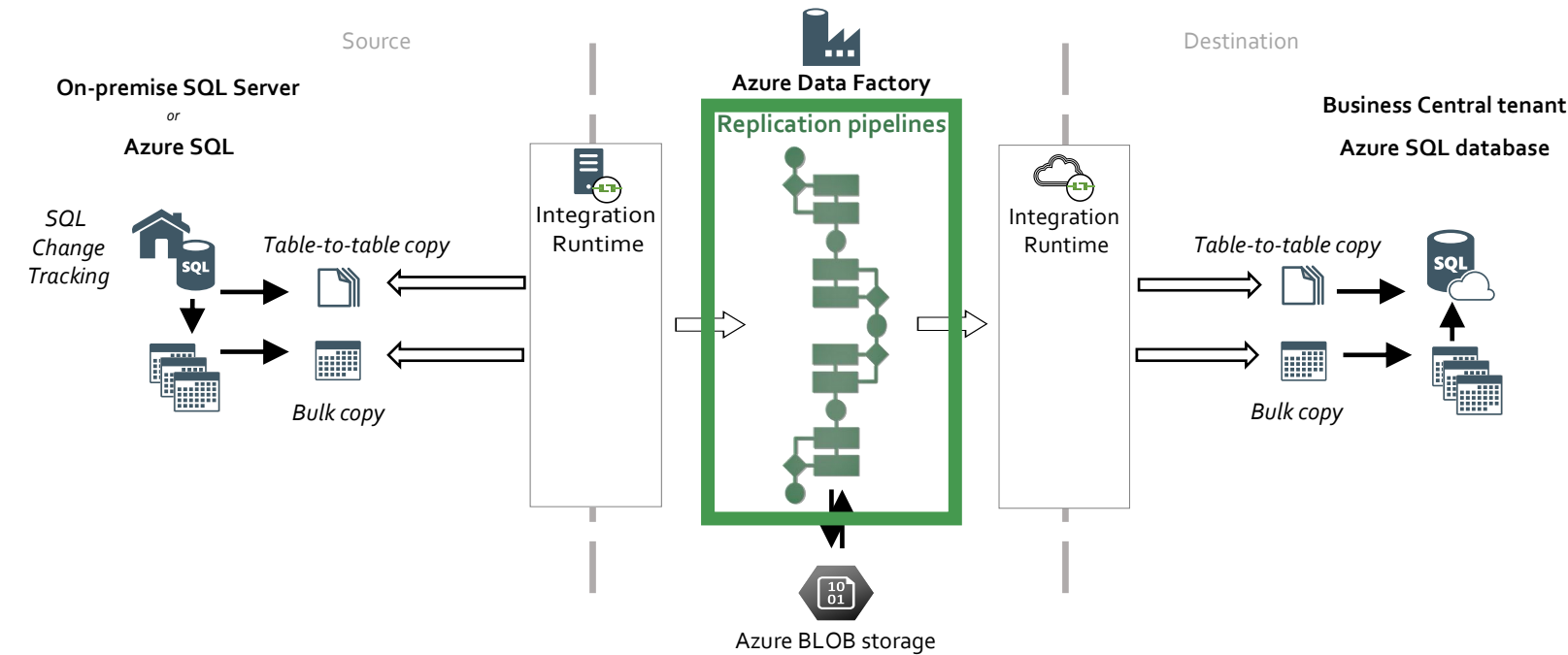
- Passing replication metadata between source and destination through a table copy instead of using parameters of the ADF activities.

- No more limitation of 4 MB for the metadata size.
- No more “large metadata” errors:
 - *“User's payload is too large.. ErrorCode: PayloadTooLarge.”*
 - *“The size of lookup activity result exceeds the limitation 4194304.”*
- **Possible to migrate unlimited* number of companies at once.**

