

Server and database

https://events1.social27.com/msdyn365bclaunchevent2021w1/agenda/player/95482

Agenda

Showcase the new features from:

- AL runtime
- Web service stack
- Database stack
- Reporting
- Security
- Telemetry

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AL runtime

AL runtime

SQL

SQL Server

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Background sessions now have a timeout

New server settings

- DefaultTaskSchedulerSessionTimeout*
- DefaultStartSessionTimeout*

Can be changed dynamically (on-premises)

Online: set to 12 hours

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Set timeout from AL (StartSession and CreateTask)

```
1 local procedure MyProcedure()
2 var
3   reccl: Record MyTable;
4   dur: Duration;
5   sid: Integer;
6 begin
7   reccl.FindFirst();
8   dur := CREATEDATETIME(Today(), @900000) - CREATEDATETIME(Today(), @800000); // One hour...
9   StartSession(sid, 50102, CompanyName, reccl, dur);
10 end;
```

```
18 local procedure MyProcedure()
19 var
20   reccl: Record MyTable;
21   dur: Duration;
22 begin
23   reccl.FindFirst();
24   dur := CREATEDATETIME(Today(), @900000) - CREATEDATETIME(Today(), @800000); // One hour...
25   TaskScheduler.CreateTask(50102, 50103, true, CompanyName, CurrentDateTime, reccl.RecordId, dur);
26 end;
```

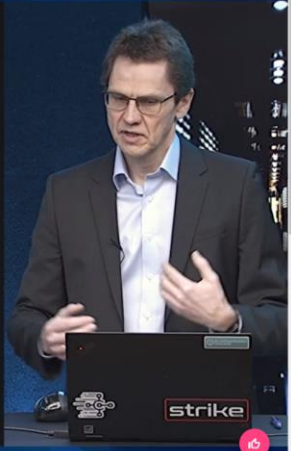
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Limit recursion level in AL session creation

New server setting
MaximumSessionRecursionDepth

Can be changed dynamically (on-premises)

Online: set to 14



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.net add-ins

We are (slowly) moving the server to .net standard

Get ready for NST on .net standard/core

Start conversion of your (on-premises) .net add-ins now...

Move to services where possible



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Check out the breaking changes page in docs

Changes in 2021 release wave 1

.NET add-ins not using .NET Standard (Warning)

In Business Central 2021 release wave 1, a warning will be shown if you include .NET add-ins that are compiled with .NET Framework and not with .NET Standard. The capability of using .NET add-ins compiled with .NET Framework will be removed in a later release.

Moved, Removed, or Replaced?	Why?
Replaced	.NET Framework has been superseded by .NET Standard. .NET add-ins compiled with .NET Framework will be deprecated as of Business Central 2021 release wave 1, but the feature won't be removed in this release. It's recommended that .NET add-ins are migrated to .NET Standard as soon as possible.



Speaker: A man in a blue suit and glasses, standing next to a laptop with logos for .NET, AL, and SQL.

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Web service stack





Diagram: A central blue cloud icon with several blue lines extending outwards to circular nodes, representing a web service stack.



Speaker: A man in a blue suit and glasses, standing next to a laptop with logos for .NET, AL, and SQL.

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Web service performance: 25% faster on 17

AvgExecutionTime and Count by PlatformVersion

PlatformVersion	AvgExecutionTime (bn)	Count
16.0.159884	0.50bn	388
17.0.17020	0.18bn	279
17.0.18204	0.22bn	254
17.0.19353	0.76bn	291
17.0.20458	0.61bn	270
17.0.21485	0.41bn	278

PlatformVersion

strike

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API performance: 5-6x faster

AvgExecutionTime and Count by PlatformVersionName

PlatformVersionName	AvgExecutionTime (M)	Count
16.5	27M	549
17.0	20M	251
17.1	119M	20M
17.2	88M	100
17.3	70M	111
17.4	78M	90

PlatformVersionName

strike

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SOAP Performance: No improvement

