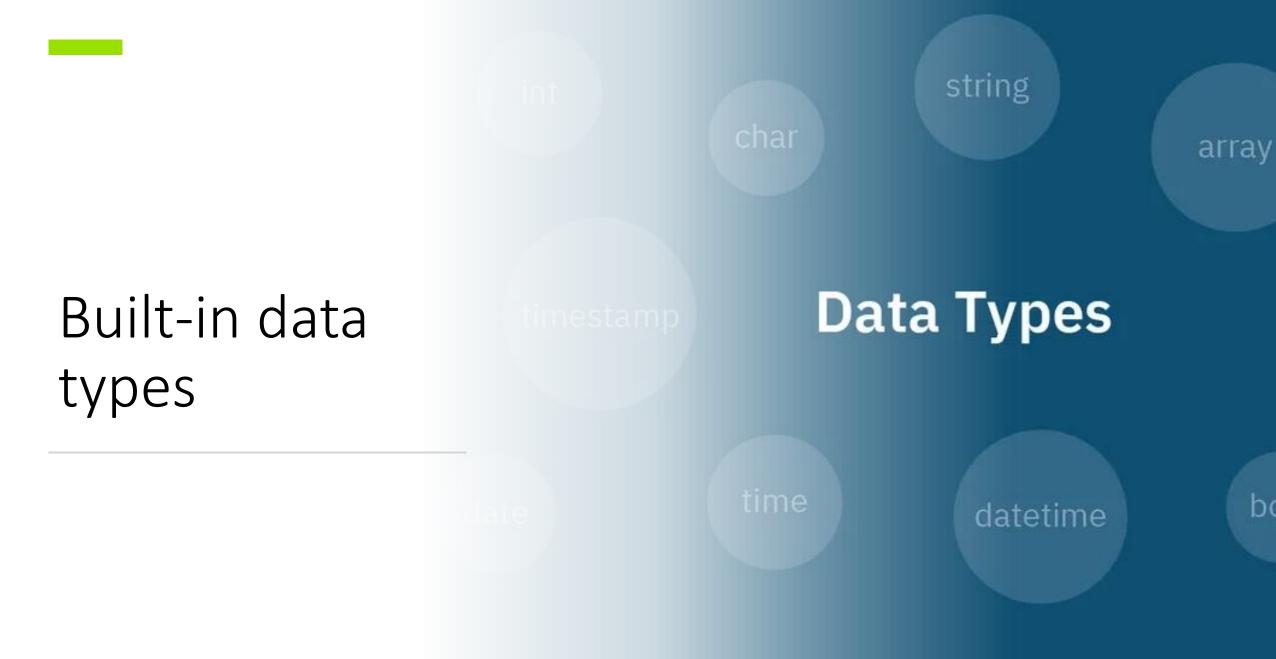


## Techniques for optimizing Dynamics 365 Business Central

Milan Milinčević









Optimized for performance and server resource consumption

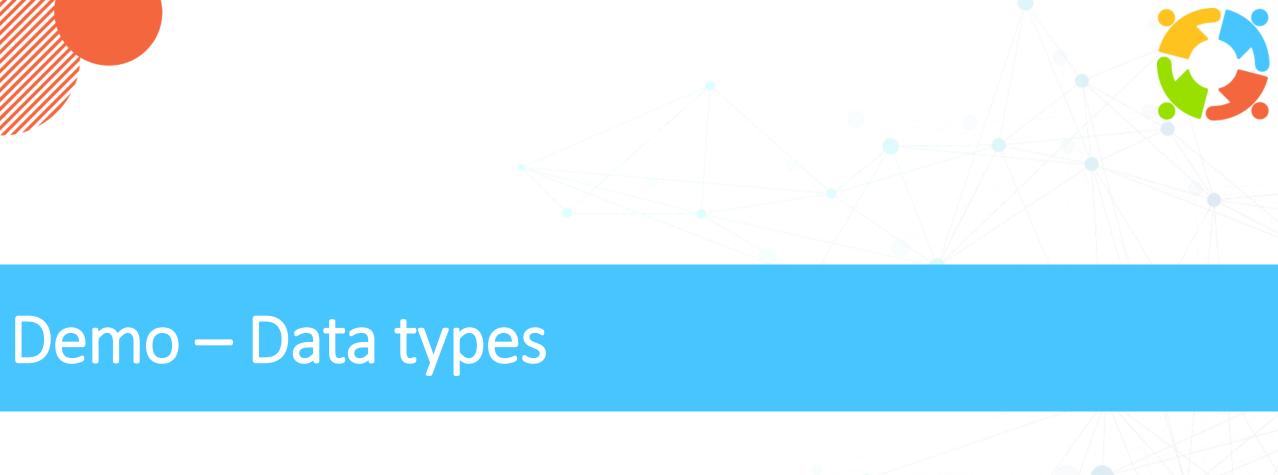
Text builder

Media & Media Set

Dictionary

List







# Event recorder

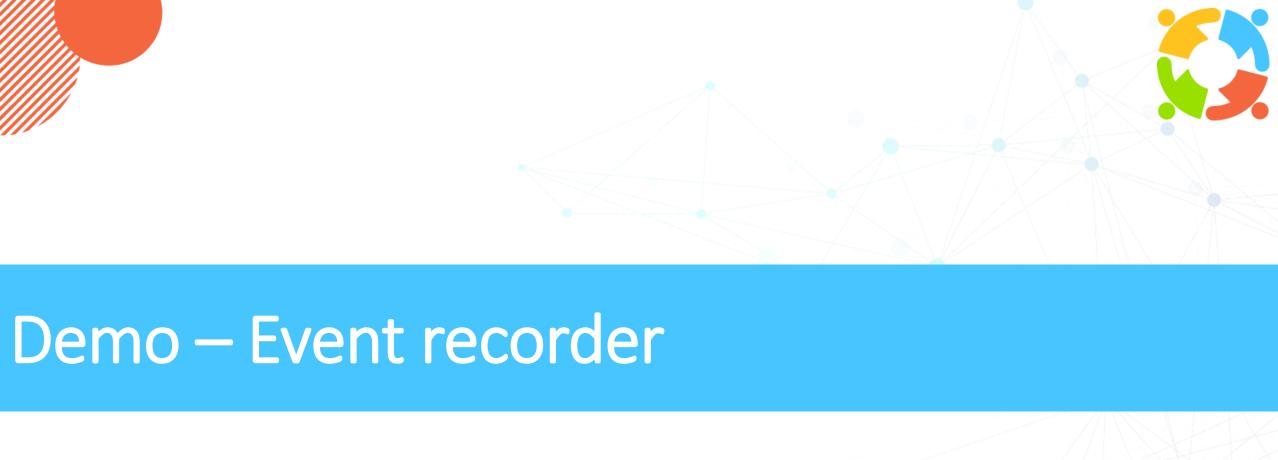


#### **Event recorder**

- Subscribe to events to extend the functionality
- Record events of some business process
- Captures events from the same session

#### **Record Events**

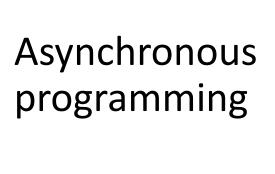
	Event Type 🕇	Hit Count	Object Type 🕇	Object Name	Event Name 1
	irigger Everii	ı	raye	Sales IIIVOICE SUDI	OnanterdetCurrecordevent
	Trigger Event	1	Page	Sales Invoice Subf	OnAfterGetRecordEvent
	Trigger Event	1	Page	Sales Invoice Subf	OnAfterGetRecordEvent
	Trigger Event	1	Page	Sales Invoice Subf	OnAfterGetRecordEvent
	Trigger Event	1	Page	Sales Invoice Subf	OnAfterGetRecordEvent
	Custom Event	1	Page	Sales Invoice Subf	On After Update Editable On Row
	Custom Event	1	Page	Sales Invoice Subf	OnBeforeCalculateTotals
	Custom Event	1	Page	Sales Invoice Subf	OnBeforeUpdateTypeText
:	Custom Event	1	Page	Sales Invoice Subf	OnBeforeUpdateTypeText
	Custom Event	1	Page	Sales Invoice Subf	OnBeforeUpdateTypeText
	Custom Event	1	Page	Sales Invoice Subf	OnBeforeUpdateTypeText
	Custom Event	1	Page	Sales Invoice Subf	OnBeforeUpdateTypeText
	Trigger Event	6	Page	G/L Posting Preview	OnAfterGetRecordEvent
	Trigger Event	1	Page	G/L Posting Preview	OnOpenPageEvent
					7/1 2/2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

