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Telemetry for Business Central from basics to advanced usage

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www.bctechdays.com

Few words about us

KENNIE

- Started his IT career in 2000 (he is very old…)
- Working for Microsoft as a Program Manager on the BC product team
- First time speaking at BCTechDays
- Helping partners use telemetry every day
- Has no humour

KRZYSZTOF

- Developer and System Architect with over 12 years experience
- Working for the Danish ISV
- Microsoft MVP
- First time speaking at BCTechDays
- Using telemetry every day
- Has a lot of humour

Few words about you

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#3719306

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I work for...

ⓘ Start presenting to display the poll results on this slide.

slido

I use telemetry...

ⓘ Start presenting to display the poll results on this slide.

What's in the movie today

- **Baby Boom** – Telemetry Basics, what is it, why and how?
- **James Bond 007** – Sending own telemetry to know more
- **Moneyball** – Using Power BI Reports
- **Flash Gordon** – react before customer will call you
- **The Bank Job** – telemetry costs and control
- **Back to the Future** – plans and what's new
- **Good Night, and Good Luck** – what to do next

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Telemetry Basics

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Telemetry Basics

Telemetry is the **automated** communication processes from multiple data sources.

Means: Less Calls and Emails

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Telemetry Basics

Telemetry data is used to improve **customer experiences**, monitor security, **application health**, quality, and **performance**.

Means: See the issues before others will scream at you

Telemetry Basics

VAR

END CUSTOMERS

ISV

MICROSOFT

Telemetry Basics

PLATFORM

CUSTOM

How does it work?

VARs

- **Environment Lifecycle** – everything except creation
- **Company Lifecycle*** – create, copy, delete
- **Extension Lifecycle*** – compile, publish, install, upgrade, uninstall etc.
- **Authorization*** – signing in to Business Central by users
- **Permissions** – Permission Sets*, Assign*, Remove*, Errors
- **Configuration Package*** – exporting, importing, applying
- **Database State*** – deadlocks, lock timed out, wait statistics
- **Long Running*** – AL methods, SQL statements

*Also onPrem

VARs

- **Email*** – sending success and fails
- **Error Handling*** – errors users got, feedback for error messages
- **Sensitive Field Monitoring*** – status and value change
- **Job Queue and Task Scheduler*** – enqueue, error (status), tasks
- **Page Views*** – all pages, language, device and more
- **Report Generation*** – how long, how many rows
- **Retention Policy Trace*** – log entry, delete
- **Onboarding*** – checklists status
- **Web Service Requests*** – incoming and outcoming

*Also onPrem

ISVs – only own data

- **AppSource Submission Process** – all info about submission, errors
- **App Key Vault Secret** – initialization, retrieval and errors
- **Extension Lifecycle** – only own extensions data
- **Error Handling** – errors users got
- **Long Running** – own AL methods, SQL statements
- **Page Views** – own pages, language, device and more
- **Report Generation** – how long, how many rows
- **Web Service Requests** – own incoming and outcoming

Telemetry Event Groups

- **LC******* – Lifecycle telemetry Events (Environment, Company, Extensions)
- **RT******* – Runtime Events (Authorization, Performance, Report Generation)
- **CL******* – Client Events (PageViews, Errors Feedback)
- **AL******–** Application Events (Permissions, Emails, Retention Policy)

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„There are things known and there are things unknown and in between are the doors.“

Jim Morrison <- Aldous Huxley <- William Blake

DOCS

http://aka.ms/bctelemetry

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Setup and KQL

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Setup

Environments > BCTechDays2022

Details

Name	Application Family	Country/region
BCTechDays2022	Business Central	US
Type	**Application Insights Connection String (?)**	**Security Group**
Sandbox	InstrumentationKey=1393eab1-****-****-****-**********;IngestionEndpoint=https://centralus-2.in.applicationinsights.azure.com/;LiveEndpoint=https://centralus.livediagnostics.monitor.azure.com/	Not available