PlatformVersionName	AvgExecutionTime	Count
16.5	126	33M
17.0	123	19M
17.1	162	16M
17.2	146	54M
17.3	180	30M
17.4	199	29M

strike

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Why are API pages faster

- Tailored to access through OData rather than UI
 - No factboxes
 - No UI specific code
- Partial records enabled by default
- Investment in performance improvements

strike

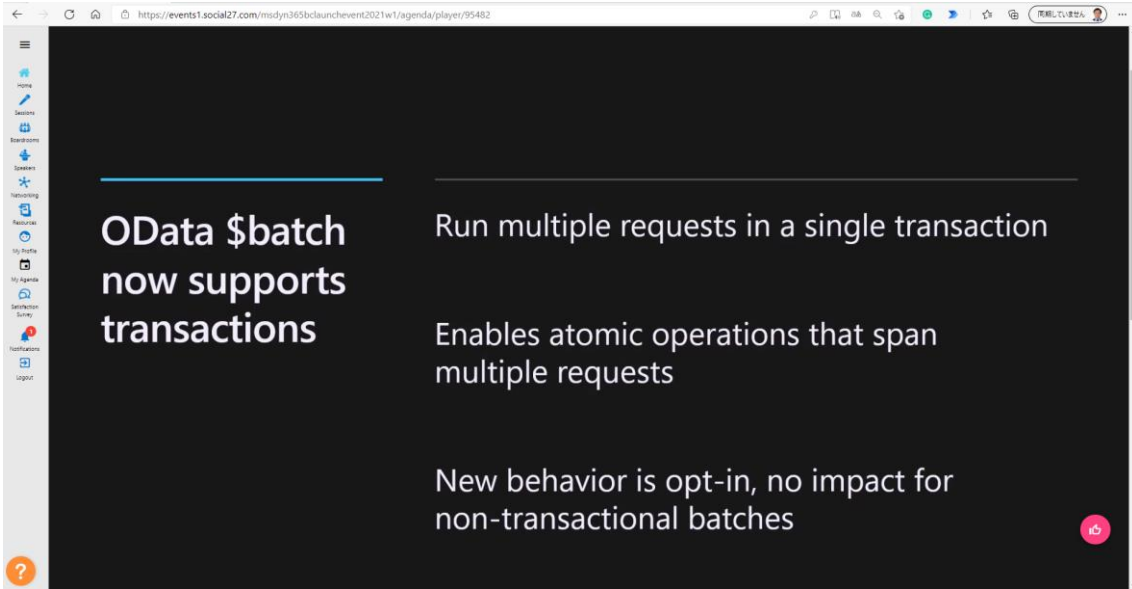
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OData \$batch now supports transactions

Run multiple requests in a single transaction

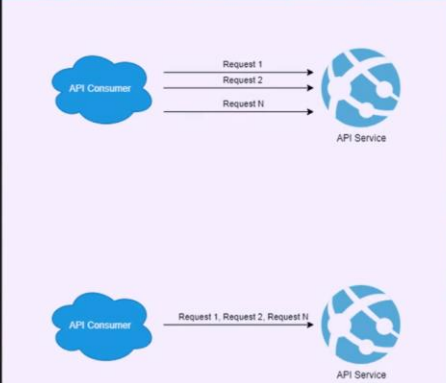
Enables atomic operations that span multiple requests

New behavior is opt-in, no impact for non-transactional batches



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OData request batching



The diagram illustrates the concept of OData request batching. It is divided into two parts. The top part shows an 'API Consumer' (represented by a blue cloud) sending three separate requests, labeled 'Request 1', 'Request 2', and 'Request N', to an 'API Service' (represented by a blue globe icon). The bottom part shows the same 'API Consumer' sending a single batched request, labeled 'Request 1, Request 2, Request N', to the 'API Service'. To the right of the diagram, a presenter in a blue suit is visible, gesturing towards the screen. A laptop in the foreground displays 'SQL' and 'SQL Injection'.

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OData support for collection of complex types

OData stack now support properties of type Collections(X) for complex types X

Remark:
Complex types only work on-prem today


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Triggers in API pages always called

Supported in schema version 2.0

Triggers in API pages are always called if part of the payload


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OData deep inserts

Supported in schema version 2.0

Example: Posting sales order with multiple lines and dimensions




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OData API V2.0 requests use schema version 2.0

Any calls on the route `"/api/v2.0"` gets newer platform version

Partners must still use `$schemaversion=2.0` to uptake new platform



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OData v3 removed

Support for OData v3 is removed

Use telemetry to determine if your environment(s) are affected

The slide features a dark blue background with white text. On the right side, there is a video feed of a man in a blue suit and glasses, standing behind a laptop with 'SQL' logos. A navigation sidebar is visible on the left, and a search bar is at the top right.