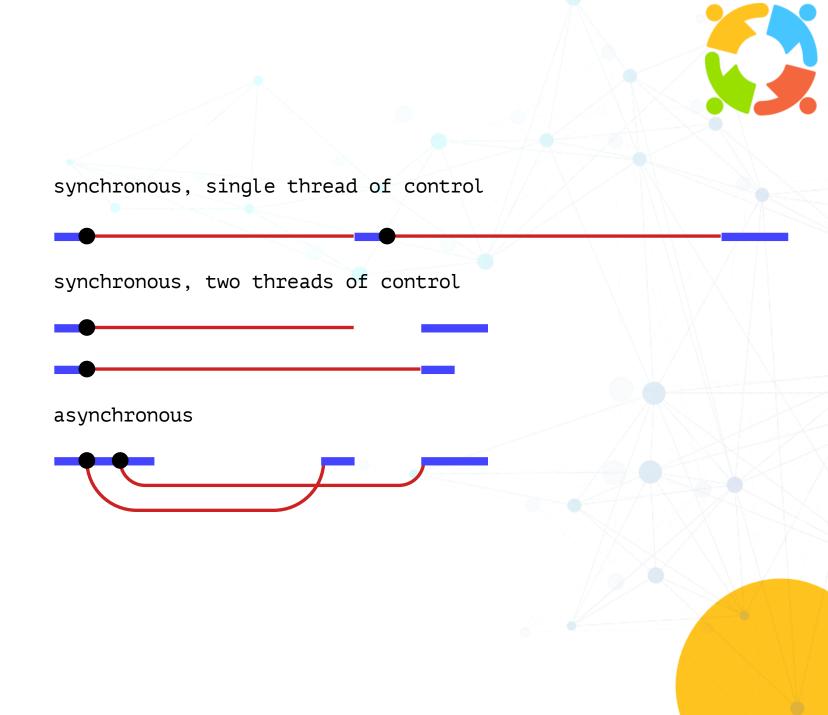




### onous vs. Asynch

#### Async in BC





#### Async/parallel in BC

- Moving focus from UI to background
- Different ways to achieve

Page Background task

StartSession

Task

Job Queue

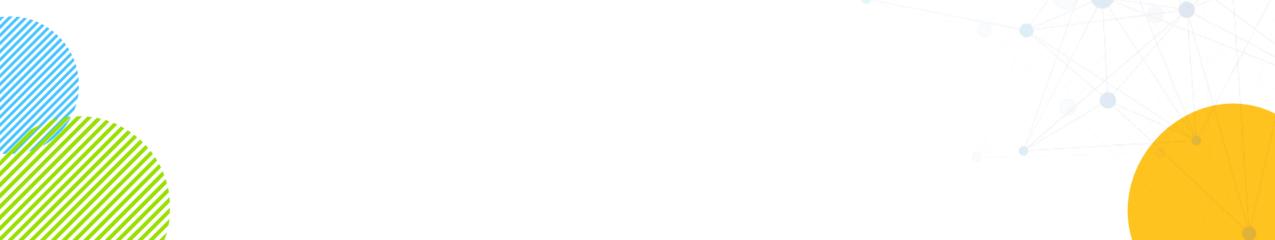


#### Limits



Description	Limit	Description	Limit
Background Session max concurrency	10	Child sessions max concurrency	5
Background session max queue length	100	Scheduled tasks max concurrency	5





# Included fields

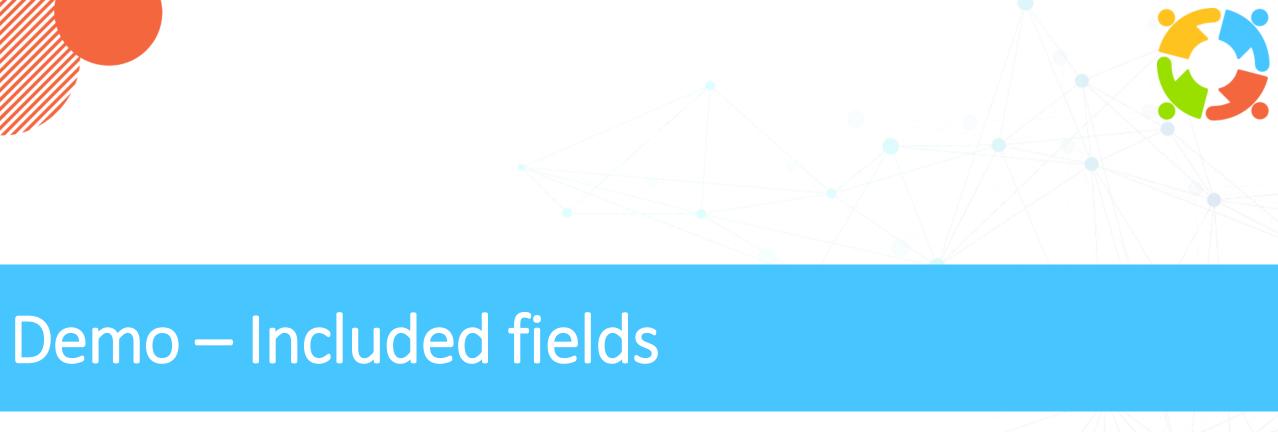




"When an index contains all the columns needed to satisfy a query, it is called a covering index <sup>1</sup>."

