

# **Teams Call Records** **Treasure Trove or Pandora's box?**

March 11<sup>th</sup>, 2025



# Host & Speaker



**Femke Goedhart**

Product Marketing Manager

[femke.goedhart@panagenda.com](mailto:femke.goedhart@panagenda.com)



**Stefan Fried**

Senior Program Manager &  
Senior Consultant

[stefan.fried@panagenda.com](mailto:stefan.fried@panagenda.com)

# Before We Start



## All attendee lines are muted

This is to prevent interruptions during the presentation.



## Please submit questions via the Chat or Q&A panel

Your questions will be addressed directly during the webinar or in the Q&A section after the presentation.



## The webinar is being recorded

After the webinar, we will send you a mail to give access to the recording and presentation slides.



## Share your feedback with us

Use the link provided at the end to let us know what we can do better.



# About panagenda



- Founded 2007, privately owned and funded
- HQ in Vienna (Austria)
- Offices in Germany, USA and The Netherlands
- panagendians work from >20 different locations

Microsoft Partner

 **HCL SOFTWARE**

Business Partner



## OPTIMIZE

MICROSOFT 365  
MICROSOFT TEAMS  
AND MORE



## ANALYZE

APPLICATIONS  
SERVERS  
MAIL

## REDUCE

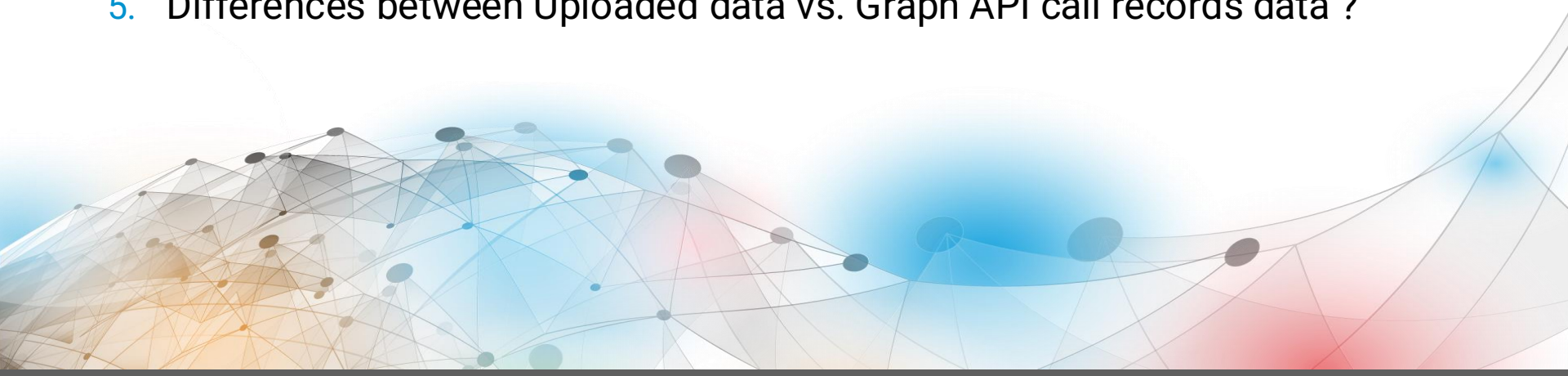
INFRASTRUCTURE  
WORKLOAD  
COST

Time  
Your  
Upgrade

## MANAGE

NOTES  
NOTES WEB  
NOTES MOBILE

1. What Are Teams Call Records and Why Are They Important?
2. Call Telemetry Data flow (*creation – upload – processing – retrieval*)
3. Structure of a Teams Call Record
4. Limitations of the available data ?
5. Differences between Uploaded data vs. Graph API call records data ?



# What Are Teams Call Records and Why Are They Important ?



# What are Teams Call Records?

## ■ What ?

- They give detailed information of usage and telemetry data on calls and meetings in Microsoft Teams
- Provided by Microsoft via Microsoft Graph API
- No additional Costs (part of M365 Subscriptions)