* BC environment can contain max 300 companies



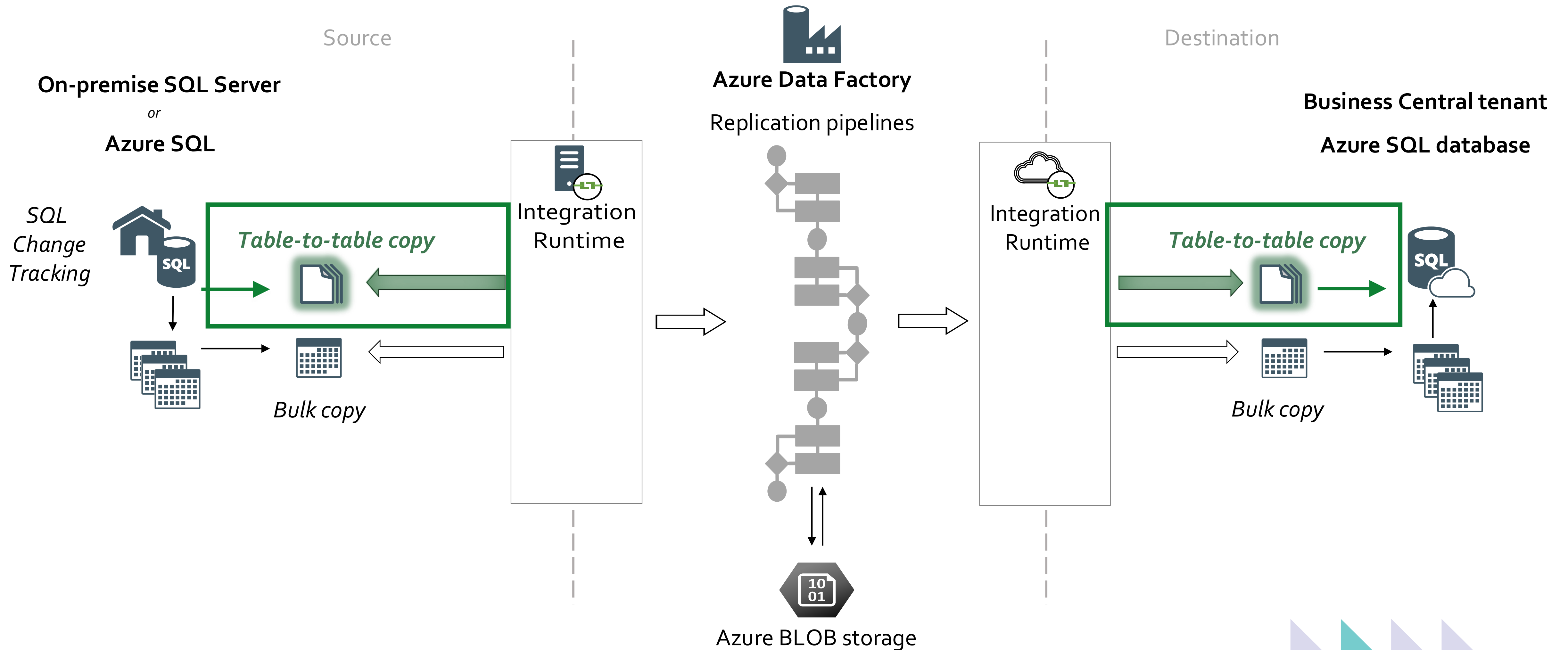
Optimizations for replication pipelines



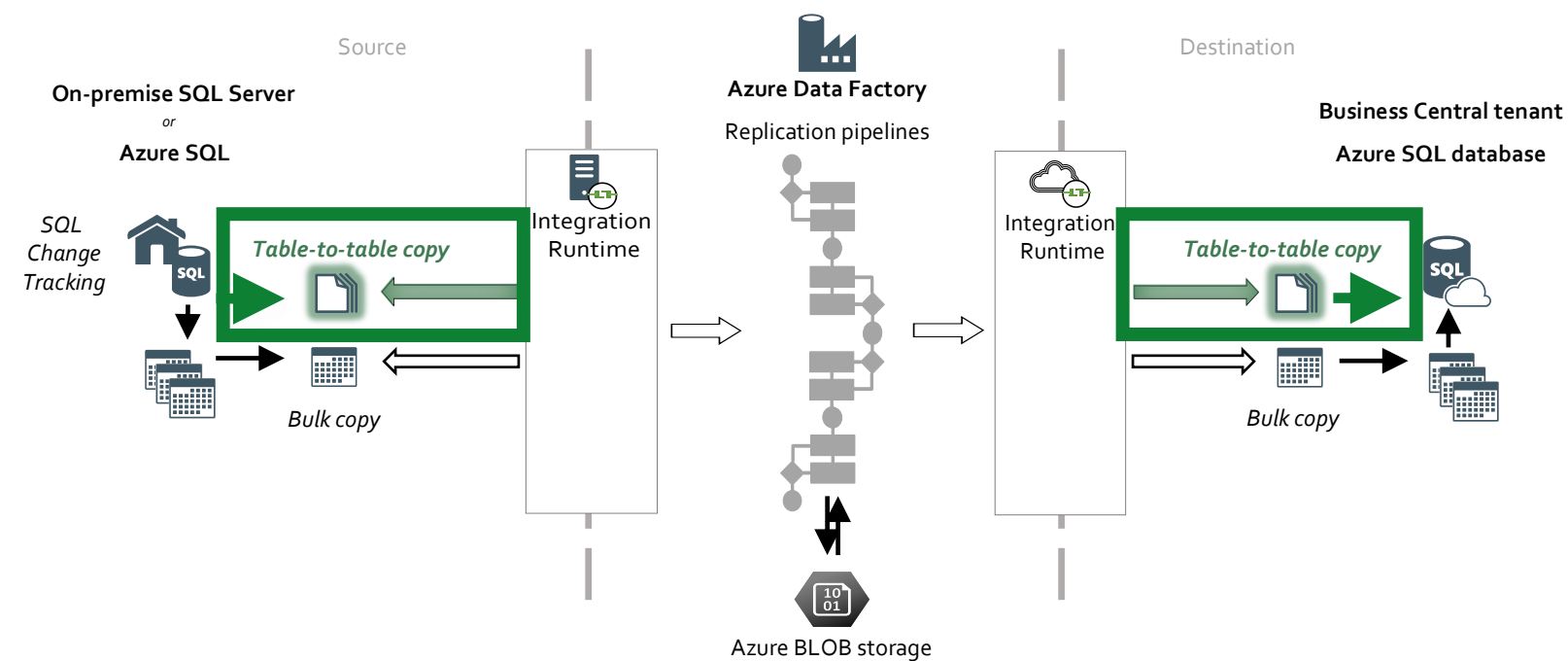
- Up to 15-45 minutes faster replication for large and slow on-premise databases.
- Removed:
 - Estimation of company sizes during replication.
- Added:
 - Replication of SQL *sys.sequences* views.
 - **Support for AL NumberSequences data type** to continue uninterrupted numbering in the BC tenant after cloud migration.



Optimizations for table-to-table copy



Optimizations for table-to-table copy



- Changed:

- Table-to-table copy for tables larger than:
 - 100 thousand records,
 - or 250 MB of data.

- Added:

- Disabling indexes of the destination table before copy.
- Rebuilding the indexes once, after the data is replicated.

- More tables are copied table-to-table, faster replication status updates.

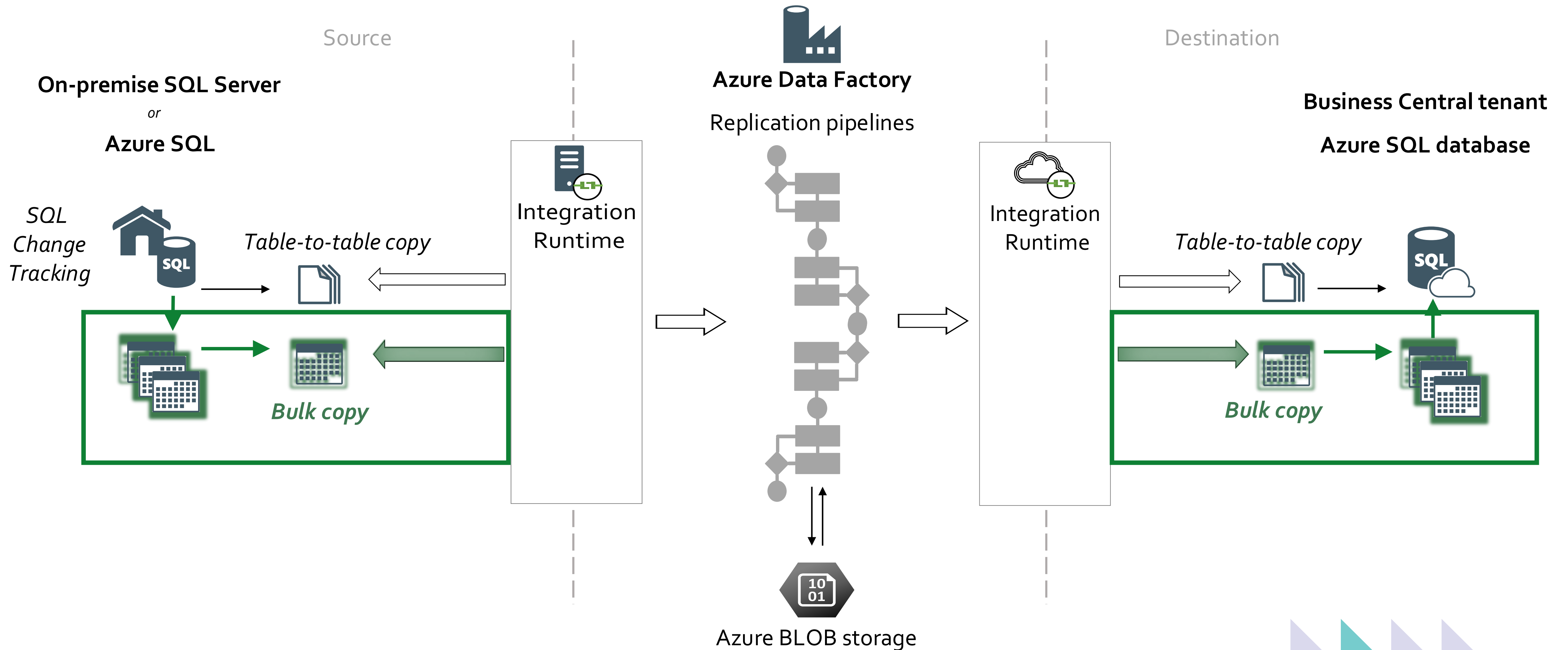
- Overall performance gain for table-to-table copy:

8 - 22 %
faster

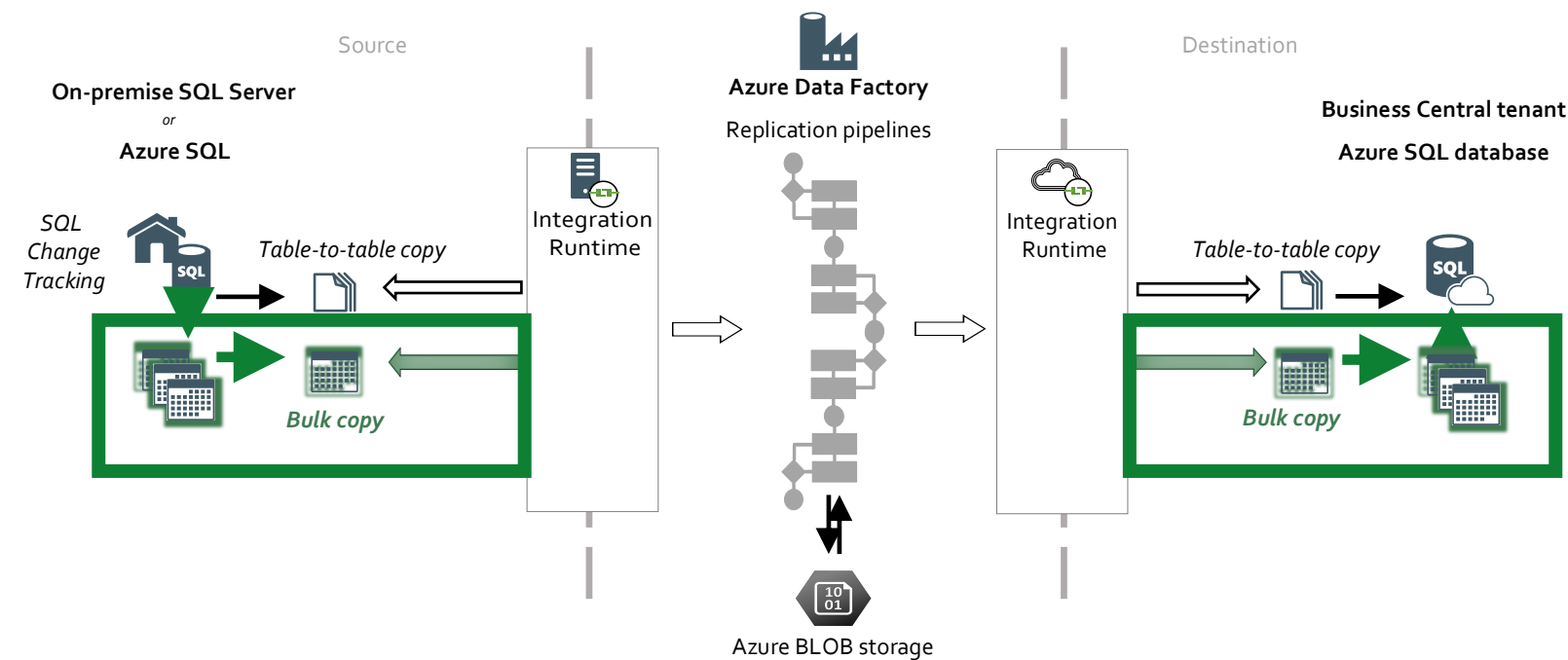
- No more timeouts while replicating large tables.



Optimizations for bulk copy



Optimizations for bulk copy



- Reduced probability of timeouts during bulk copy of smaller tables.

- Performance gain for bulk copy:

60 - 80 %
faster

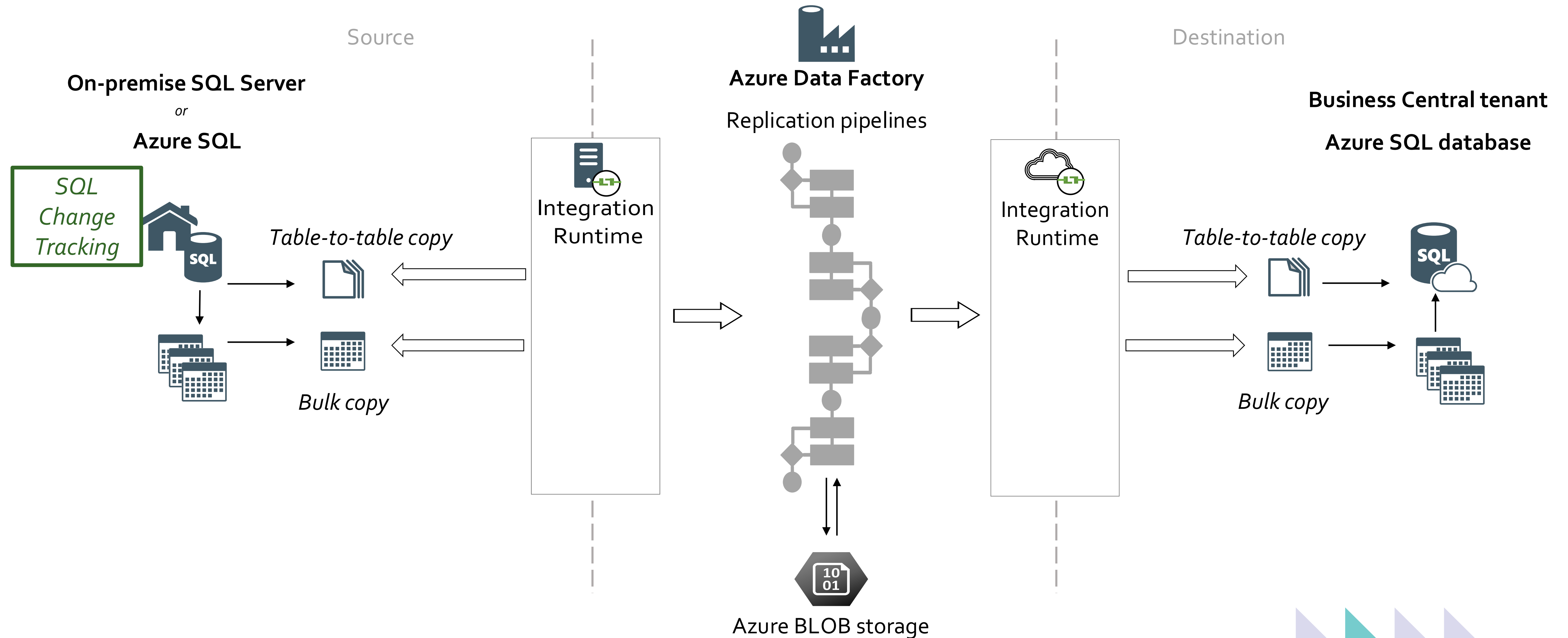
- Changed:

- Bulk-copy for tables smaller than:
 - 100 thousand records,
 - and 250 MB of data.
- Reduced the size of every bulk
→ more and smaller bulks.
- Diagnostic Runs respect the bulk size.

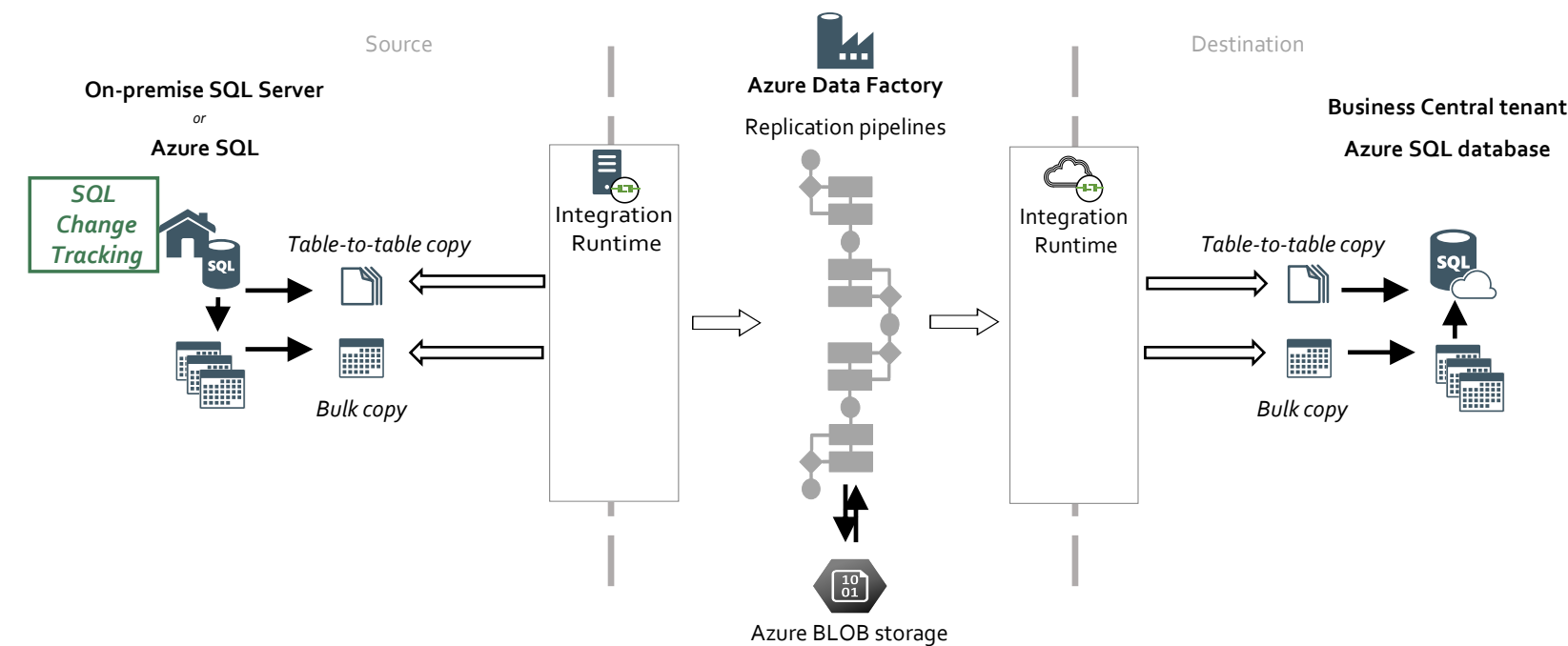
- More smaller bulks,
more frequent updates of the replication status.
- Consider Diagnostic Runs to quickly test data replication.