#### Included fields

```
keys
  // Before
  key(K1; ItemNo, LastModifiedDate, Description, Description2)
  // After
  key(K2; ItemNo, LastModifiedDate)
    IncludedFields = Description, Description2;
```







# Partial records



#### Partial records

- Loading subset of fields from database
- Avoid JOIN
- ☑ JIT loading

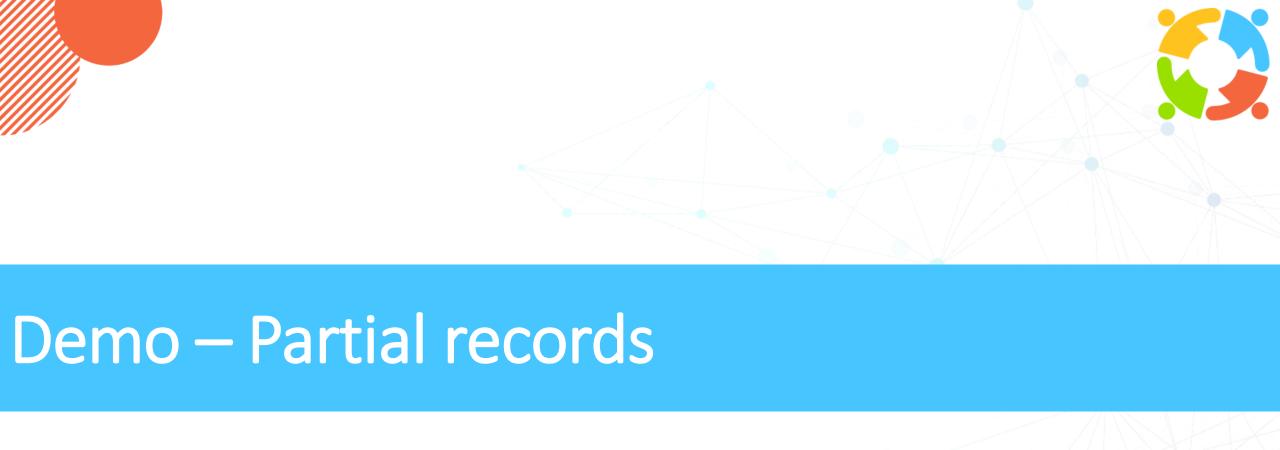
SetLoadFields

AddLoadFields

AreFieldsLoaded

LoadFields

SetBaseLoadFields





#### Without SetLoadFields

```
SELECT "50100"."timestamp", "50100"."Entry No_", "50100"."Description", "50100"."Description 2", "50100"."Amount ", "50100"."Amount 2", "50100"."Amount 3", "50100"."Amount 5", "50100"."Start Date", "50100"."Color", "50100"."Color 2", "50100"."Color 3", "50100"."Car No_", "50100"."Car No_", "50100"."Car No_", "50100"."SsystemCreatedAt", "50100"."SsystemCreatedAt", "50100"."$systemCreatedBy", "50100"."$systemModifiedAt", "50100"."$systemModifiedBy" FROM "CRONUS".dbo."CRONUS Danmark A_S$Demo$4f09c3af-fe51-4b4d-ade3-f2aee1c28a 06" "50100" WITH(READUNCOMMITTED) JOIN "CRONUS".dbo."CRONUS Danmark A_S$Demo$66122ea4-ae42-4836-88d1-aa3a3e123a8e" "50100_e7" WITH(READUNCOMMITT DO) ON ("50100"."Entry No_" = "50100_e7"."Entry No_") WHERE ("50100"."Car No_"=@0) ORDER BY "Entry No_" ASC OPTION(FAST 50)
```