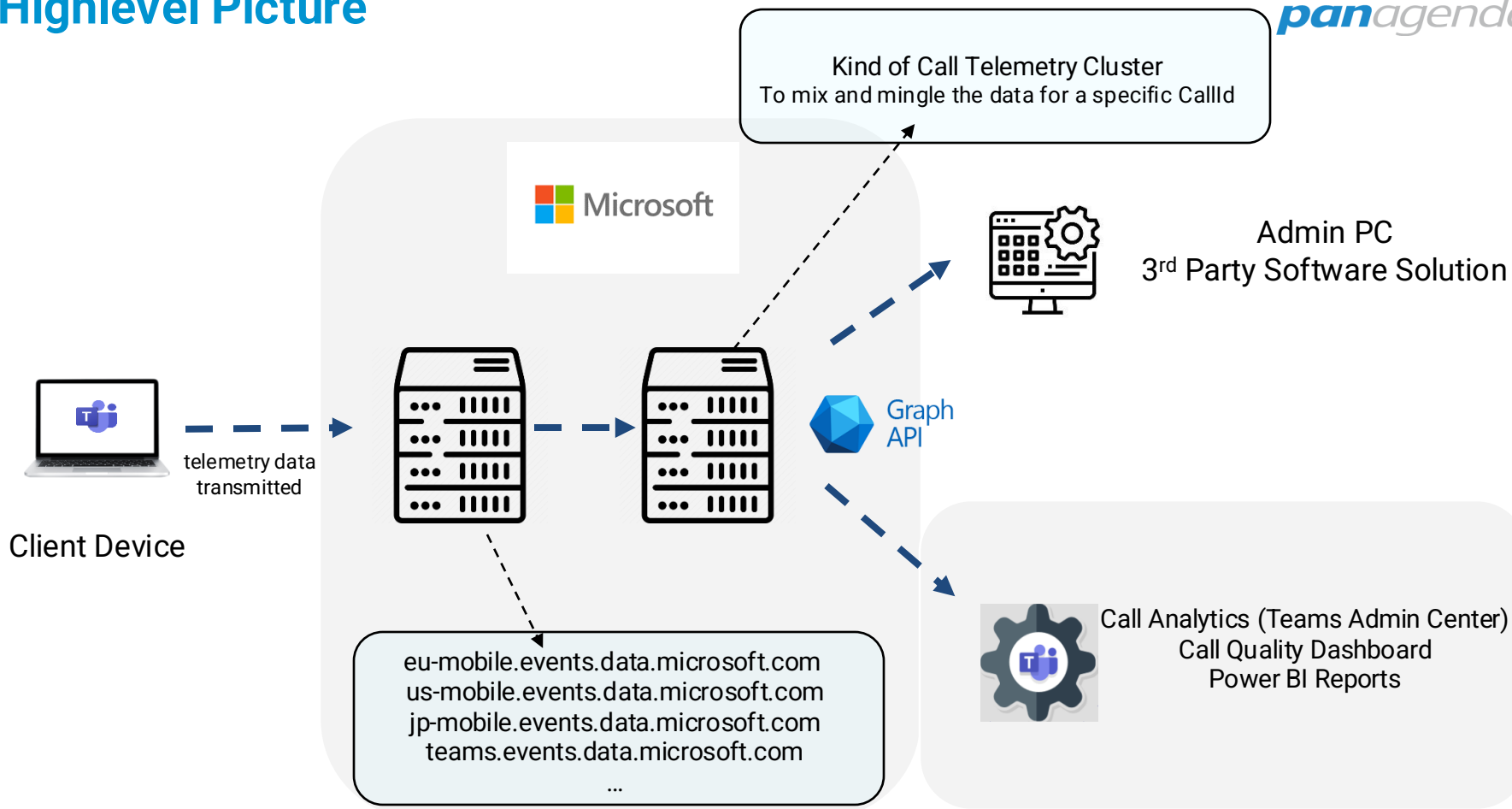
- **Importance and Relevance ?**
  - Monitoring and Troubleshooting Call Quality
  - Powering native Microsoft Tools (e.g Teams Admin Portal)
  - Analyzing Usage Patterns
  - Creating Custom Reports
  - Improve Product Performance (for Microsoft)



# Call Telemetry Data Flow

How does data from a PC get uploaded to the cloud  
to become accessible as a call record?

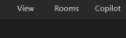
# Highlevel Picture



# Let's begin with the Client Device

## ...the Source of the Telemetry Data





The screenshot shows the Microsoft Teams interface. At the top, there is a navigation bar with icons for 'React', 'View', 'Rooms', 'Copilot', and a 'More' button (three dots). Below the 'More' button, a dropdown menu is open, displaying several options: 'Add an app', 'Record and transcribe', 'Meeting info', 'Video effects and settings', 'Audio settings', 'Language and speech', 'Call health', 'Settings', 'Meeting options', and 'Help'. The 'Call health' option is highlighted with a red box, and the 'Settings' option is also highlighted with a red box.

