**What's new in Dynamics 365 Business Central telemetry - March 2023**

It is March and it has been a month since the last newsletter. We are wrapping up the 2023 release wave 1 of Business Central and this also means improvements to telemetry.

As always, the bleeding edge news on Dynamics 365 Business Central telemetry happens on Twitter, so if you want to keep up with the latest and greatest (and the beta versions of the Power BI telemetry apps) then follow me there (@kennienp). The intention of these monthly newsletters is to try to gather everything that I know and learn about this area and present it here. Let’s go…

In the March 2023 edition, read about these things:

* History of the Business Central telemetry feature part 1 – getting data
* Upcoming conference sessions
* Getting better web services telemetry
* Power BI Usage apps – March updates
* New signal/updates
* Documentation improvements
* Tips and Tricks

# History of the Business Central telemetry feature part 1 – getting data

Might not get to this in the March newsletter.

# Upcoming conference sessions in March 2023

**DynamicsCon Virtual (March 15-16)**

I just finished recording this session with the production crew.

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Join me at the DynamicsCon Virtual conference (online and free) on March 16 to learn how to use Dynamics 365 Business Central telemetry before/after your go-live? Session is both for customers and partners.

Read more and join the event here:

https://dynamicscon.com/submission/get-low-friction-go-lives-and-optimize-your-investments-with-telemetry-data/

**Days Of Knowledge Uk (March 23 – 24)**

Telemetry Hero and Microsoft MVP Krzysztof Bialowas is doing his full day workshop Telemetry Deep-Dive at the precon day on March 23.

Read more here: <https://directions4partners.com/days-of-knowledge/uk-2023/schedule/?tid=444622>

Krzysztof is also doing 90 min deep dive session on telemetry on March 25.

Read more here: https://directions4partners.com/days-of-knowledge/uk-2023/schedule/?tid=429141

On March 24, Microsoft MVP (and API Hero) Arend-Jan Kauffmann is doing a 90 min deep dive on Business Central APIs and he told me that he will also cover telemetry as seen from the API developer and consumer side.

Read more here: https://directions4partners.com/days-of-knowledge/uk-2023/schedule/?tid=442152

See the full conference schedule here:

https://directions4partners.com/days-of-knowledge/uk-2023/schedule/

**Conferences in April, May, and June 2023**

There will also be telemetry sessions at the conferences mentioned below. In upcoming newsletters, I will go more into details about the sessions there.

Business Central Launch event (April 2023), online (agenda not published yet, registration needed, attendance is free)

https://aka.ms/bcle

Directions North America (April 16-19, 2023) in Orlando, Florida

https://directionsna.com/

Directions Asia 2023 (April 27 - 28, 2023) In Bangkok, Thailand.

https://directions4partners.com/events/directions-asia-2023/

Days Of Knowledge Central (May 25 - 26, 2023) in Dusseldorf, Germany

https://directions4partners.com/days-of-knowledge/central-2023/

Days Of Knowledge Nordic 2023 (June 1 - 2, 2023) in Odense, Denmark

https://directions4partners.com/days-of-knowledge/nordic-2023/

BC/NAV Techdays 2023 (June 22-23, 2023) in Antwerp, Belgium

https://www.bctechdays.com/

# Getting better web services telemetry

When calling Business Central web services, you can soon inject information about the caller into telemetry.

By setting the HTTP header \_UserAgent\_, then this will be logged with the httpHeaders dimension (for OData and API calls).

By setting the HTTP header \_client-request-id\_, then this will be logged with the httpHeaders dimension (for OData and API calls) and it will also set the "OperationId"/ClientActivity in AppInsights

This means that you can from telemetry see who is calling BC APIs and also correlate to telemetry from other web services (if you use Azure Application Insights to instrument those).

Read more here in docs:

https://learn.microsoft.com/en-us/dynamics365/business-central/dev-itpro/webservices/web-service-telemetry#incoming-web-service-telemetry

# Power BI Usage apps – March updates

First, some updates on uptake and MAU of the Power BI apps:

We now have almost 1000 apps that refresh data every day. This means that data is available for partners and customers to analyze right away in case there are questions on usage or issues that need taken care of. Seen in the light of the Power BI metrics story highlighted above, this also means that almost 1000 organizations potentially can start taking their telemetry journey from data (raw telemetry in Application Insights) to information (Power BI) and now to actions (Power BI metrics and Teams). The total DAU (Daily Active Users) of the apps is now stable 100+ during the weekdays and table 10-20 DAU during weekends (so we even have users who cannot stop using the apps on a Saturday or Sunday). The number of organizations with stable MAU (Monthly Active Users) numbers is also growing, which indicates that more and more partners integrate telemetry in their partner practices. Very nice to see this progress.