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SOAP endpoints on UI pages deprecated

Support for SOAP endpoints on UI pages is up for deprecation

Will be removed from the product in a later release

The slide features a dark blue background with white text. On the right side, there is a video feed of the same man in a blue suit and glasses, standing behind a laptop with 'SQL' logos. A navigation sidebar is visible on the left, and a search bar is at the top right.

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


Exclude Flow fields and fields outside repeater from ETag (OData)


New strategy for ETag calculation

Can now exclude fields outside of the repeater and non editable flow fields



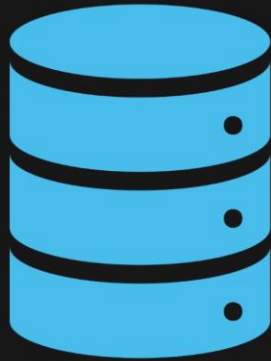
Two new flags for UI Pages exposed as OData Web Services




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Data stack




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Add keys (indexes) to the base app

- Use table extension to add keys to another table
- Possible to create a key where ALL fields are in the parent table
- Keys cannot span across base table + extension

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Index example

```
tableextension 50100 CustomerExt extends Customer {
  keys{
    key(CustKey; "Responsibility Center"){
      MaintainSiftIndex = true;
      SumIndexFields = "Budgeted Amount";
    }
  }
}
```

https://docs.microsoft.com/en-us/sql/relational-databases/sql-server-index-design-guide?vi...

SQL Docs Overview Install Secure Develop Administer Analyze Reference Download SQL Server

Docs / SQL / Internals & Architecture / Index Architecture & Design

Version: SQL Server 2019

SQL Server Index Architecture and Design Guide

01/19/2019 • 64 minutes to read

Applies to: SQL Server (all supported versions) Azure SQL Database Azure SQL Managed Instance Azure Synapse Analytics Parallel Data Warehouse

Poorly designed indexes and a lack of indexes are primary sources of database application bottlenecks. Designing efficient indexes is paramount to achieving good database and application performance. This SQL Server index design guide contains information on index architecture, and best practices to help you design effective indexes to meet the needs of your application.

This guide assumes the reader has a general understanding of the index types available in SQL Server. For a general description of index types, see [Index Types](#).

This guide covers the following types of indexes:

- Clustered
- Nonclustered
- Unique

Is this page helpful? Yes No

In this article

- Index Design Basics
- General Index Design Guidelines
- Metadata
- Clustered Index Design Guidelines
- Nonclustered Index Design Guidelines
- Unique Index Design Guidelines
- Filtered Index Design Guidelines

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Database system requirements

Business Central Database Components for SQL Server

The following table shows the minimum system requirements for Business Central database components for SQL Server.

Specification	Requirement
Supported operating systems	<ul style="list-style-type: none"> Windows 10 Pro, Enterprise, or Education (64-bit edition) Windows Server 2019 (Datacenter, Standard) Windows Server, version 1809 or later (Datacenter, Standard) Windows Server 2016 (Datacenter, Standard) <p>For information about the supported versions and their lifecycles, see Windows lifecycle fact sheet.</p>
Hardware resources	For more information, see Hardware and Software Requirements for Installing SQL Server . From this page, you can also access requirements for other versions of SQL Server.
SQL Server	<ul style="list-style-type: none"> Microsoft SQL Server 2019 Express, Standard, or Enterprise Microsoft SQL Server 2017 Express, Standard, or Enterprise Microsoft SQL Server 2016 Express, Standard, or Enterprise (Service Pack 2 or later) Azure SQL Database Managed Instance, Basic, Pool, or Single Database
Service Packs and Cumulative Updates	Unless explicitly stated, all released Service Packs and Cumulative Updates of the above Microsoft SQL Server versions are supported. It's recommended to always be on the latest released Service Pack and Cumulative Update.
Additional information	Business Central Setup installs the following software if it's not already present on the target computer: <ul style="list-style-type: none"> SQL Server 2016 Express (64-bit edition) <p>If the operating system on the target computer doesn't support SQL Server 2016 Express, Setup displays a pre-requisite warning. In this case, you should exit Setup. Then, update the operating system on the computer to one</p>


Business Central Database Components

The following table shows the minimum system requirements for Business Central database components.