**Streams and events**

**Audio network details (Inbound)**

S2 00 ms

S1 00 ms

S 0 ms

We're getting the data

Other Packet loss Local network

Teams Real-time data  
\*.streaming.rtt.teams.microsoft.com

200	HTTPS	teams.events.data.microsoft.com	/Collector/3.0/
200	HTTPS	teams.events.data.microsoft.com	/Collector/3.0/
200	HTTPS	teams.events.data.microsoft.com	/Collector/3.0/
200	HTTPS	teams.events.data.microsoft.com	/Collector/3.0/

[illegible]

## What kind of Data ?

- Device Information
- Network Information
- Audio/Video/VBSS metrics
- Only for this user!

```
Endpoint
Name
FRST-P

MediaLine
Description
LocalAddr
IPAddr
192.168.68.106
```

```
MediaLine
Description
LocalAddr
v2
MACAddr
c4:47:4e:db:30:76 6
```

```
MediaLine
Description
NetworkConnectivityInfo
v2
BSSID
9c:53:22:7b:be:ff *
```

```
MediaLine
Description
RemoteAddr
IPAddr
86.220.163.x 7
```

```
MediaLine
Description
v3
ReflexiveLocalIPAddress
IPAddr
62
```

```
user
object
id
0d3ed8c3 3
```

```
GpuDedicatedMemoryUsageP95
2.975522
GpuDedicatedMemoryUsageP99
3.136483
GpuDedicatedMemoryUsageSampleCount
291
GpuDedicatedMemoryUsageStDev
0.600278
```

## Any PII ?

- User Id; Device Name; IP Addresses

*Microsoft ensures that EUPII(PII) is handled with strict privacy controls and is typically anonymized or pseudonymized to protect user privacy.*

*Some are already pseudonymized during upload (e.g. Remote Public IP)*

# ...and they also train AI models

[https://aiinfrastructure.static.microsoft/public/aiinfrastructure/Machine\\_capability\\_minor\\_version/\\*/model.gz](https://aiinfrastructure.static.microsoft/public/aiinfrastructure/Machine_capability_minor_version/*/model.gz)

[https://aiinfrastructure.static.microsoft/public/aiinfrastructure/great\\_rose\\_q\\_kind\\_heart\\_md\\_q\\_combined.fpie/\\*/model.gz](https://aiinfrastructure.static.microsoft/public/aiinfrastructure/great_rose_q_kind_heart_md_q_combined.fpie/*/model.gz)

>> Pointing to an AnyCast address

```
{
  "hash": "1[REDACTED]",
  "model_name": "model-dec2_1698682613_00d3cddb-avg_kind_heart_combined.fpie",
  "encryption_type": "v2_aes256cbc",
  "metadata": {
    "source_uri": "azure feed",
    "model_name": "model-dec2_1698682613_00d3cddb-avg_kind_heart_combined.fpie",
    "id": "great_rose_q_kind_heart_md_q_combined.fpie",
    "hash": "1[REDACTED]3",
    "attestation": "https://o365trustcompliance.visualstudio.com/Trust/ compliance/product/fcaf70d3-d3c2-9c7c-11ac-1388b42bbc99/assessments/2c738e72-dccf-051a-5126-cc0b6561a5de",
    "cyber_eo_assessment": "https://o365trustcompliance.visualstudio.com/DefaultCollection/Trust/_workitems/edit/517000",
    "commitid": "VSO2254905",
    "blob_location": "great_rose_q_kind_heart_md_q_combined.fpie/[REDACTED]3/model.dat",
    "issued_sas": [],
    "status": [],
    "signing_release_id": "",
    "processing_error": "",
    "author": "34d87c0e-ca8c-4a74-8e06-bc35feaca275",
    "tags": "dec md combined, dvqe music",
    "cdn_uri": "",
    "gallatin_cdn_uri": "",
    "model_uri": "",
    "azure_feed_uri": "https://skype.visualstudio.com/scc/_artifacts/feed/csc/UPack/microsoft.skype.ic3ai.deepaudio.model.deepvqe-md/overview/2.0.0",
    "model_source": 0,
    "url_hash": "",
    "retried_signing": false,
  }
}
```



# Controlling the Data ?

**Is it possible to control what is being uploaded?**

**Can specific components be reduced, or can the entire data upload be disabled?**

# Controlling the Data?

Teams v2 follows **Office Cloud Policy** tenant settings

- **Policy** (config.office.com): *Configure the level of client software diagnostic data sent by Office to Microsoft*