The March update for the apps have mainly been focused on performance tuning of data loads, although I could not resists adding a few smaller feature improvements as well.

**Environment Usage app**

Usage report

On pages 'Page views' 'Reports', 'Feature Usage', 'Checklist usage', 'Integrations', 'Connectors', and 'Deprecated features' added per environment visual.

New page 'MAU/WAU/DAU' showing Monthly/Weekly/Daily users based on the user\_Id column in Application Insights.

Performance report

On page 'Pageviews', added per-app/per-object visuals

On page 'Outgoing webservice calls', added client type. Also added per-app/per-object visuals.

Error report

On page 'SQL deadlocks', added user telemetry id visual

On page 'Environment lifecycle Errors', added support for failed soft delete and recovery (un-delete) operations (coming in 22.0)

On page 'Job Queue Errors', added AL stacktrace (introduced in telemetry in version 21.3)

Administration report

On page 'Environment lifecycle', added support for soft delete and recovery (un-delete) operations

On page 'Sensitive fields monitoring', added link to change log entries. Also added visuals to see changes by company/table/field, by table/field/company, by time of day and by day of the week

Dataset

On table SQLDeadlocks, Added user telemetry id and URL to the User card in BC. Tuned data load and moved object info, extension info, sql details, stacktrace, and client type into their own dimensions. This will allow the app to load more reporting data (for bigger telemetry databases).

On table LockTimeouts, introduced sqlHashDim

On table LongRunningSQLQueries, tuned data load (introduced hash partitions) and moved stacktrace and client type into their own dimensions. This will allow the app to load more reporting data (for bigger telemetry databases). Added 'are you missing a SetCurrentKey?' to SQL explanation

On table LongRunningAL, tuned data load (introduced hash partitions) and moved object, extension, stacktrace and client type into their own dimensions. This will allow the app to load more reporting data (for bigger telemetry databases).

On table IncomingWebServicePerformance, tuned data load (introduced hash partitions) and moved connector type, and category into their own dimensions. This will allow the app to load more reporting data (for bigger telemetry databases).

On table ReportPerformance, tuned data load (introduced hash partitions) and moved connector type, and category into their own dimensions. This will allow the app to load more reporting data (for bigger telemetry databases).

On tables EnvironmentLifecycle, EnvironmentLifecycleErrors, ExtensionLifecycle, ExtensionLifecycleErrors, IndexLifecycle, CompanyLifecycle, FieldChanges, RententionPolicyDeletes: tuned queries to run faster (introduced TenantHash)

On table TaskSchedulerErrors, added support for new signal 'Task timeout changed because it was exceeding the max timeout value'. Also tuned query (introduced TenantHash)

On table TaskSchedulerPerformance, tuned query (introduced TenantHash, moved to 1h bins).

See the full change log here:

https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/PowerBI/Reports/AppSource/environment-app-pbix/changelog.txt

**App Usage app**

Dataset

On table LongRunningSQLQueries, tuned data load and moved stacktrace and client type into their own dimensions. This will allow the app to load more reporting data (for bigger telemetry databases).

On tables ExtensionLifeCycleErrors, ExtensionUpdatePerformanceQuery, IncomingWebServiceErrorsQuery, OutgoingWebServiceErrorsQuery, tuned data load and moved tenant and extension info into their own dimensions. This will allow the app to load more reporting data (for bigger telemetry databases).

Usage report

On pages 'Page views' 'Reports', 'Feature Usage', 'Feature Uptake', and 'Integrations' added per environment visual

Performance report

used combined app name and id on X by app visuals (pageviews, reports, incoming ws, outgoing ws, Updates)

On page 'Pageviews', added per-app/per-object visuals

On page 'Outgoing webservice calls', added client type.

On page 'Long RunningSQLQueries' in Explanation, mention "are you missing a SetCurrentKey?"