Optimizations for delta-sync



Optimizations for delta-sync



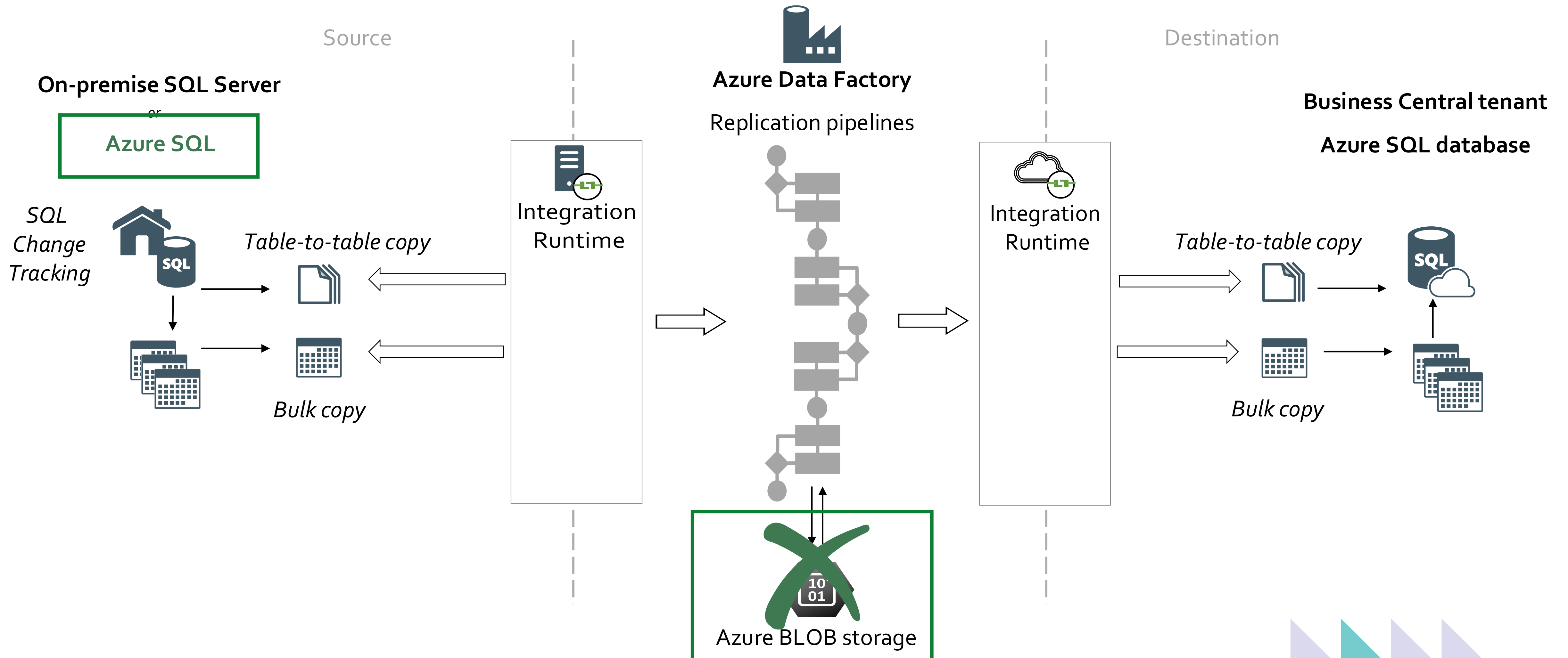
- Changed:

- Enforced 3 days Change Tracking retention period for the on-premise database.
- Streamlined getting and applying incremental changes.
- More setups enabled for delta-sync.

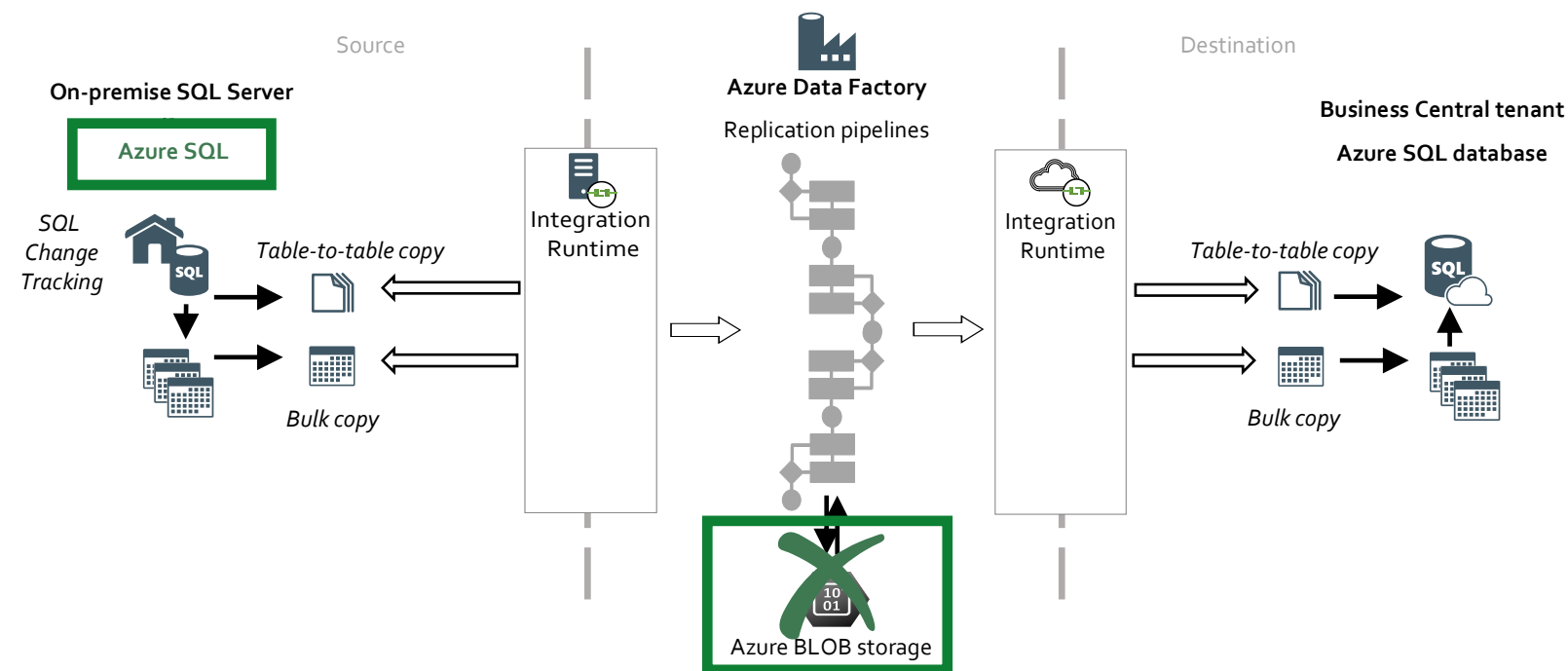
- Higher probability of delta-syncs.
- **Consider increasing Change Tracking retention period** to get longer periods of delta-synchronization.
- Delta-sync now works also for databases that didn't have change tracking enabled before cloud migration.
- Reduced overall migration time.