**Note:** *This does not stop the upload of events but reduces the dataset*

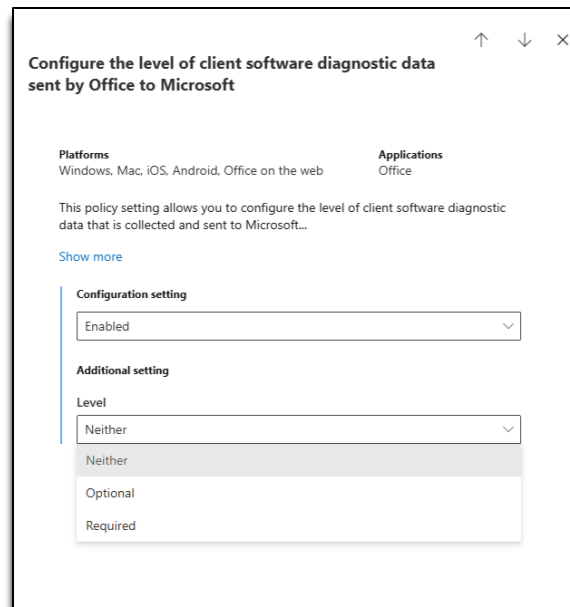
## Policy setting for diagnostic data

Diagnostic data is used to keep Office secure and up-to-date, detect, diagnose and remediate problems, and also make product improvements.

You can use the *Configure the level of client software diagnostic data sent by Office to Microsoft* policy setting to choose what level of diagnostic data is sent to Microsoft.

If you enable this policy setting, you must choose which level of diagnostic data is sent to Microsoft. Your choices are Required, Optional, or Neither.

- If you choose **Required**, the minimum data necessary to help keep Office secure, up-to-date, and performing as expected on the device it's installed on is sent to Microsoft.
- If you choose **Optional**, additional data that helps make product improvements and provides enhanced information to help detect, diagnose, and remediate issues is sent to Microsoft. This data may also be used in aggregate to train and improve experiences powered by machine learning, such as recommended actions, text predictions, and contextual help. If you choose to send optional diagnostic data, required diagnostic data is also included.
- If you choose **Neither**, no diagnostic data about Office client software running on the user's device is sent to Microsoft. This option, however, significantly limits Microsoft's ability to detect, diagnose, and remediate problems that your users may encounter when using Office.



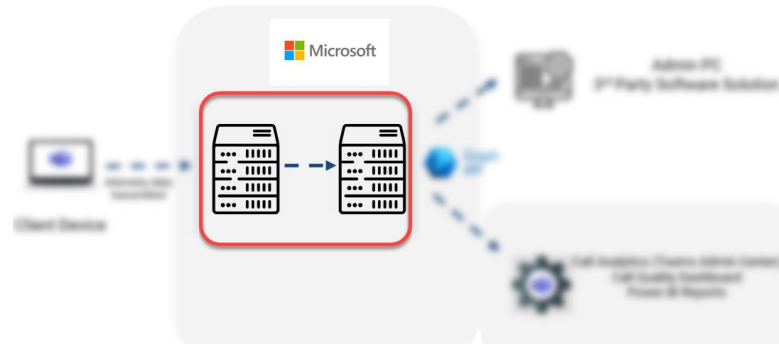
The screenshot shows the configuration page for diagnostic data. It includes sections for Platforms (Windows, Mac, iOS, Android, Office on the web) and Applications (Office). A description states: 'This policy setting allows you to configure the level of client software diagnostic data that is collected and sent to Microsoft...'. There is a 'Show more' link. Under 'Configuration setting', a dropdown menu is set to 'Enabled'. Under 'Additional setting', a dropdown menu for 'Level' is open, showing three options: 'Neither' (selected), 'Optional', and 'Required'.

# Controlling the Data?

- Diagnostics Data produced by “Office”
  - *Network Settings*
  - *Group Policy*
  - *Registry*
  
- Complexity of technical feasibility to control it
  
- Impact on Operation and Featured Connected Experience

# Where is the data uploaded(stored) ?

Is telemetry data from European clients always uploaded in Europe ?



# Uploaded / Stored – There are several factors

- **Uploading Location != Storing Location**

- **Data Residency**

Microsoft ensures that call quality data is stored in data centers within the same geographic region as the tenant → adhering to local data residency and compliance requirements

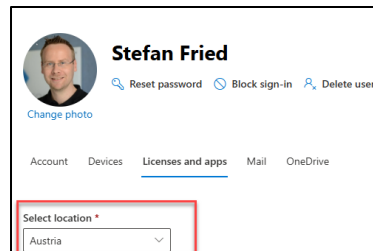
- **Regional Privacy Regulations (e.g Microsoft EU Data Boundary)**

- **Service Specific Configuration**

- **User Usage Location - Entra**

- **Multi-Geo**

- ...