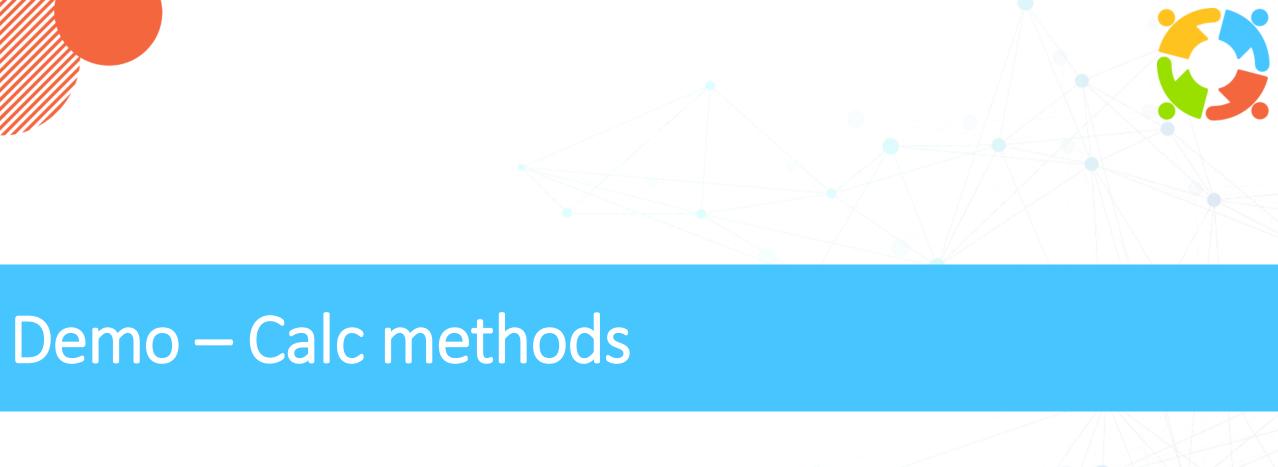
#### With SetLoadFields

SELECT "50100"."timestamp","50100"."Entry No\_","50100"."Amount","50100"."Start Date","50100"."Car No\_","50100"."\$systemId","50100"."\$systemCrea

SELECT "50100"."timestamp", "50100"."Entry No\_", "50100"."Amount", "50100"."Start Date", "50100"."Car No\_", "50100"."\$systemId", "50100"."\$systemCreatedAt", "50100"."\$systemModifiedBy" FROM "CRONUS".dbo."CRONUS Danmark A\_S\$Demo\$4f09c3af-feb1-4b4d-ade3-f2aee1c28a06" "50100" WITH(READUNCOMMITTED) WHERE ("50100"."Car No\_"=@0) ORDER BY "Entry No\_" ASC OPTION(FAST 50)