Optimizations for Azure SQL source



Optimizations for Azure SQL source



- Performance gain for copy activities from Azure SQL source:

12 - 16 %
faster

- Removed:

- Intermediate staging of data in Azure BLOB storage.

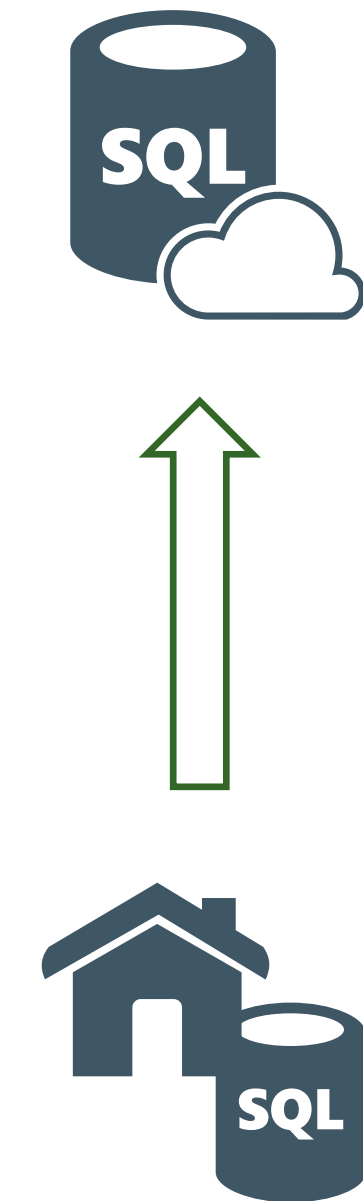
- Enabled replication for tables with *sql_variant* columns from Azure SQL source.
- Enabled table-to-table copy for tables with large field values (images).
- No more errors from BLOB infrastructure:
 - "SystemErrorOutOfMemory, A task failed with out of memory"
 - "AzureBlobWriteOperationFailed. Could not finish the operation within specified timeout"
 - "The specified row delimiter is incorrect. Cannot detect a row after parse 100 MB data."



Consider migrations from Azure SQL

- Migrations from Azure SQL:
 - are more stable;
 - are faster;
 - allow replication of slq_variant fields;
 - can replicate large images in single fields.
- When deploying on-premise databases to Azure SQL:
 - choose a service tier with higher compute and I/O limits
 - with vCore model: at least Business Critical
 - with DTU model: at least Standard S3

Source database
for Cloud Migration



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New upgrade strategy

Plans for future



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Demo



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Table mapping during migration



Table 18 Customer

Microsoft Fields
Field – Not needed
Field 1
Field 2
Field 3

ReplicateData=true property inserts default mapping by name

Table 18 Customer

Microsoft Fields

PTE 1 Table Extension

PTE 1 - Field 1
PTE 1 - Field 2

PTE 2 Table Extension

PTE 2 - Field 3



Table mapping during migration



Table 18 Customer

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Field – Not needed
Field 1
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ReplicateData=true property inserts default mapping by name

Table 18 Customer

Microsoft Fields

Migration Table Mapping will copy the custom fields to target tables if field name and type match

PTE 1 Table Extension

PTE 1 - Field 1
PTE 1 - Field 2

PTE 2 Table Extension

PTE 2 - Field 3



Table mapping during migration



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Migration Table Mapping will copy the custom fields to target tables if field name and type match



PTE 1 Table Extension

PTE 1 - Field 1
PTE 1 - Field 2

PTE 2 Table Extension

PTE 2 - Field 3



Demo



Provide table mappings via code

Subscribe to:

OnInsertDefaultTableMappings event
codeunit 4001 "Hybrid Cloud Management"

Table mappings will be inserted after the setup wizard is completed



Not supported – Multiple tables as a source



Table 18 Customer

Microsoft Fields
PTE 1 - Field 2

PTE 1 Table Extension

PTE 1 - Field 1

Default Mapping - ReplicateData=true

Migration table mapping

Default Mapping - ReplicateData=true



Table 18 Customer

Microsoft Fields

PTE 1 Table Extension

PTE 1 - Field 1
PTE 1 - Field 2

The migration of Field 1 will not work as the destination table PTE 1 Table Extension has 2 source tables



Solution 1 – Move field to PTE in OnPrem instance



Table 18 Customer

Microsoft Fields

Default Mapping - ReplicateData=true



Table 18 Customer

Microsoft Fields

PTE 1 Table Extension

PTE 1 - Field 1

PTE 1 – Field 2

Default Mapping - ReplicateData=true

PTE 1 Table Extension

PTE 1 - Field 1

PTE 1 - Field 2



Solution 2 – Introduce a new PTE and use mapping



Table 18 Customer

Microsoft Fields
PTE 1 - Field 2

Default Mapping - ReplicateData=true

Migration table mapping

Table 18 Customer

Microsoft Fields

PTE 2 Table Extension

PTE 1 - Field 2

PTE 1 Table Extension

PTE 1 - Field 1

Default Mapping - ReplicateData=true

PTE 1 Table Extension

PTE 1 - Field 1



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Telemetry events

Event ID	Description
AL0000K0J	Replication run started
AL0000K0H	Replication run completed.
AL0000K0I	Replication run completed with failed tables.
AL0000FXC	Companion table repair scheduled
AL0000FJ1	Companion table repair started
AL0000FJ4	Companion table repair completed successfully
AL0000K0K	Cloud migration data upgrade scheduled
LC0175	Environment data upgrade operation started
LC0176	Environment data upgrade operation completed successfully
LC0177	Environment data upgrade operation failed
LC0178	Recovery from a failed data upgrade operation has completed successfully
LC0179	Recovery from a failed data upgrade operation has failed
AL0000IGC	Cloud migration disabled

<https://learn.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-cloud-migration-trace>



Track progress of cloud migrations



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**Dynamics 365 Business
Central Usage 02/06/2023**

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Field Changes

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Cloud Migration

Tenant/Environment
(Blank) (Domain) + c32415e1-054e-401b-ad32-3cdfa301b1d2

This report page shows data on Cloud Migration replication runs and data upgrades for your environments.

Last Cloud Migration Event by Environment

Tenant/Environment/Company	Admin Center	URL	Cloud Migration URL	Last Event	When
c32415e1-054e-401b-ad32-3cdfa301b1d2					
sandbox4				Cloud Migration Disabled	5/20/2023 8:17:13 PM
Sandbox2				Data Upgrade Succeeded	6/15/2023 1:12:50 PM
sandbox3				Data Upgrade Succeeded	5/13/2023 4:17:56 PM

2

Replication errors

0

Replication errors

0

Replication errors

Cloud Migration Log

Date/Time	Domain	aadTenantId	environmentName	Event
5/20/2023 8:17:13 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Cloud Migration Disabled
6/15/2023 1:11:35 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Data Upgrade Started
5/13/2023 4:16:46 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Data Upgrade Started
5/19/2023 8:47:28 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Data Upgrade Started
6/15/2023 1:12:50 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Data Upgrade Succeeded
5/13/2023 4:17:56 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Data Upgrade Succeeded
5/19/2023 8:50:20 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Data Upgrade Succeeded
6/15/2023 1:11:13 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Replication Run Completed
5/13/2023 12:08:27 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Replication Run Completed

Migration Events over time

Event ● Cloud Migration Disabled ● Data Upgrade Started ● Data Upgrade Succeeded ● Replication Run Completed ● Replication Run Completed with Failed Tables ● Replication Run Started

<https://github.com/microsoft/BCTech/tree/master/samples/AppInsights/PowerBI/Reports/AppSource/environment-app-pbix>



Track progress of cloud migrations



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Sandbox2				Data Upgrade Succeeded	6/15/2023 1:12:50 PM
sandbox3				Data Upgrade Succeeded	5/13/2023 4:17:56 PM

All

Last 7 days

Since Yesterday

2

0

0

Replication errors

Replication errors

Replication errors

Cloud Migration Log

Date/Time	Domain	aadTenantId	environmentName	Event
5/20/2023 8:17:13 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Cloud Migration Disabled
6/15/2023 1:11:35 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Data Upgrade Started
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6/15/2023 1:12:50 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Data Upgrade Succeeded
5/13/2023 4:17:56 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Data Upgrade Succeeded
5/19/2023 8:50:20 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Data Upgrade Succeeded
6/15/2023 1:11:13 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Replication Run Completed
5/13/2023 12:08:27 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Replication Run Completed

Migration Events over time

Track progress of cloud migrations

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Cloud Migration

Tenant/Environment

(Blank) (Domain) + c32415e1-054e-401b-ad32-3cdfa301b1d2

What is current status across environments?