URL
https://businesscentral.dynamics.com/a5e15796-1efe-4ad7-aeb3-afedf7f1c2c9/BCTechDays2022

Version Management

Application Version	Platform Version	Available Update Version
20.4.44313.44365	20.4	
Update will start on or after	**Update Window (UTC-06:00) (?)**	**Update Rollout State (?)**
	21:00 - 04:00	

VAR

ADMIN CENTER

POWERSHELL

app.json > ...

```
{
  "id": "2ebe2057-3176-4adf-b3ec-4990d630054b",
  "name": "Easy Translate",
  "publisher": "BC4All",
  "version": "1.0.0.1",
  "brief": "The extension allows to translate automatically the records in Business Central",
  "description": "The extension allows to translate automatically the records in Business Central using Azure Translator Cognitive Service.",
  "privacyStatement": "http://bc4all.com/privacy-policy-2/",
  "EULA": "http://bc4all.com/eula/",
  "help": "http://bc4all.com/docs-category/easy-translate/",
  "url": "http://bc4all.com/easy-translate/",
  "logo": "res\\logo.png",
  "dependencies": [],
  "screenshots": [],
  "platform": "1.0.0.0",
  "application": "19.0.0.0",
  "idRanges": [
    {
      "from": 70465525,
      "to": 70465560
    }
  ],
  "contextSensitiveHelpUrl": "http://bc4all.com/docs-category/easy-translate/",
  "resourceExposurePolicy": {"allowDebugging": true},
  "runtime": "8.0",
  "features": ["TranslationFile"],
  "applicationInsightsConnectionString": "InstrumentationKey=                    511b1610159;IngestionEndpoint=https://westus2-2.in.applicationinsights.azure.com/"
}
```

ISV/PTE

APP.JSON

KQL

Imagine that SQL and Powershell had a child…

This is KQL.

And when KQL grew up, it added crazy fast data operators and data viz capabilities

SQL vs KQL

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SQL

```
SELECT col1, col2, col3, SUM(amount)
FROM table
WHERE col4=42
GROUP BY col1
ORDER BY col3, col2
```

KQL

```
table
| where col4==42
| project col1, col2, col3, amount
| summarize sum(amount) by col1
| order by col3, col2
```

KQL advanced examples

```
// powerful let expressions
let query1 = ...;
let query2 = ...;
query1 | union query2
```

```
// regular expressions on steroids
table
| parse col with * "resourceName=" resourceName ", totalSlices=" totalSlices:long * "sliceNumber=" sliceNumber:long * "lockTime=" lockTime ", releaseTime=" releaseTime:date "," * "previousLockTime=" previousLockTime:date ")" *
```

```
// easy lookback
traces
| order by timestamp
| extend prev_time = prev(timestamp)
| extend dur = diff(time, prev_time)
```

```
// easy data viz
traces
| some transformations
| render barchart
```

KQL query repository (aka.ms/bctelemetrysamples)

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master | BCTech / samples / AppInsights / KQL / **Queries** /

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KennieNP example queries for BCTexhdays 2022 — 1c336e9 14 hours ago — History

..

DataCollectionRules	Guidance and samples for using Data Collection Rules to control cost	last month
ExampleQueriesForEachArea	syntax errors fixed	15 hours ago
HelperQueries	adding LC0026 and LC0027 to dataset for app inventory	14 days ago
PerformanceTuning	Create edit-in-excel.kql	9 months ago
README.md	Guidance and samples for using Data Collection Rules to control cost	last month
examples.txt	example queries for BCTexhdays 2022	14 hours ago

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Custom Telemetry

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Custom Telemetry

- Can be used for improving the product
- You can see which features are already in use
- You can see which features are not in use
- You can use it to deactivate not needed features
- You can use it to onboard the customers
- You can use it to have better customer care

Feature Telemetry

- System App: [ALAppExtensions/Modules/System/Telemetry at main · microsoft/ALAppExtensions (github.com)]
- FeatureTelemetry: Codeunit "Feature Telemetry”
  - LogUptake
  - LogError
- Enum::"Feature Uptake Status”
  - Discovered
  - Set up
  - Used
  - Undiscovered
- **Feature Logger**
- Message eventId always get prefix AL