**BUT there is one scenario where this can be influenced by the End-User!**

## Be aware of this Scenario!

A (European) user switches to a non-EU tenant because he is listed as a guest there and joins a Call.

- Call telemetry data is only available in the other tenant
- Call telemetry data is uploaded outside of e.g EU

```
> teams.events.data.microsoft.com
Non-authoritative answer:
Name:    onedscolprdwus07.westus.cloudapp.azure.com
Address: 20.189.173.8
Aliases: teams.events.data.microsoft.com
         teams-events-data.trafficmanager.net
```

**This can occur when your End Users can switch to other M365 tenants.**

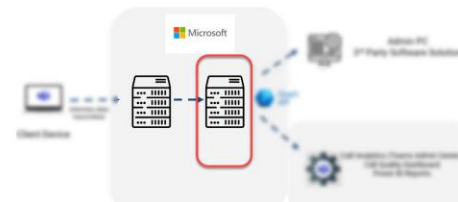
# Merging all collected data for a Call

- **CallId** – Unique Identifier of tracking a Call

- **Call Telemetry Clustering / Data Aggregation**

The collected telemetry data is associated with a unique call ID to cluster all data points related to the same call, ensuring that metrics from all participants are aggregated into a single call record.

Telemetry data is aggregated/processed to create a view of the call's performance (e.g. including analyzing metrics such as RTT, packet loss, ...)

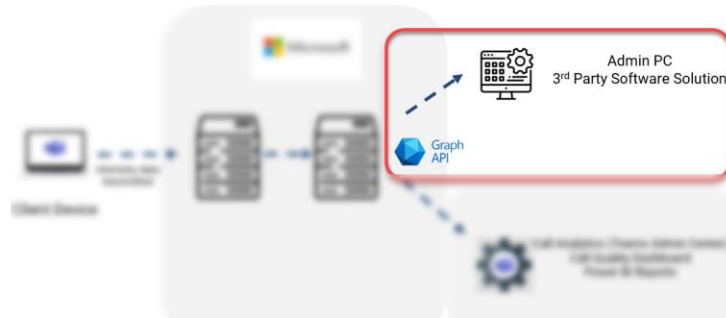


# Microsoft Graph API – Call Records

## Structure ?

How can I pull / access the Call Record?

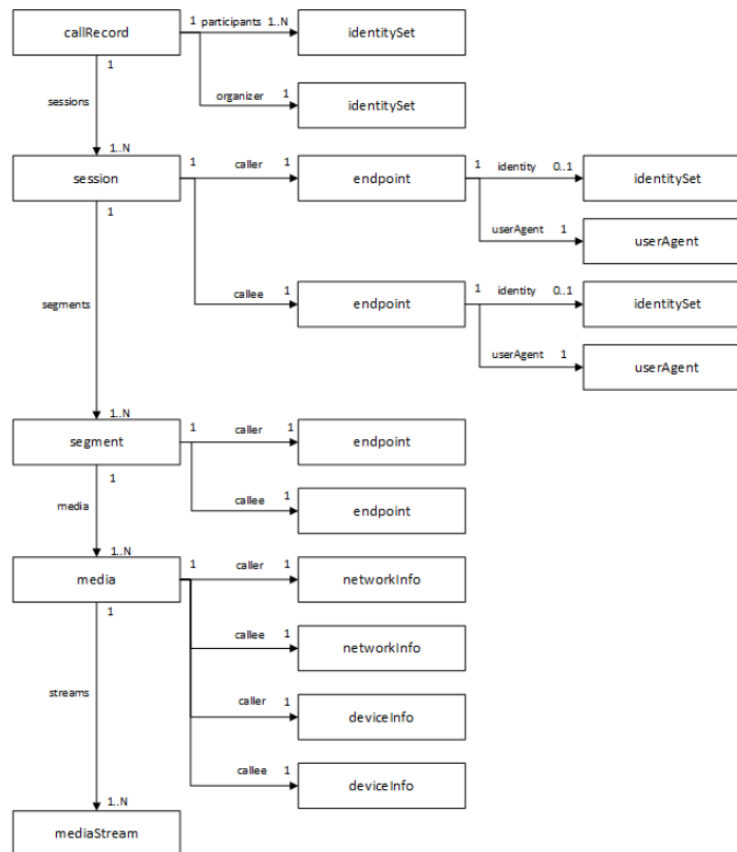
Are there any restrictions in terms of Content?