This report page shows data on Cloud Migration replication runs and data upgrades for your environments.

Last Cloud Migration Event by Environment

Tenant/Environment/Company	Admin Center	URL	Cloud Migration URL	Last Event	When
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sandbox3				Data Upgrade Succeeded	5/13/2023 4:17:56 PM

Errors and other KPIs

All	Last 7 days	Since Yesterday
2	0	0
Replication errors	Replication errors	Replication errors

Browse the log


Cloud Migration Log

Date/Time	Domain	aadTenantId	environmentName	Event
5/20/2023 8:17:13 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Cloud Migration Disabled
6/15/2023 1:11:35 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Data Upgrade Started
5/13/2023 4:16:46 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Data Upgrade Started
5/19/2023 8:47:28 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Data Upgrade Started
6/15/2023 1:12:50 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Data Upgrade Succeeded
5/13/2023 4:17:56 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Data Upgrade Succeeded
5/19/2023 8:50:20 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox4	Data Upgrade Succeeded
6/15/2023 1:11:13 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	Sandbox2	Replication Run Completed
5/13/2023 12:08:27 PM		c32415e1-054e-401b-ad32-3cdfa301b1d2	sandbox3	Replication Run Completed

Migration Events over time

Telemetry samples

<https://aka.ms/bctelemetrysamples>

 Search or jump to... /

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<> Code

BCTech / samples / AppInsights / KQL / Queries / ExampleQueriesForEachArea / CloudMigration.kql

Code Raw Copy Download Edit Dropdown Expand

```
1 // KQL samples - Cloud Migration
2 // Introduced in 22.1
3
4 // all signal related to Cloud Migration
5 traces
6 | where customDimensions.alCategory == 'CloudMigration'
7
8
9 // Companion table repair scheduled
10 traces
11 | where timestamp > ago(7d)
12 | where customDimensions has 'AL0000FXC'
13 | where customDimensions.eventId == 'AL0000FXC'
14 | project timestamp
15 , aadTenantId = customDimensions.aadTenantId
16 , clientType = customDimensions.clientType
17 , companyName = customDimensions.companyName
18 , environmentName = customDimensions.environmentName
19 , environmentType = customDimensions.environmentType
```

Alerts and email notifications

- You can create alerts and receive email notifications for the Cloud Migration events:
<https://learn.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-alert#low-code-alerting-with-kql>

- Most useful Cloud Migration events:

Event	eventId
Replication run completed	AL0000K0H
Replication run completed with failed tables	AL0000K0I
Data upgrade completed successfully	LC0176
Data upgrade failed	LC0177
Recovery from failed upgrade completed successfully	LC0178
Recovery from failed upgrade failed	LC0179

- More events here:
<https://learn.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-cloud-migration-trace>



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New upgrade strategy - Announcement



- Development and administration
 - New and planned
 - > Get started
 - > Administration
 - > Development
 - > Security, privacy, and compliance
 - > Performance
 - > Integration
 - ▼ Removed or deprecated features
 - > Deprecated features in the application
 - Deprecated features in the platform**
 - > Deprecated tables
 - > Deprecated code
 - > Business Central on-premises
- Download PDF

Changes in 2025 release wave 1 (version 26.0)

Direct cloud migration and data upgrade from version Dynamics Business Central 2019 (v.14.x) (removed)

Removed or Replaced?	Why?
Removed	<p>Direct cloud migration and data upgrade from version Business Central 2019 (v.14.x) is no longer supported. In order to upgrade (or cloud-migrate) data to v.26 or higher, follow one of these paths:</p> <ul style="list-style-type: none">• Pre-v.14 customers > upgrade to v.14 > upgrade to v.25 > upgrade or cloud migrate to v.26• V.14 to v.24 customers > upgrade to v.25 > upgrade or cloud migrate to v.26 <p><code>ObsoleteState = Removed</code> fields will be regularly cleaned up with a cadence of once every five major releases (referred to as the <i>stepping-stone</i> release). So after v.25, the next stepping-stone release will be v.30, and so on.</p>

<https://learn.microsoft.com/en-us/dynamics365/business-central/dev-itpro/upgrade/deprecated-features-platform>

Changes in 2024 release wave 2 (version 25.0)

Direct cloud migration and data upgrade from version Dynamics Business Central 2019 (v.14.x) (warning)

Removed or Replaced?	Why?
Removed	<p>Cloud migration tool and on-premises data upgrade toolkit supports one-step upgrade path from any version starting from Dynamics Business Central 2019 (v.14) to the latest version of Business Central.</p> <p>This is possible because none of the schema elements (tables and fields) deprecated over 11 major updates (from v.14 to v.25) were removed from the released databases to preserve backwards compatibility and enable more seamless transition for our customers to the latest versions on-premises and online.</p>



New upgrade strategy - Announcement

What:

We are stopping direct upgrade and cloud migration path from Dynamics Business Central 2019 (v.14.x)

When:

2025 release wave 1 (version 26.0)

Why:

We need to cleanup obsoleted fields and tables.

The ability to remove the Obsolete=Removed objects from the product will be added.

We are looking into moving the tables between extensions.



Removing elements from schema (Planned design)

v25

Table

Obsolete = Removed

Field

Obsolete = Removed

v26

Table

Obsolete = Removed

Field

Obsolete = Removed

Delete

Cleanup upgrade code



Removing elements from schema (Planned design)