Error report

On page “extension lifecycle errors”, made error details visual full width

On pages for incoming/outgoing web service errors, added per-app/per-object visuals

See the full change log here:

https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/PowerBI/Reports/AppSource/isv-app-pbix/changelog-isv-app.txt

# New signal/updates

**Soft/hard deletes and recoveries of environments**

In the April 2023 release, when an administrator deletes an environment from the tenant admin center, the environment will only be marked for deletion (soft delete) and will stay in this state for a period of time (currently seven days). During this period, the administrator can recover (un-delete) the environment and only after grace period has ended, the Business Central control plane service will permanently delete the environment. All operations around this functionality have telemetry.

Docs will be available here (might not be updated at the time you read this): <https://learn.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/telemetry-environment-lifecycle-trace>

Get KQL samples here: <https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/KQL/Queries/ExampleQueriesForEachArea/EnvironmentLifecycle.kql>

(search for event ids LC0148-LC0151 (hard delete), LC0180-LC0182 (soft delete), and LC0183-LC0185 (recovery)

You can setup alerts on this, get the alerting KQL query here:

<https://github.com/microsoft/BCTech/tree/master/samples/AppInsights/Alerts#:~:text=Environment(s)%20deleted>

The Power BI app on environment telemetry has been updated to use this information in the March 2023 update (of the app).

**Coming in 21.3**

In version 21.3, we added AL stack trace as a custom dimension to job queue error signal. This allows you to better troubleshoot why the error occurred.

See KQL sample code here: <https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/KQL/Queries/ExampleQueriesForEachArea/JobQueue.kql>

In the March 2023 update of the Power BI app for environment telemetry, this is now shown on the job queue error page in the Error report.

**Smaller improvements in 22.0**

We are finalizing the 2023 release wave 1 and here are some smaller improvements that will come in version 22.0:

* Error message telemetry (event RT0030) will include the error text in English in the custom dimension alEnglishLanguageDiagnosticsMessage
* Incoming web service telemetry (event RT0008) will include the time spent waiting in the throttling queue in the custom dimension requestQueueTime
* Error codes in failed OData calls (event RT0008) to help troubleshoot 400 return code signal.
* Long running AL method telemetry (eventId RT0018) will include details on SQL operations in the custom dimensions sqlRowsRead and sqlStatements
* Outgoing web service telemetry (eventId RT0019) will include details on client type and AL stack trace in the custom dimensions clientType and alStackTrace

KQL samples might already have been updated, see [BCTech/samples/AppInsights/KQL/Queries/ExampleQueriesForEachArea at master · microsoft/BCTech (github.com)](https://github.com/microsoft/BCTech/tree/master/samples/AppInsights/KQL/Queries/ExampleQueriesForEachArea)

The Power BI apps will be updated to use this information in the April 2023 update.

**Change of the timeout values for scheduled tasks**

In version 22.0, the Business Central server will change the timeout values for scheduled tasks in case they are created with a value higher than the maximum value defined on the server. If this happens, you will get also telemetry on it:

// Task timeout changed because it was exceeding the max timeout value

// Signal introduced in 22.0

traces

| where timestamp > ago(60d) // adjust as needed

| where customDimensions has 'LC0057' // for performance

| where customDimensions.eventId == 'LC0057'

| project timestamp

, aadTenantId = customDimensions.aadTenantId

, codeunitObjectId = customDimensions.codeunitObjectId

, companyName = customDimensions.companyName

, environmentName = customDimensions.environmentName

, environmentType = customDimensions.environmentType

, failureCodeunitObjectId = customDimensions.failureCodeunitObjectId

, formatId = customDimensions.formatId

, isReady = customDimensions.isReady

, languageId = customDimensions.languageId

, notBefore = customDimensions.notBefore

, taskId = customDimensions.taskId

, timeout = customDimensions.timeout

See KQL sample code here:

https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/KQL/Queries/ExampleQueriesForEachArea/TaskScheduler.kql

**Feature Management state changes**

In version 22.0, you will get telemetry on state changes on the Feature Management page. As an administrator, you can then alert if someone enables a feature:

// Feature management state changes

// Available from 22.0

traces

| where timestamp > ago(5d)

| where customDimensions.eventId == "AL0000JT3"

| project timestamp

, aadTenantId = customDimensions.aadTenantId

, Environment = customDimensions.environmentType

, FeatureId = customDimensions.FeatureId

, FeatureDescription = customDimensions.FeatureDescription // which feature

, Status = customDimensions.Status // enabled/disabled

, usertelemetryId = user\_Id // who did it

See KQL sample code here:

https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/KQL/Queries/ExampleQueriesForEachArea/ FeatureTelemetry.kql