# Calc methods







### Tri-state locking

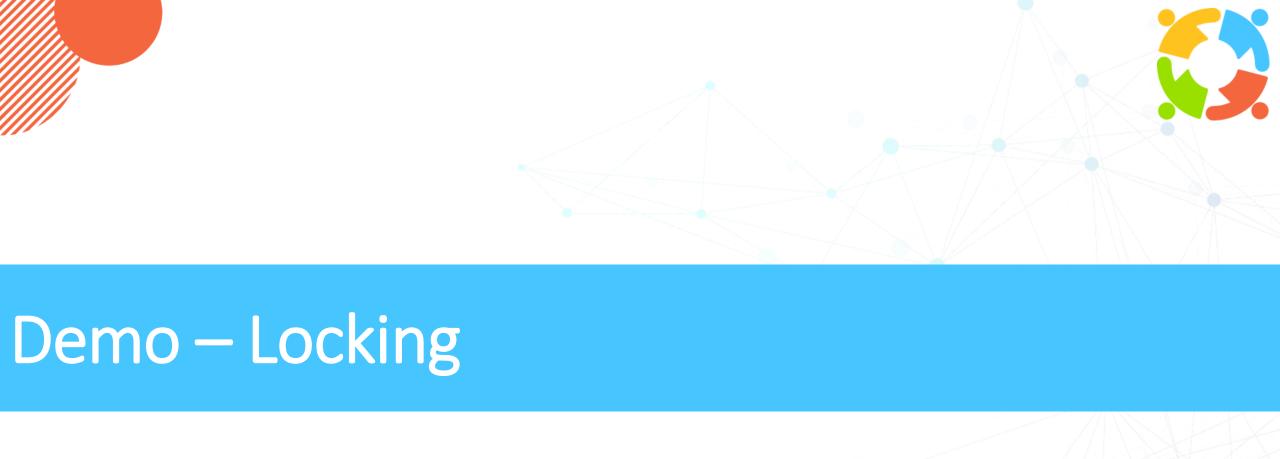


#### Locking - table hints

READUNCOMMITED

READCOMMITED

UPDLOCK





#### BC 22 and before

```
local procedure TwoStateLocking()
var
   Item: Record Item;
begin
   Item.FindFirst(); <= READUNCOMMITED</pre>
   Item.Description := 'demo desc';
   Item.Modify();
   DoCalculationsWithNewItem();
end;
1 reference
local procedure DoCalculationsWithNewItem()
var
   Item: Record Item;
begin
                       <= UPDLOCK
   Item.FindLast();
    //some calculations
end;
```

#### BC 23 and after

```
local procedure TriStateLocking()
var
    Item: Record Item;
begin
                       <= READUNCOMMITED
    Item.FindFirst();
    Item.Description := 'demo desc';
    Item.Modify();
   DoCalculationsWithNewItem();
end;
1 reference
local procedure DoCalculationsWithNewItem()
var
    Item: Record Item;
begin
    Item.FindLast();
                        <= READCOMMITED
    //some calculations
end;
```

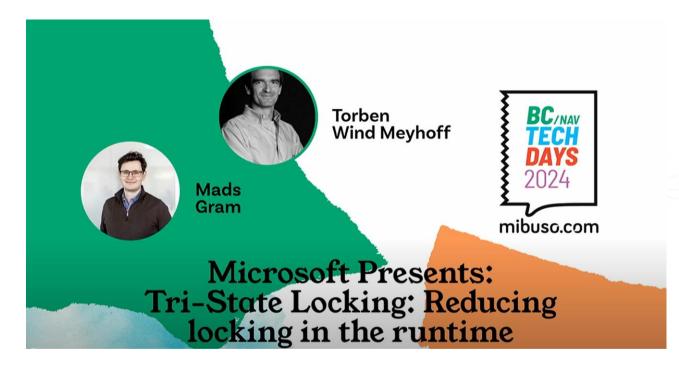




eature Management: All $\checkmark$ $\rlap{/}$ $\rlap{/}$ $\rlap{/}$ $\rlap{/}$ Edit	: List						Ø 7 ≣
Feature		Automatically enabled from	Automatically enabled from version	Enabled for	Get started	Current Company Status	Update Start Date/Time
Feature Update: Replace the existing EU 3-Party Trade Purch	Learn more	2025 Wave 1 (from April to Se	26.0	None	_	Disabled	
Feature Update: Enable use of new extensible exchange rate	Learn more	2025 Wave 1 (from April to Se	26.0	None	_	Disabled	
Feature Update: Enable use of new extensible invoice postin	Learn more	2025 Wave 1 (from April to Se	26.0	None	_	Disabled	
Feature Update: Enable use of G/L currency revaluation	Learn more	2025 Wave 2 (from October 20	27.0	None	_	Disabled	
Feature: Convert user group permissions	Learn more	2024 Wave 2 (from October 20	25.0	All Users	_	Enabled	
Feature Update: Enable use of package tracking in physical i	Learn more	2025 Wave 2 (from October 20	27.0	None	_	Disabled	
Feature Update: Use new communication texts for reminder	Learn more	2025 Wave 2 (from October 20	27.0	None	_	Disabled	
Feature Update: Replace the existing Intrastat functionality	Learn more	2024 Wave 2 (from October 20	25.0	None	_	Disabled	
Feature: Enable using SAF-T Audit Files Exports	Learn more	2025 Wave 1 (from April to Se	26.0	None	_	Disabled	
Feature Update: New sales pricing experience	Learn more	2025 Wave 1 (from April to Se	26.0	None	_	Disabled	
Feature Update: Auto-save with every field change	Learn more	2024 Wave 2 (from October 20	25.0	All Users	Try it out	Enabled	
Feature: Enable using bulk operations for Shopify connector	Learn more	2025 Wave 1 (from April to Se	26.0	None	_	Disabled	
Feature Update: Use new customer and item templates in S	Learn more	2024 Wave 2 (from October 20	25.0	None	_	Disabled	
Feature: Enable Tri-State locking in AL	Learn more	2024 Wave 2 (from October 20	25.0	All Users V		Enabled	7

#### Find out more!

- https://bcinternals.com/posts/tri-state-locking/
- https://youtu.be/Z1avFd77I18







### Q & A



### Thank you!