v25

v26

Table

Obsolete = Removed



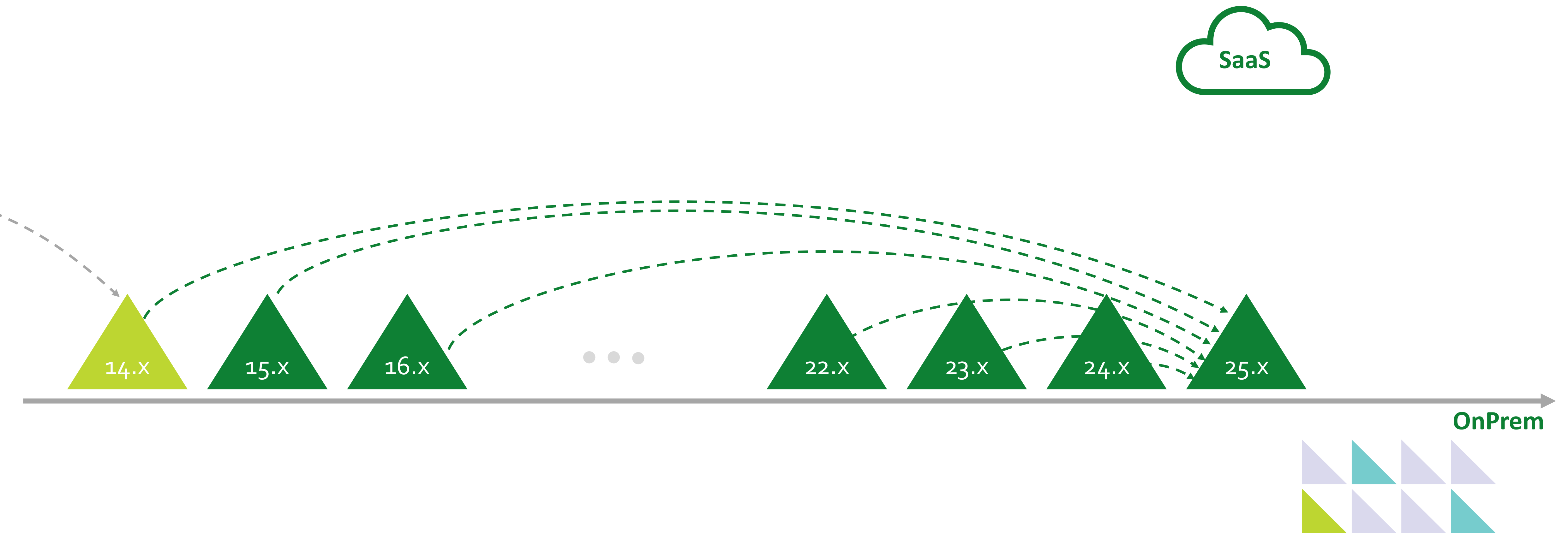
Field

Obsolete = Removed

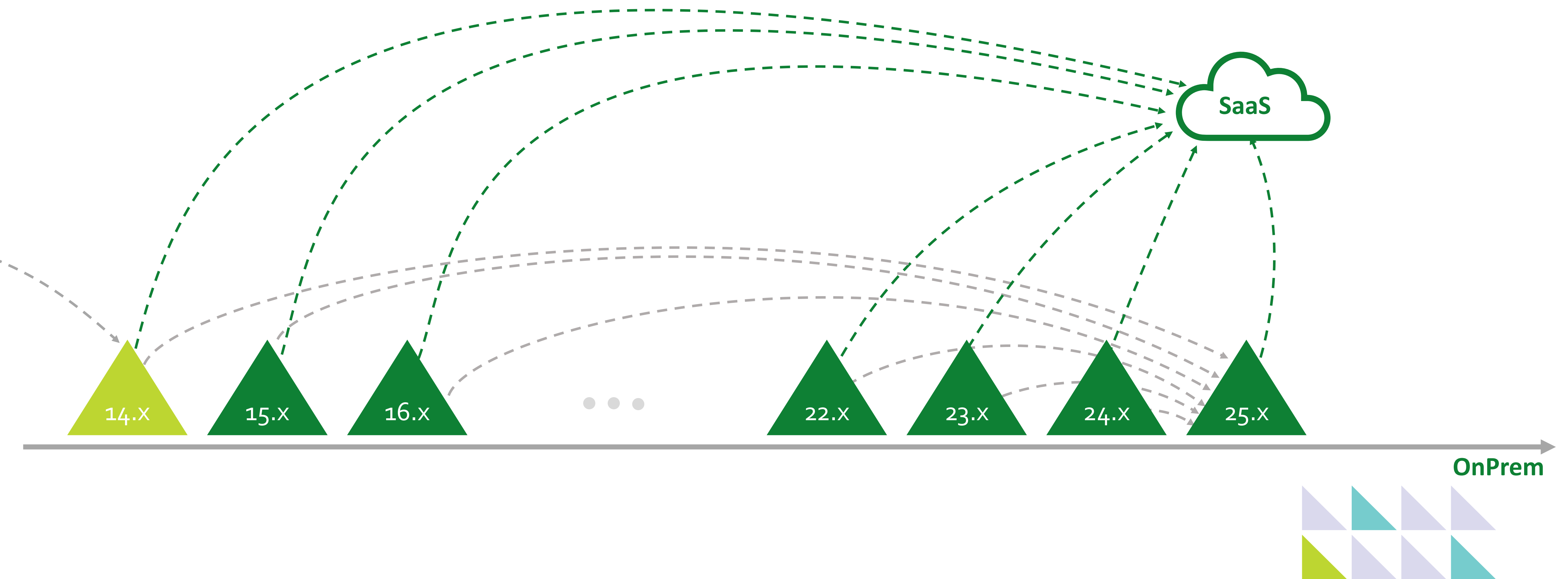
If fields or tables are marked as Obsolete=Removed
we will allow the delete. Compilation rules