**Coming soon/in the works (no ETA given)**

* Information on files blocked from upload due to malware scanning (only in the online version)..
* Error codes in failed OData calls to help troubleshoot 400 return code signal.
* PTE validation signal (PTEs that block updates to next major)

# Tips and Tricks

**Setting parameters AadTenantId, EnvironmentName and EnvironmentType for on-premises environments**

If you use telemetry on-premises, consider setting parameters AadTenantId, EnvironmentName and EnvironmentType to uniquely identify the tenant. These parameters will be logged in the custom dimensions aadTenantId, environmentName and environmentType.

For more information, see   
https://learn.microsoft.com/en-us/powershell/module/microsoft.dynamics.nav.management/mount-navtenant?view=businesscentral-ps-15&preserve-view=true

**Override app dataset settings when updating apps**

Did you know that you can control the way that Power BI handles updates of your Power BI app(s) on telemetry data. If you do not want Power BI to overwrite the dataset parameters, then choose the “Update only workspace content” option when updating the app:

Graphical user interface, text, application, email

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**Makes it easy to monitor/alert on any change to environment(s)**

I added a new alerting query added for administrators who want to monitor changes to their environments. The query gathers information on when any of these events happen:

environment changes

feature changes

extension lifecycle events

company changes

index changes

data deletes (rention policy)

data changes (sensitive field monitoring)

Read more here:

https://github.com/microsoft/BCTech/tree/master/samples/AppInsights/Alerts#:~:text=Environment%20changes,AllEnvironmentChanges.kql

**Calculate DAU (Daily Active Users), WAU (Weekly Active Users), MAU (Monthly Active Users) with KQL**

New sample query added for calculation of DAU (Daily Active Users), WAU (Weekly Active Users), MAU (Monthly Active Users). The calculations are based on the user\_id column. Note that for environment telemetry in environments running version 20.0 or higher, this column is used by Business Central to write the user telemetry id. For users where the tenant admin has turned user telemetry id off, the column will just have a zero guid as value. This means that the calculated DAU/WAU/MAU number is lower that actual usage.

Get the sample here:

https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/KQL/Queries/HelperQueries/DAU\_WAU\_MAU.kql

**KQL sample code for telemetry on error message votes**

KQL sample code has been added for telemetry on error message votes (I forgot to add a sample when it was introduced back in April 2022).

Get the sample here:

https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/KQL/Queries/ExampleQueriesForEachArea/Errors.kql

**Telemetry for the API developer**

In January, Microsoft MVPs Jeremy Vyska and Arend-Jan Kauffmann published a new book called

*Microsoft Dynamics 365 Business Central API v2.0 Reference*

The main topic of the book is Business Central APIs but the book also has a section on telemetry for API developers and consumers.

Read more (and buy a copy for your developers) here:

https://sparebrained.com/books/business-central-api-reference/

# Blog posts and videos

Our great telemetry heros have been busy in February. Here are some blogs that I have seen in the wild. There might be more (let me know or do PRs to the blogs/videos pages on BCTech)

Bert Verbeek discusses how to query multiple telemetry resources using Log Analytics, the data backend underneath Business Central telemetry:

<https://www.bertverbeek.nl/blog/2023/02/24/the-use-of-log-analytics-workspace-and-business-central/>

Did you know that the BCTech repo has pages with links to blog posts and videos on telemetry?

Blogs: https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/BLOGS.md

Videos: https://github.com/microsoft/BCTech/blob/master/samples/AppInsights/VIDEOS.md

If you create blog posts/videos on telemetry (or know of things that are not linked from these two pages), feel free to do a pull request to the repository (or send me an email/message)

**That’s all folks!**

That's it for the March newsletter. If you made it all the way down here, then you are truly a Telemetry Hero. See you in a month.

PS. Would love to hear your experiences on using alerts to be more proactive. Reach out (or blog about your experiences.)

PPS. It is not too late to rate the Power BI apps on Appsource 😊 Your feedback matters (a lot).

Do it here

aka.ms/bctelemetryreport

or

aka.ms/bctelemetry-isv-app