# Structure of a Call Record

- Organizer
- Session
- Segment
- Media
- MediaStream
  - Audio
  - Video
  - VBSS



# Structure of a Call Record - Examples

- Meeting between two Tenants
  - Organizing tenant's call record
  - Participating tenant's call record
- P2P call between two Tenants
  - Initiator tenant's call records
  - Participating tenant's call records

**Let's have a look**

## Content Limitations?

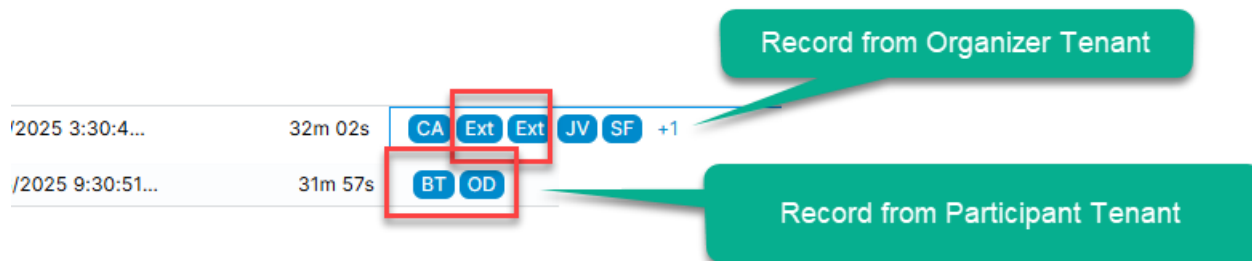
- Almost zero Documentation exists on this topic
- Tenant organizing the call has most information
  - Minimal data from external callers
- Other (Participant) tenant has limited data
- In-tenant information may vary due to local regulations (across End-Users)

**Important:** By design, Graph API call gives the display name of the organizer even when queried from a different tenant. Organizer display name is never obfuscated – This is the expected behavior.

# Let's talk about Content Limitations

## Example Participant visibility – Meeting (more than 2)

If an organization's users join a meeting but did not organize the meeting, that organization will only see details for their own users. The organization that organized a federated meeting will see all participants.



What does the organizing tenant knows from the user from the other tenant ?

```
"associatedIdentity": {  
  "id": "0c[redacted]3",  
  "displayName": "Stefan Fried",  
  "tenantId": "[redacted]",  
  "@odata.type": "#microsoft.graph.userIdentity",  
  "userPrincipalName": "stefan.fried@panagenda.com"  
}
```

```
},  
"name": "",  
"cpuName": "",  
"cpuCoresCount": null,  
"cpuProcessorSpeedInMhz": null,  
"associatedIdentity": {
```

# Let's talk about Content Limitations

## Example Participant visibility – Meeting (only two)

If an organization's users join a meeting but did not organize the meeting, that organization will only see details for their own users. The organization that organized a federated meeting will see all participants.

Meeting - Ext. Tenant is Organizer

3/6/2025 8:18:46... Ext OD

3/6/2025 2:19:56... SF

Record from Organizer Tenant

Record from Participant Tenant

Dec 27, 2024 1:00 PM GMT+1

Meeting status: Complete Meeting type: Microsoft Teams

Organizer: SF Stefan Fried Participants: 2

Timeline Participant details

Name	Start time	Duration
EB epmcanary bla...	1:01 PM	00:00:55
SF Stefan Fried	1:00 PM	00:02:42

# Let's talk about Content Limitations

## Example Participant visibility – P2P

You will see all (both) Users

**P2P - Ext. Tenant initiated**

3/6/2025 8:24:4...	Ext	OD
3/6/2025 2:24:4...	Ext	SF

Record from Organizer Tenant

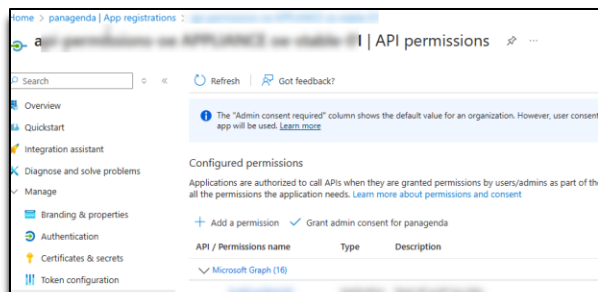
Record from Participant Tenant

What does the organizing tenant knows from the user from the other tenant ?

```
"associatedIdentity": {  
  "id": "0d...3",  
  "displayName": "Stefan Fried",  
  "tenantId": "...",  
  "@odata.type": "#microsoft.graph.userIdentity",  
  "userPrincipalName": "stefan.fried@panagenda.com"  
}
```

```
},  
"name": "",  
"cpuName": "",  
"cpuCoresCount": null,  
"cpuProcessorSpeedInMhz": null,  
"associatedIdentity": {
```