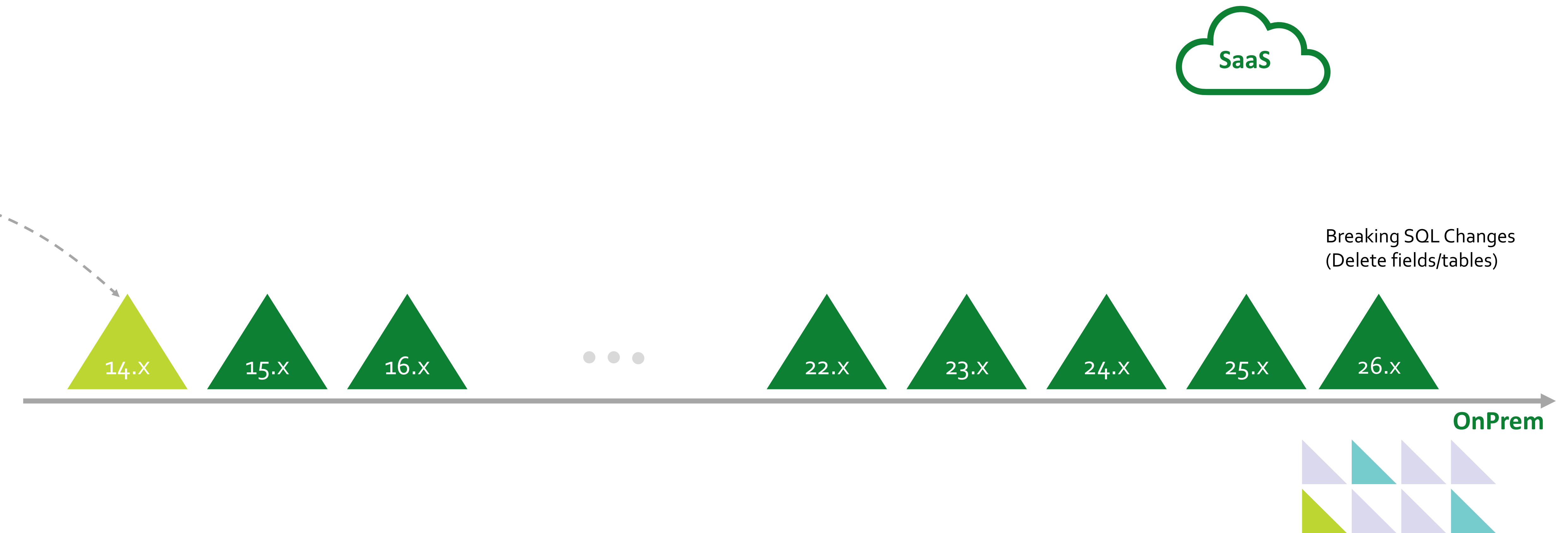
New upgrade strategy - Visualization



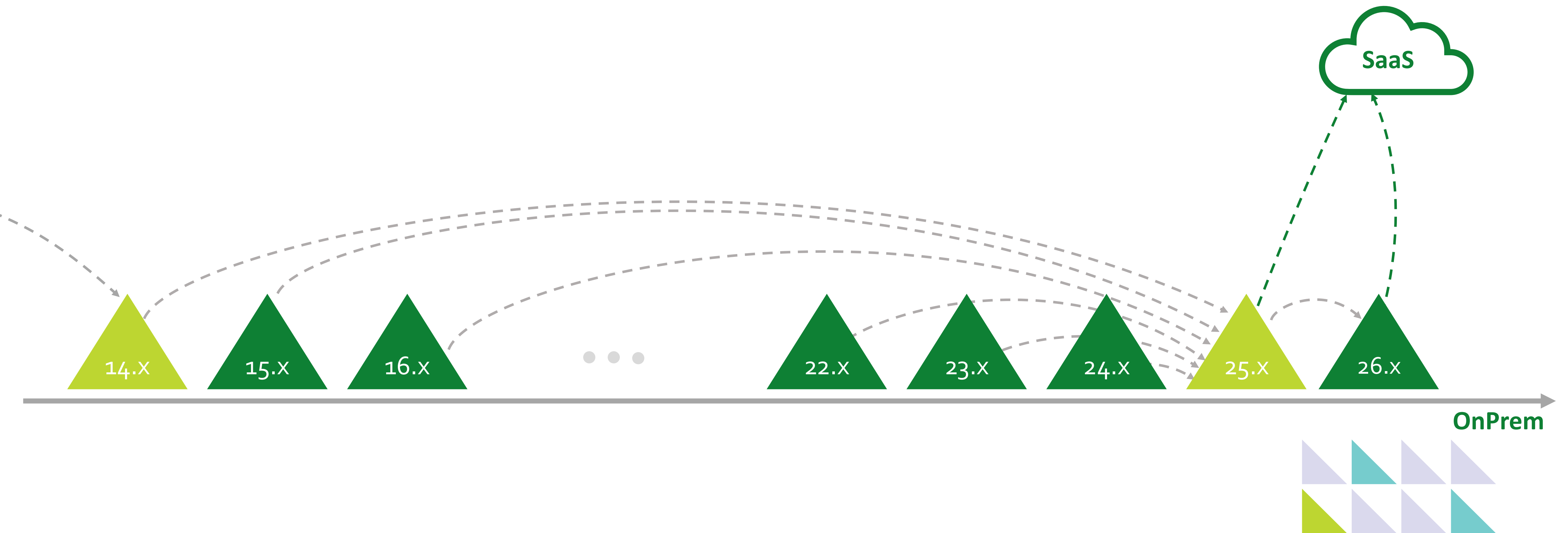
New upgrade strategy - Visualization



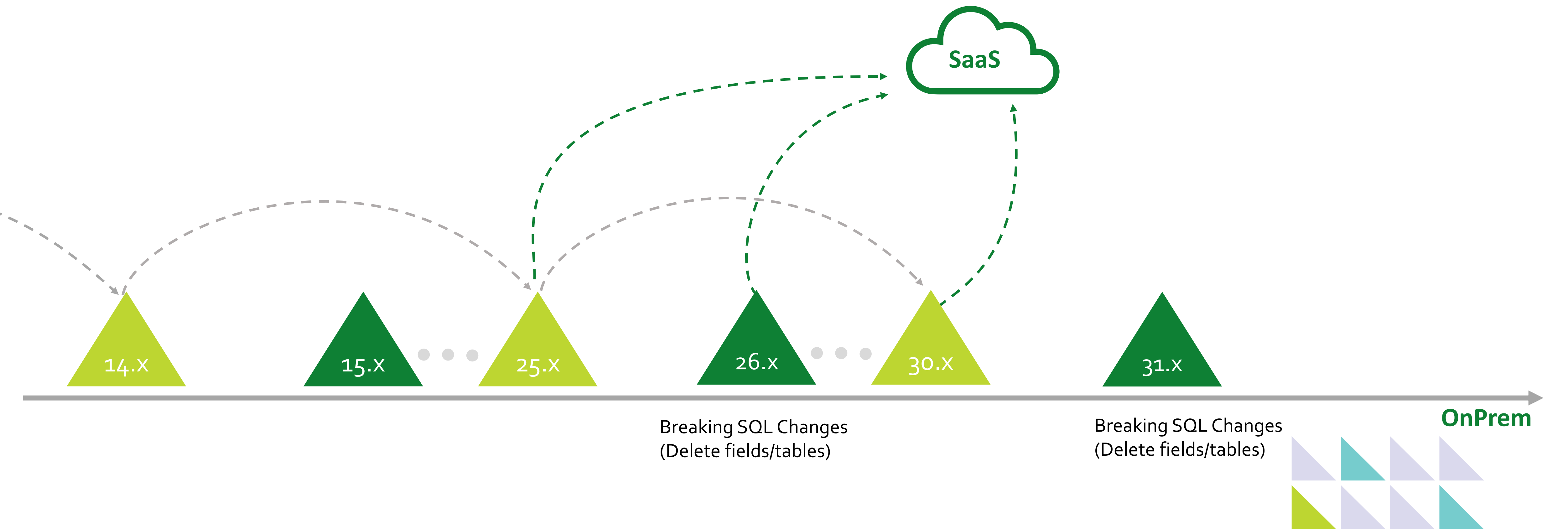
New upgrade strategy - Visualization



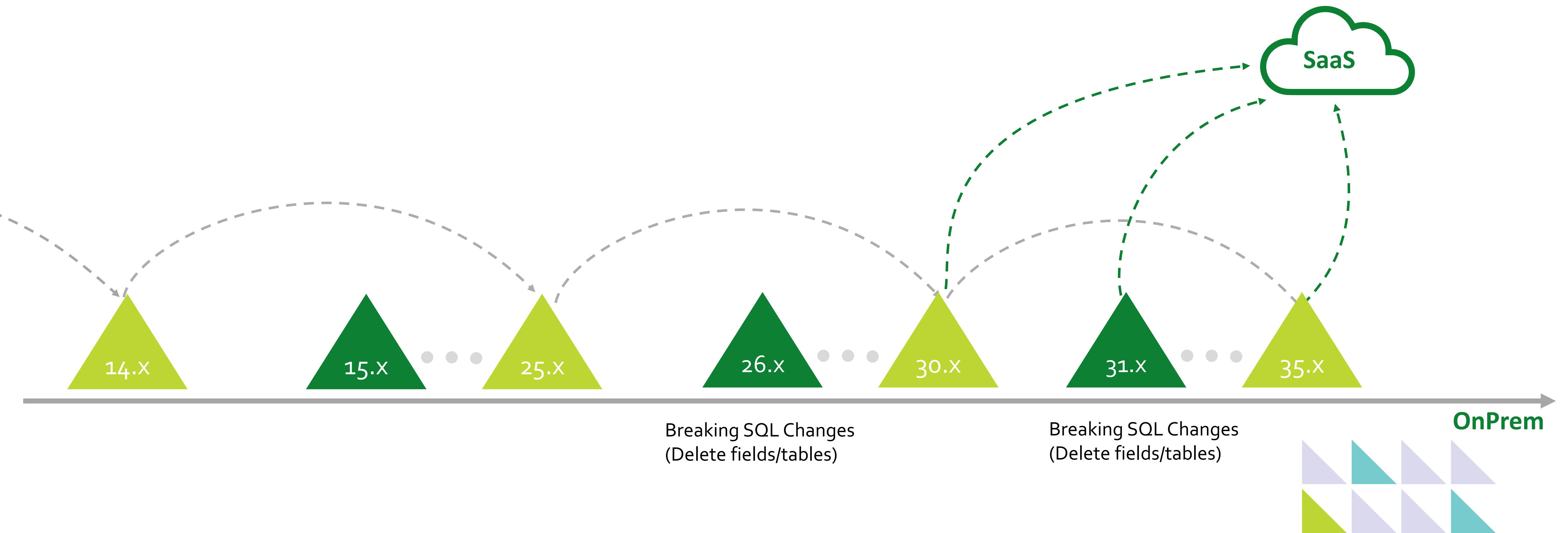
New upgrade strategy - Visualization



New upgrade strategy - Visualization



New upgrade strategy - Visualization



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Plans for the future

Specifying Company batch size for replication

Include / Exclude the tables from the cloud migration

Improve the handling of Per Database tables (don't replace entire table)

Disable assigning Intelligent Cloud permissions to all users

New UI – Add Warnings

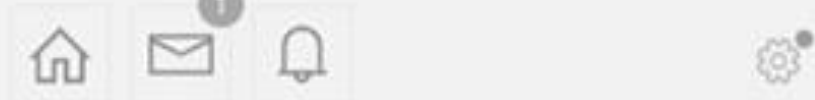
Cancel ongoing replication



Summary

- Consider migrating from Azure SQL (or strong OnPrem setup)
- For delta sync - set longer Change Tracking retention period
- Consider Diagnostic Runs to quickly test future replications
- Cloud migration tooling can support large tenants
- Move customized fields with Migration table mapping
- Setup telemetry





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Edwin Keukens



Cloud Migration

This group is for questions and information regarding managing migrations to Business C... ▾

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INFO

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Forum for discussing Business Central Cloud Migration tooling, scenarios, capabilities, troubleshooting etc.

GROUP ACTIONS

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Q&A

Any Questions?

**You can find us at the expo
Today 18-19h**



Thank
You!