Specification	Requirement
Hardware resources	For more information, see Hardware and Software Requirements for Installing SQL Server . From this page, you can also access requirements for other versions of SQL Server.
Database	Business Central supports database compatibility levels 150, 140, or 130. See https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-database-transact-sql-compatibility-level?view=sql-server-ver15 for details on SQL Server Database compatibility levels.
Service Packs and Cumulative Updates	Unless explicitly stated, all released Service Packs and Cumulative Updates of the above Microsoft SQL Server versions are supported. It's recommended to always be on the latest released Service Pack and Cumulative Update.
Additional information	Business Central Setup installs the following software if it's not already present on the target computer: <ul style="list-style-type: none"> SQL Server 2016 Express (64-bit edition) <p>If the operating system on the target computer doesn't support SQL Server 2016 Express, Setup displays a pre-requisite warning. In this case, you should exit Setup. Then, update the operating system on the computer to one that does support SQL Server 2016 Express and run Setup again.</p>

Before Now (2021 release wave 1)


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Database Compatibility Certification

No more system requirements on database

- Server (SQL Server 2016, 2017, 2019)
- Azure SQL (single database, elastic pool, managed instance, serverless, hyperscale)
- Operating system (Windows 10, Server)
- Virtualization stack (Hyper-v, WMWare, ...)
- Container stack (...)




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Tuned the data stack

Removed un-needed ISNULL calls from generated SQL statements

- SELECT clause
- WHERE clause



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Partial records on UI pages (preview)


In SaaS 18.0 enabled on

- Vendor Lookup
- Customer Lookup
- Item Lookup



On-premises: wait until we are 110% certain that it is stable



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Reporting



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Our reporting stack has evolved



2019 release wave 2

- Print extensibility
- Server-side rendering of reports

2020 release wave 2

- Request page stays open for previews
- Configurable report limits
- Partial records support
- New Report property *AllowScheduling*

2020 release wave 1

- Server settings for max report execution time
- Using read-only replicas
- Email print extension

2021 release wave 1

- Ability to select printer on the request page
- Report extensibility
- Microsoft Universal Print extension
- One-dimensional barcode fonts and encoding

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Report performance: 3x-6x faster on 17.0

Two types of analysis of report execution in 16 vs 17. For two Fridays one month apart (October 23 and November 20), I looked at report execution data.

In the **first** analysis, I just did a summarize avg and median by major version on the two dates

In the **second** analysis, I looked at tenants that were on 16 in October and were on 17 in November. For each tenant, I recorded MS reports that was executed on both days. Then I summed up all execution time and execution count across the population and compared averages.

Result of analysis 1:

October data

major	count	median_exe_time	avg_exe_time
16	141503	43,2	2501,51
17	12772	15,2	1249,88

November data

major	count	median_exe_time	avg_exe_time
16	72026	29,95	3251,01
17	403263	6,90	792,86

Improvement 16 vs 17


median: 43,2/6,90 = 6x

avg: 2501,51/792,86 = 3x

Result of analysis 2:


report_time_in_sec_16	report_time_in_sec_17	num_reports_16	num_reports_17	avg_sec_16	avg_sec_17	improvement
94917,62	77809,72	76598	307923	1,24	0,25	5x

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Improvements in memory consumption for large RDLC reports

- Improved the streaming algorithm between server components
- 50% reduction of memory footprint for large reports




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New metadata AllowScheduling on a report

- Some reports give different results when run as 'Preview' vs scheduled
- Due to triggers in the request page being used to fill in values



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AllowScheduling and the request page

Filter: Integer

× Number 0.650

+ Filter...

Advanced >

Send to... Print Preview Cancel

AllowScheduling = true

Filter: Integer

+ Filter...

Advanced >

Send to... Print Preview & Close Cancel

AllowScheduling = false

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AllowScheduling and the request page

ReportFieldOutsideDataItem

Handled by the browser

Filter: Item

Choose file type...

PDF Document

Microsoft Word Document

Microsoft Excel Document

OK Cancel

Filter: Integer

+ Filter...