# How can you retrieve a record ?



Permission type	Least privileged permissions
Delegated (work or school account)	Not supported.
Delegated (personal Microsoft account)	Not supported.
Application	CallRecords.Read.All

## ■ Build App

```
const config = {  
  auth: {  
    clientId: 'YOUR_CLIENT_ID',  
    authority: 'https://login.microsoftonline.com/YOUR_TENANT_ID',  
    clientSecret: 'YOUR_CLIENT_SECRET',  
  },  
};
```

```
async function getAccessToken() {  
  const authResponse = await cca.acquireTokenByClientCredential({  
    scopes: ['https://graph.microsoft.com/.default'],  
  });  
  return authResponse.accessToken;  
}
```

```
const callRecord = await client  
  .api('/communications/callRecords/${callRecordId}?$expand=sessions($expand=segments)')  
  .get();
```

### Important

- Version Updates (use Change notification)
- Throttling

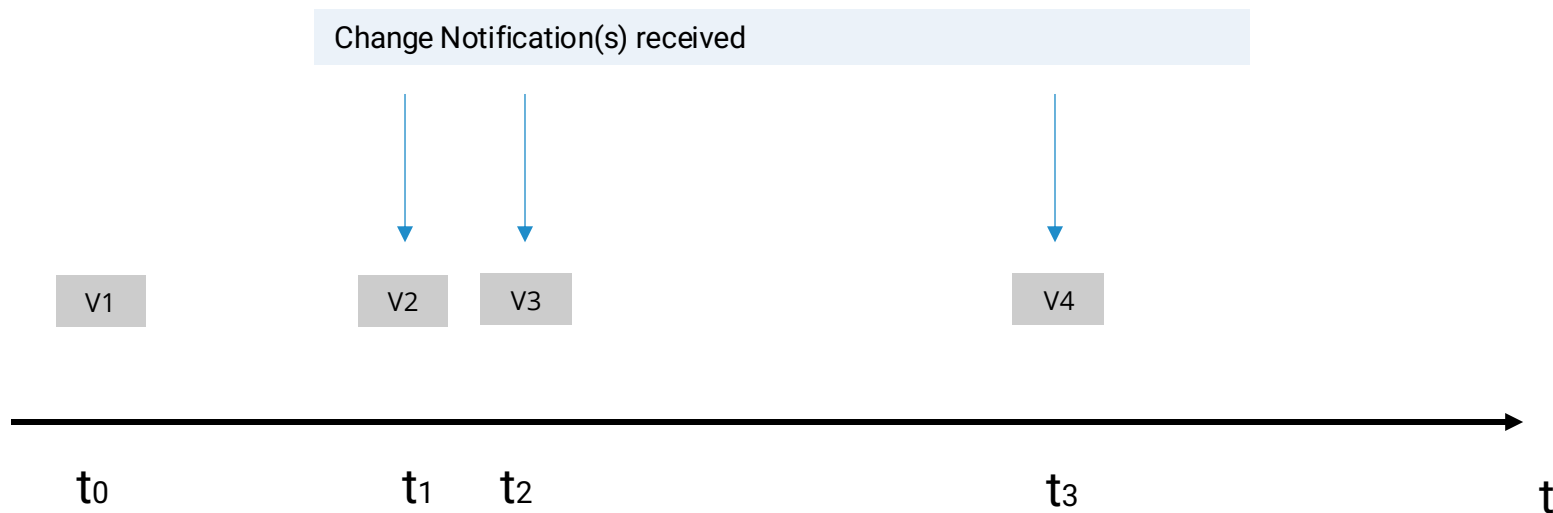
Type	Version	Modalities	LastModifiedDateTime
groupCall	2	["audio","video"]	2025-03-06 13:45:15.2100
groupCall	3	["audio","video"]	2025-03-06 13:49:51.1410

<https://learn.microsoft.com/en-us/graph/api/resources/callrecords-api-overview?view=graph-rest-1.0>

<https://learn.microsoft.com/en-us/graph/api/resources/change-notifications-api-overview?view=graph-rest-1.0>