DEMO – Custom Telemetry

```
///<summary>
/// Function sends telemetry signal about discover the feature
/// Add the function where user discovers the feature - for example on open pag
/// AL prefix is added automatically to the Event Id.
/// Example: Event Id - ET0001 will be shown in the Application Insights as ALE
/// </summary>
1 reference
procedure SendDiscoverFeatureEasyTranslate()
var
    FeatureTelemetry: Codeunit "Feature Telemetry";
begin
    FeatureTelemetry.LogUptake('ETF0001', EasyTranslateLbl, Enum::"Feature Upta
end;

///<summary>
/// Function sends telemetry signal about set up the feature
/// Add the function where user set up the feature - for example when all field
/// AL prefix is added automatically to the Event Id.
/// Example: Event Id - ET0001 will be shown in the Application Insights as ALE
/// </summary>
1 reference
procedure SendSetUpFeatureEasyTranslate()
var
    FeatureTelemetry: Codeunit "Feature Telemetry";
begin
    FeatureTelemetry.LogUptake('ETF0001', EasyTranslateLbl, Enum::"Feature Upta
```

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Open source and free reports

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Telemetry Maturity Model

BCTech/samples/AppInsights/Presentations at master · microsoft/BCTech (github.com)

*inspired by the Gartner BI maturity model

Power BI apps

KQL is fun (it is!), but not the tool of choice for an account manager (!).

With Power BI apps for VARs and ISVs, any role in your organization can use telemetry to help take data-driven decisions.

DEMO – Power BI app for VARs

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Plik | Eksportuj | Czat w aplikacji Teams | Uzyskaj analizy | Subskrybuj | ···

Wyświetlasz tę aplikację z przykładowymi danymi. Połącz swoje dane

Dynamics 365 Business Central Usage

- Usage
  - Sessions
  - Clients
  - Locations
  - Page views
  - Reports
  - Feature usage
  - Integrations
  - Connectors
  - Deprecated features
  - About the report
- Errors
- Performance
- Administration

Wstecz

Locations

Tenant/Environment/Company

Wszystkie

This page shows from where users use Business Central (not the localization they use) and which language they use.

Usage by Location

Locations and Languages

Pageviews	Location	Language
2736	United Kingdom	en-US
2702	Ireland	en-US
1040	Denmark	en-US
875	United States	en-US
234	Ireland	zh
229	Singapore	zh-CN
160	India	en-IN
136	United Kingdom	da-DK
129	United Kingdom	en-GB
70	Singapore	zh
59	Singapore	en-US
56	Czechia	en-US
45	Denmark	da
44	Denmark	da-DK
8694		

Locations

New toys for ISVs…

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Announcing: public preview of new ISV app

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Microsoft | AppSource Apps Consulting Services Industry Clouds Partners Co-Sell Se

Apps > **Dynamics 365 Business Central App Usage (public preview)**

Dynamics 365 Business Central App Usage (public preview)

by Microsoft

Power BI apps

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Overview Ratings + reviews Details + support

Visualize Business Central app usage: user traffic, errors, performance, and administration.

Visualize different aspects of a Dynamics 365 Business Central app usage: user traffic, errors, performance, administration overview (including changes), and more. Explore and monitor key system metrics in Power BI by connecting to your Dynamics 365 Business Central telemetry data. With Business Central ISV App Usage, you get a Power BI dashboard and report with insights about how users use your app, which errors occur, recommendations for performance tuning, and an administrator's overview (including which changes happen and when). Use the dashboard and reports as provided or customize them to highlight the information you care about most. Note that this app is for per-app telemetry, not per-environment telemetry.