Advanced >

Send to... Print Preview & Close Cancel

AllowScheduling = true

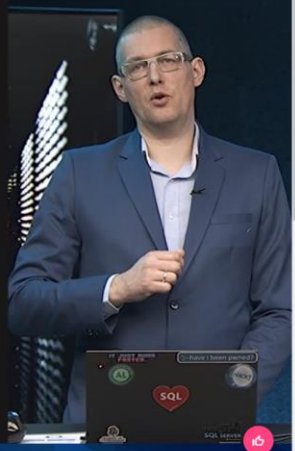
AllowScheduling = false

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Report extensibility

In an extension, you can

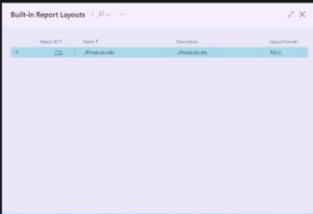
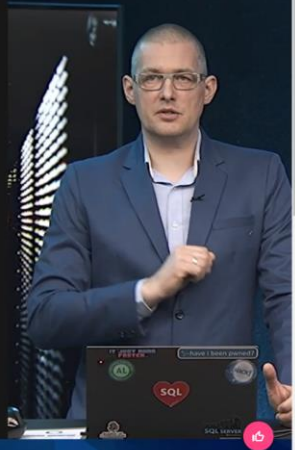
- Extend the dataset
- Add a layout




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Report Layout Selection (RDLC)

Report ID	Report Name	Report Type	Layout Name
714	Inventory - Vendor Purchases	RDLC (built-in)	Default
715	Price List	RDLC (built-in)	Default
716	Inventory Cost and Price List	RDLC (built-in)	Default
717	Inventory Reorders	RDLC (built-in)	Default


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One-dimensional barcode fonts and encoding

Add barcode to a report

1. Encode string in AL
2. Add encoded string to report dataset
3. Apply barcode font in report layout




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Supported barcode symbologies

- Codabar
- Code 39
- Code 128
- Interleaved 2 of 5
- MSI Plessey
- UPC / EAN (EAN-8, EAN-13, UPC-A, UPC-E)
- USPS (IMB/Postnet/Planet)




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Home
Sessions
Bookrooms
Sponsors
Networking
Resources
My Profile
My Agenda
Satisfaction Survey
Notifications
Logout

Other reporting features (not server)

Select printer on request page

Microsoft Universal Print extension





The slide features a speaker in a blue suit on the right side. The background is dark blue with white text. The text on the slide includes 'Other reporting features (not server)', 'Select printer on request page', and 'Microsoft Universal Print extension'. The speaker is holding a laptop with 'SQL' and 'Microsoft Universal Print extension' visible on the screen.

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Home
Sessions
Bookrooms
Sponsors
Networking
Resources
My Profile
My Agenda
Satisfaction Survey
Notifications
Logout

Security



The slide features a large blue shield icon with a white checkmark inside, centered on a dark blue background. The word 'Security' is written in white on the left side. The speaker is on the right side of the slide, holding a laptop with 'SQL' and 'Microsoft Universal Print extension' visible on the screen.

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Security model (taken from aka.ms/bcsecurity)

```
graph TD; subgraph Authentication; U[Users]; end; subgraph Authorization; L[License]; end; subgraph Permissions; D[Database]; C[Company]; O[Object]; R[Record]; end; U --- L; L --- P[Permissions]; P --- S[SQL database];
```

The diagram illustrates a security model. It is divided into three main sections: Authentication, Authorization, and Permissions. The Authentication section contains a box labeled 'Users'. The Authorization section contains a box labeled 'License'. The Permissions section contains four stacked boxes labeled 'Database', 'Company', 'Object', and 'Record'. Below these sections is a box labeled 'SQL database'. Arrows indicate the flow of information: from 'Users' to 'License', from 'License' to the 'Permissions' section, and from the 'Permissions' section to the 'SQL database'.

A speaker in a blue suit is standing on the right side of the slide, presenting the content. He is holding a laptop with a red 'SQL' logo on it.

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Entitlements as AL (new model)

```
1 entitlement "Dynamics 365 for Team Members BaseApp"
2 {
3     Type = PermissionSet;
4     Id = "d9ac351d-8970-4976-bd84-5f205807c8d8";
5     ObjectEntitlements = "BaseApp Objects - Exec",
6     "D365 BASIC",
7     "D365 DIM CORRECTION",
8     "D365 WRITING FIELDS",
9     "D365 READ",
10    "D365 TEAM MEMBER",
11    SECURITY;
12 }
```

The screenshot shows a code editor window with a file explorer on the left. The file explorer shows a workspace named 'BASEANDTESTS (WORKSPACE)' with various files. The main editor window displays an AL entitlement definition for 'Dynamics 365 for Team Members BaseApp'. The code defines the entitlement type as 'PermissionSet', provides an ID, and lists several object entitlements and security settings.

Permissions as data (old model)

```

SELECT TOP (1000) [Object Type],
[Object ID],
[Read Permission],
[Insert Permission],
[Modify Permission],
[Delete Permission],
[Execute Permission],
[Security Filter],
[SystemId],
[SystemCreatedAt],
[SystemModifiedBy],
[SystemModifiedBy]
FROM [App175US].[dbo].[Permission]

```

Timestamp	Role ID	Object Type	Object ID	Read Permission	Insert Permission	Modify Permission
1	0x000000000000007D	D365 ACC. PAYABLE	3	1	0	1
2	0x00000000000000A9	D365 ACC. PAYABLE	4	1	0	1
3	0x00000000000000A3	D365 ACC. PAYABLE	17	1	2	2
4	0x00000000000000A4	D365 ACC. PAYABLE	19	1	0	0
5	0x00000000000000A7	D365 ACC. PAYABLE	21	1	2	2
6	0x00000000000000A8	D365 ACC. PAYABLE	23	1	0	1
7	0x00000000000000A6	D365 ACC. PAYABLE	24	1	1	1
8	0x00000000000000A9	D365 ACC. PAYABLE	25	1	2	1
9	0x00000000000000A9	D365 ACC. PAYABLE	32	1	2	2
10	0x00000000000000A0	D365 ACC. PAYABLE	36	1	0	2
11	0x00000000000000A3	D365 ACC. PAYABLE	37	1	1	1
12	0x00000000000000A4	D365 ACC. PAYABLE	38	1	1	1
13	0x00000000000000A6	D365 ACC. PAYABLE	39	1	1	1

```

SELECT TOP (1000) [timestamp],
[Role ID],
[Name],
[Hash],
[SystemId],
[SystemCreatedAt],
[SystemCreatedBy],
[SystemModifiedAt],
[SystemModifiedBy]
FROM [App175US].[dbo].[Permission Set]

```

Emp	Role ID	Name	Hash
0000000000000010	D365 ACC. PAYABLE	Dynamics 365 Accounts payable	84436D0544C50B091784B8E0340008
0000000000000011	D365 ACC. RECEIVABLE	Dyn. 365 Accounts receivable	65144E7093A0B064002A24335554
0000000000000012	D365 ACCOUNTANTS	Dynamics 365 for Accountants	614C23710BC2EE096C1484EE0A3
0000000000000013	D365 ACDS, EDIT	Dynamics 365 Create ACDS	03043F7C96E72AE2A5E8689903A
0000000000000014	D365 ACDS, VIEW	Dynamics 365 View ACDS	054573813FC3F148C81045A889C7
0000000000000015	D365 ASSEMBLY, EDIT	Dynamics 365 Create assembly	388E3F38D39F5E4D077AC778D7F5
0000000000000016	D365 ASSEMBLY, SETUP	Dynamics 365 Setup assembly	D2C8A6E5D0E404720130C0722898
0000000000000017	D365 ASSEMBLY, VIEW	Dynamics 365 View assembly	8857D54718A48E44020A8AF6CE4
0000000000000018	D365 AUTOMATION	Dynamics 365 Automation	E0316AF0478877469E38F78ED008
0000000000000019	D365 BACKUP/RESTORE	Backup or restore database	32C013084132A48E0D767C1AC
000000000000001A	D365 BANKING	Dynamics 365 Banking	CA2F9E661ED9C789E0C0764D10
000000000000001B	D365 BASIC	Dynamics 365 Basic access	88F4557E1D27A337E330888E0C
000000000000001C	D365 BASIC, INV	Dyn. 365 Basic Inv Acc	88CF4F8E0F89794806472E31B008
000000000000001D	D365 BUS FULL ACCESS	Dyn. 365 Full Business Acc.	C04417266F03744E0D5F47C0F5
000000000000001E	D365 BUS PREMIUM	Dyn. 365 Prem. Bus. Full Acc.	5D806865096A818C5D0A8C4C6F9
000000000000001F	D365 CASH FLOW	Dynamics 365 Cash Flow	8FDE046A287CF8248A8E1556E3