At a glance

DEMO – Power BI app for ISVs

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Get the apps

- **For VARs (per-environment app)**
  - aka.ms/bctelemetryreport
- **For ISVs (per-app app)**
  - aka.ms/bctelemetry-isv-app

Convince your boss docs: aka.ms/bctelemetry

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  - Onboard your customers
  - Monitor and analyze telemetry
    - Overview
    - Available telemetry
    - Enable Application Insights
    - **Use Power BI to analyze telemetry**
    - Telemetry by area
    - Telemetry by Event IDs
  - Manage technical support
  - Automation API
  - Admin Center API
  - Cloud Migration API

... / Administration / Monitor and analyze telemetry /

Analyze and Monitor Telemetry with Power BI

Article • 07/25/2022 • 8 minutes to read • 4 contributors

To make it simple to analyze Business Central telemetry, we've developed a Power BI app available from Microsoft Appsource. The app is free and open source but requires Power BI pro licenses to use.

The app consists of four reports:

- Usage
- Errors
- Performance
- Administration

Get the app

To install or update the app, go to https://aka.ms/bctelemetryreport and select **Get it now**.

You'll first have to sign in to Microsoft AppSource using your Power BI account name and password, if you aren't already signed in. Follow the online instructions to get the app installed in Power BI.

Once installed, the **Dynamics 365 Business Central Usage** app appears under **Apps** in Power BI. A

In this article

- Get the app
- Connect to Azure Application Insights for the first time
- Configure the app after initial setup
- Share the app with coworkers and others
- Use the app
- See also

Show less

Use the app

Once installed and configured, how can you use the different reports in the app? We identified four different personas as described in this table:

Persona	Description
Account Manager	Person making sales to new and existing customers.
Product Owner	Person responsible for an extension/app.
Project manager	Person responsible for the implementation of a Business Central environment for a customer.
Supporter	Person performing triage, investigation, and mitigation of customer issues.

In the following table, you'll find examples of scenarios for each persona where the app might be of help.

Persona	Scenario	How the Power BI app can help
Account Manager	Prospective customer has concerns that online solutions are a blackbox.	The Power BI app comes with sample data when you install it. If questions pop up, show them what kind of insights the app offers and that they can get access to the app if they find it useful. Focus on the Usage report unless the customer wants to see some of the more technical reports (that is, Errors, Performance, or Administration). If the customer has a representative from IT, then show them the Administration report.
Account Manager	Plan new activities with an existing customer.	Most of the pages in the Usage report can help drive conversations with the customer on how to get more value from their Business Central investment. For example, look at the *Page views*, *Reports*, and *Feature Usage* pages to check whether the customer is using the functionality they set out to when starting the project. Lack of data typically means lack of usage.

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Notifications

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Notifications

- Application Insights does not send the notification if you would not set them
- **Alerts**
  - Paid
  - Not Flexible
- **Power Automate Flows**
  - Premium Connector needed
  - Very Flexible
  - Can be adjusted by Consultants
- **Logic Apps**
  - Paid
  - Very Flexible
  - Rather for developers

DEMO – Alerts

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View the alert in Azure Monitor >

Summary

Alert name	Mial about Install
Severity	Sev3
Monitor condition	Fired
Affected resource	bctechdays_var
Resource type	microsoft.insights/components
Resource group	bctechdays2022
Subscription	Visual Studio Enterprise Subscription
Monitoring service	Log Alerts V2
Signal type	Log
Fired time	September 1, 2022 14:29 UTC
Alert ID	362e6705-a11b-56a5-fdb9-c326810224a1
Alert rule ID	https://portal.azure.com/#blade/Microsoft_Azure_Monitoring/UpdateLogSearchV2AlertRuleViewModel/alertId/%2Fsubscriptions%2Ff64986b9-429a-4fa0-b4a5-f807afda4447%2FresourceGroups%2FBCTechDays2022%2Fproviders%2Fmicrosoft.insights%2Fscheduledqueryrules%