Permissions as AL objects (new model)

permissionset 2118 "General Ledger Journals - Post"

```

1 permissionset 2118 "General Ledger Journals - Post"
2 {
3   Access = Public;
4   Assignable = false;
5   Caption = 'Post G/L journals';
6
7   Permissions = tabledata "Acc. Sched. KPI Web Srv. Line" = RIMD,
8                 tabledata "Acc. Sched. KPI Web Srv. Setup" = RIMD,
9                 tabledata "Accounting Period" = r,
10                tabledata "Analysis View" = rimd,
11                tabledata "Analysis View Entry" = rim,
12                tabledata "Analysis View Filter" = r,
13                tabledata "Attachment Entity Buffer" = RIMD,
14                tabledata "Bank Account" = m,
15                tabledata "Bank Account Ledger Entry" = rim,
16                tabledata "Bank Statement Matching Buffer" = RIMD,
17                tabledata "Batch Processing Parameter" = RIMD,
18                tabledata "Batch Processing Session Map" = RIMD,
19                tabledata "Check Ledger Entry" = rim,
20                tabledata "Currency" = r,
21                tabledata "Currency Exchange Rate" = r,
22                tabledata "Date Compr. Register" = r,
23                tabledata "Dimension Combination" = R,
24                tabledata "Dimension Value Combination" = R,
25                tabledata "Dynamic Request Page Field" = R,
26                tabledata "Employee Time Reg Buffer" = RIMD,
27                tabledata "G/L Account" = R,
28                tabledata "G/L Entry - VAT Entry Link" = Ri,
29                tabledata "G/L Entry" = Ri,
30                tabledata "G/L Register" = Rim,
31                tabledata "Gen. Jnl. Allocation" = RIMD,
32

```

```

permissionset 2118 "General Ledger Journals - Post"
{
  Access = Public;
  Assignable = false;
  Caption = 'Post G/L journals';

  Permissions = tabledata "Acc. Sched. KPI Web Srv. Line" = RIMD,
                 tabledata "Acc. Sched. KPI Web Srv. Setup" = RIMD,
                 tabledata "Accounting Period" = r,
                 tabledata "Analysis View" = rimd,
                 tabledata "Analysis View Entry" = rim,
                 tabledata "Analysis View Filter" = r,
                 tabledata "Attachment Entity Buffer" = RIMD,
                 tabledata "Bank Account" = m,
                 tabledata "Bank Account Ledger Entry" = rim,
                 tabledata "Bank Statement Matching Buffer" = RIMD,
                 tabledata "Batch Processing Parameter" = RIMD,
                 tabledata "Batch Processing Session Map" = RIMD,
                 tabledata "Check Ledger Entry" = rim,
                 tabledata "Currency" = r,
                 tabledata "Currency Exchange Rate" = r,
                 tabledata "Date Compr. Register" = r,
                 tabledata "Dimension Combination" = R,
                 tabledata "Dimension Value Combination" = R,
                 tabledata "Dynamic Request Page Field" = R,
                 tabledata "Employee Time Reg Buffer" = RIMD,
                 tabledata "G/L Account" = R,
                 tabledata "G/L Entry - VAT Entry Link" = Ri,
                 tabledata "G/L Entry" = Ri,
                 tabledata "G/L Register" = Rim,
                 tabledata "Gen. Jnl. Allocation" = RIMD,

```

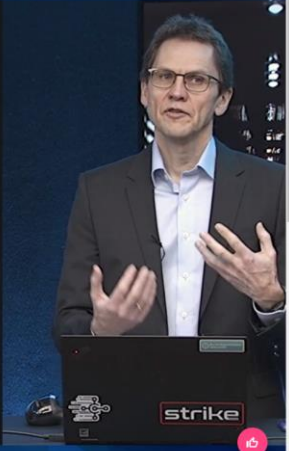
https://events1.social27.com/misdyn365bclaunchevent2021w1/agenda/player/95482

PermissionSet AL object

```
permissionset 9977 "D365 SALES DOC, POST"
{
  Access = Public;
  Assignable = true;
  Caption = 'Dynamics 365 Post sales doc.';

  IncludedPermissionSets = "Webhook - Edit";

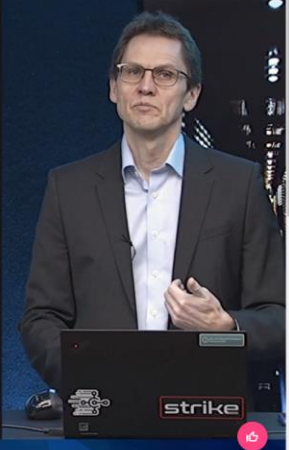
  Permissions =    tabledata "Analysis View" = rimd,
                  tabledata "Analysis View Filter" = r,
                  ...
}
```



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PermissionSetExtension AL object

```
permissionsetextension 8697 "My permission extension" extends
"D365 BUS FULL ACCESS"
{
  Permissions = tabledata "Elec. VAT Decl. Setup" = RIMD,
                tabledata "Sales VAT Advance Notif." = RIMD;
}
```



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Platform telemetry


35:30 / 44:14

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Available signal

Release Wave	Available Signals
2019 release wave 2	<ul style="list-style-type: none"> Long Running SQL queries Authorization
2020 release wave 1	<ul style="list-style-type: none"> Report execution time Web service calls Cancelled operations Update errors Company lifecycle events Database lock timeouts Extension lifecycle events Client telemetry (page views) AL support (Session.LogMessage)
2020 release wave 2	<ul style="list-style-type: none"> Outgoing web service calls ISV telemetry pipeline ISV key vault Long Running AL execution Extension lifecycle (ISV) AL sensitive field Retention policy Performance toolkit Email module Job Queue Rapid start Permission lifecycle Web service key authentication Reporting engine
2021 release wave 1	<ul style="list-style-type: none"> Index creation/removal Client telemetry (page views) (ISV)

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Web Service Key Authentication telemetry


New signal in 17.3

Analyze and monitor usage of web service keys used in environments

- Authentication with web service key succeeded/failed




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Reporting engine telemetry

New signal in 17.3

Analyze if customers prefer RDLC or Word report layouts




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Index creation/ removal telemetry

New signal in 18.0

Monitor when indexes are added/removed
using table extensions



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```

1 | traces
2 | where timestamp > ago(1d) and customDimensions.eventId in ('LC0024', 'LC0025')
3 | project eventId=customDimensions.eventId
4 | , message
5 | , extensionName=customDimensions.extensionName
6 | , keyMaintainSIFTIndex = customDimensions.keyMaintainSIFTIndex
7 | , keyMaintainSQLIndex = customDimensions.keyMaintainSQLIndex
8 | , keySqlIndexFields = customDimensions.keySqlIndexFields
9 | , keySumIndexFields = customDimensions.keySumIndexFields
10 | , keyFields = customDimensions.keyFields
11 | , keyName = customDimensions.keyName
12 |
13 |

```

eventId	message	extensionName	keyMaintainSIFTIndex	keyMaintainSQLIndex	keySqlIndexFields	keySumIndexFields	keyFields	keyName
LC0025	Index disabled: Item	appins	True	True	Description	Budget Profit	Description	Mj
LC0025	Index disabled: Item	appins	True	True	Description	Budget Profit	Description	Mj
LC0024	Index enabled: Item	appins	True	True	Description	Budget Profit	Description	Mj
LC0024	Index enabled: Item	appins	True	True	Description	Budget Profit	Description	Mj
LC0025	Index disabled: Item	appins	True	True	Description	Budget Profit	Description	Mj

Demo: Partner telemetry for index creation/removal



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Go-dos

- Use API pages for integration scenarios
- Use AddLoadFields for intensive algorithms
- Start converting .net add-ins to .NET standard

The slide features a dark blue background with white text. On the right side, there is a video feed of a man in a blue suit and glasses speaking. He is standing behind a laptop that has 'SQL' and 'AL' logos on it. The browser's address bar at the top shows the URL: https://events1.social27.com/msdyn365bclaunchevent2021w1/agenda/player/95482. A sidebar on the left contains navigation icons for Home, Sessions, Backrooms, Speakers, Networking, Resources, My Profile, My Agenda, Satisfaction Survey, Notifications, and Logout.

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Related sessions

- LE21-04 | Partner telemetry
- LE21-07 | Permissions and entitlements
- LE21-08 | Visual Studio code and AL
- LE21-12 | Printing
- LE21-20 | Modernizing our architecture

The slide features a dark blue background with white text. On the right side, there is a video feed of the same man in a blue suit and glasses speaking. He is standing behind a laptop that has 'SQL' and 'AL' logos on it. The browser's address bar at the top shows the URL: https://events1.social27.com/msdyn365bclaunchevent2021w1/agenda/player/95482. A sidebar on the left contains navigation icons for Home, Sessions, Backrooms, Speakers, Networking, Resources, My Profile, My Agenda, Satisfaction Survey, Notifications, and Logout.