DEMO – LogicApp

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Cost Control

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Cost Control

- **5gb** of data is free per month (insert the data not store the data)
- 90 days retention policy is free
- If you are afraid **set daily cap** on data ingestion
- Use **Data Collection Rules** to filter unwanted data
- Use **custom endpoint** if you want to send data anywhere else

https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-overview#ingest

DEMO – Data Collection Rules

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Logs

Workspace-BCTechDays2022-CUS

Workspace-BCTec... Select scope ▷ Run

```
source
| where Properties.eventId != "RT0003"
```

TimeGenerated [UTC]	AppRoleInstance	AppRoleName	AppVersion
9/1/2022, 12:42:47.023 PM	N/A	N/A	N/A
9/1/2022, 12:45:55.196 PM	N/A	N/A	N/A
9/1/2022, 12:45:55.305 PM	N/A	N/A	N/A
9/1/2022, 12:46:01.191 PM	N/A	N/A	N/A
9/1/2022, 12:46:06.689 PM	N/A	N/A	N/A
9/1/2022, 12:46:06.704 PM	N/A	N/A	N/A

Custom Endpoint Scenario

Per customer telemetry

Cross-customer telemetry

InstrumentationKey=<guid>;
IngestionEndpoint=https://my-azure-function-url

Custom Endpoint code samples

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master | BCTech / samples / AppInsights / CustomIntegrations / CustomEndpoint / | Go to file | Add file | ...

KennieNP first draft of Azure function that can direct telemetry data to two c... ... 7a2c6c1 on 14 Aug History

..

AzureFunction	first draft of Azure function that can direct telemetry data to two c...	last month
README.md	Custom Telemetry Endpoint	5 months ago
diagram.png	added diagram	5 months ago

README.md

In this folder, you will find information and a code sample that illustrate how you can send telemetry data to a different endpoint than Azure Application Insights to control where data is ingested.

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What's new

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What's new in Telemetry

- **2022 wave 1**
  - Database deadlocks
  - Database wait statistics
  - Verbose telemetry enabled
  - General error dialogs
  - Error message votes
  - Report action and document type in reporting
  - Environment lifecycle and configuration changes
  - User checklist lifecycle
  - Permission error dialogs
  - Session stops
  - Dependency cycle discovered in permission sets
  - Use of read scale-out in web service calls
  - Performance Toolkit

  - User telemetry id on user card

- **2022 wave 2**
  - Azure function integration

- **21.x and beyond**
  - Long held locks
  - Error message votes for ISVs
  - User telemetry id shown in-client
  - Client add-in performance and stability
  - User actions

Telemetry change log

What signal is available in which version?

README.md

Signal	Emitted from version, update	Documentation (use CTRL+click to open in a new tab)
Long running operation (SQL query)	2019 release wave 2 (15.0)	https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-long-running-sql-query-trace
Authorization	2019 release wave 2 (15.2)	https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-authorization-trace
Web Service Request	2020 release wave 1 (16.0)	https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-webservices-trace
Report Execution	2020 release wave 1 (16.0)	https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-reports-trace
Open Company timing	2020 release wave 1 (16.0)	https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-authorization-trace
Company lifecycle (create/copy/delete)	2020 release wave 1 (16.1)	https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-company-lifecycle-trace
Upgrade errors due to exceptions in upgrade code	2020 release wave 1 (16.2)	https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-extension-update-trace

https://github.com/microsoft/BCTech/tree/master/samples/AppInsights/KQL#what-signal-is-available-in-which-version

Call to Actions

- Set telemetry for active and new customers
- Install Power BI Apps - **aka.ms/bctelemetryreport (VAR) and aka.ms/bctelemetry-isv-app** (ISV)
- Explore more on **aka.ms/bctelemetry** (docs)
- Go to **aka.ms/bctelemetrysamples** (bctech samples) and see all examples in AppInsights
- Read blogs about telemetry
  - MyNAVBlog.com
  - demiliani.com
  - www.bertverbeek.nl

Q&A

Any Questions?

slido

Which telemetry signal you would like to see in future?

ⓘ Start presenting to display the poll results on this slide.

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Thank You!