# Version Updates for a Call Record

When new Call Telemetry Data is aggregated, the system will provide a new Version of the Call telemetry content



**$t_0$ :**  $v_1$  - you want to retrieve this immediately when it becomes available

**$t_1, t_2$ :** You may want to skip  $v_2$  and  $v_3$  to limit the number of graph calls (throttling?)

**$t_3$ :**  $v_4$  – your app retrieves after  $x$  hours the latest available version → less graph calls!



# traceRouteHops

## ⓘ Note

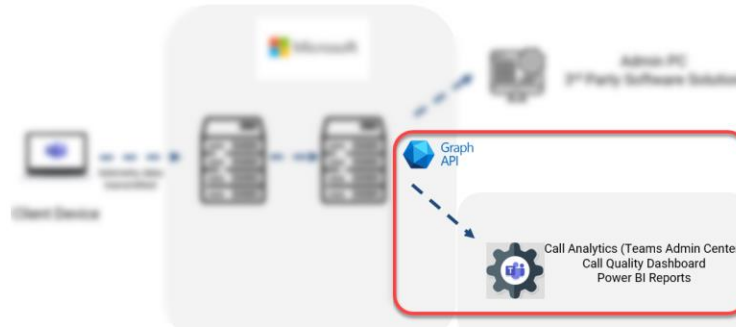
\*By default, **traceRouteHops** will always return an empty array of trace route data for your organization.

```
"traceRouteHops": [  
  {  
    "ipAddress": "192.168.1.1",  
    "hopCount": 0,  
    "roundTripTime": "PT0.006S"  
  },  
  {  
    "ipAddress": "5[REDACTED]",  
    "hopCount": 1,  
    "roundTripTime": "PT0.015S"  
  },  
  {  
    "ipAddress": "7[REDACTED]",  
    "hopCount": 2,  
    "roundTripTime": "PT0.009S"  
  },  
  {  
    "ipAddress": "7[REDACTED]",  
    "hopCount": 3,  
    "roundTripTime": "PT0.01S"  
  },  
  {  
    "ipAddress": "7[REDACTED]",  
    "hopCount": 4,  
    "roundTripTime": "PT0.02S"  
  },  
  {  
    "ipAddress": "104.44.230.176",  
    "hopCount": 5,  
    "roundTripTime": "PT0.019S"  
  },  
  {  
    "ipAddress": "104.44.30.118",  
    "hopCount": 7,  
    "roundTripTime": "PT0.081S"  
  }  
]
```

orting

# Microsoft Graph API – Call Records

In which native Microsoft tools Call Records are used?



## Several Area's

**Call analytics** show detailed information about the devices, networks, and connectivity related to ***specific calls and meetings*** for each user in Teams.

**Real-time analytics** show detailed information about the devices, networks, and connectivity related to ***scheduled in-progress meetings*** for each user in Teams.

**Call Quality Dashboard (CQD)** gives you a ***view*** of call quality across your organization.

**Power BI Report**– Quality of Experience(QER)

For compliance reasons, EUII data is only kept for 28 days. As CQD's data crosses the 28-day mark, fields that contain EUII are cleared, resulting in EUII-free data.

Fields that contain EUII data are:

- IP Address
- User ObjectID
- MAC Address
- Phone Number
- UPN
- Feedback Text
- Client Endpoint Name
- Local Address
- Remote Address
- Base Address
- BSSID
- Local Site
- Remote Site
- Auto Attendant Identity
- Call Queue Identity
- Transferred from Call Queue Identity
- Organizer ObjectID
- Organizer UPN
- Organizer Sip Uri (Skype for Business only)
- VTC Device Name
- VTC Device Detail

# Any Differences?

Are there any differences between the data uploaded and what can be retrieved via the API

# Differences ?

Data not exposed via Graph API

- WebRTC Statistics
- ICE (Interactive Connectivity Establishment)

Exporting debug info from the Admin Portal gives you just a subset of the previous uploaded client data

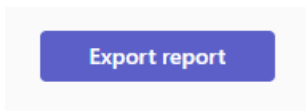
Dashboard \ Manage users \ Stefan Fried \ Meeting \ Session

**Mar 6, 2025, 3:30 PM GMT+1**

Overview Advanced **Debug**

Report

Report time	Mar 6, 2025, 4:02 PM GMT+1
CallDurationInSeconds	1921.764107
CallAnsweredModalities	Audio[0] = Bidirectional, Came = ReceiveFromPeer, Camera[2]



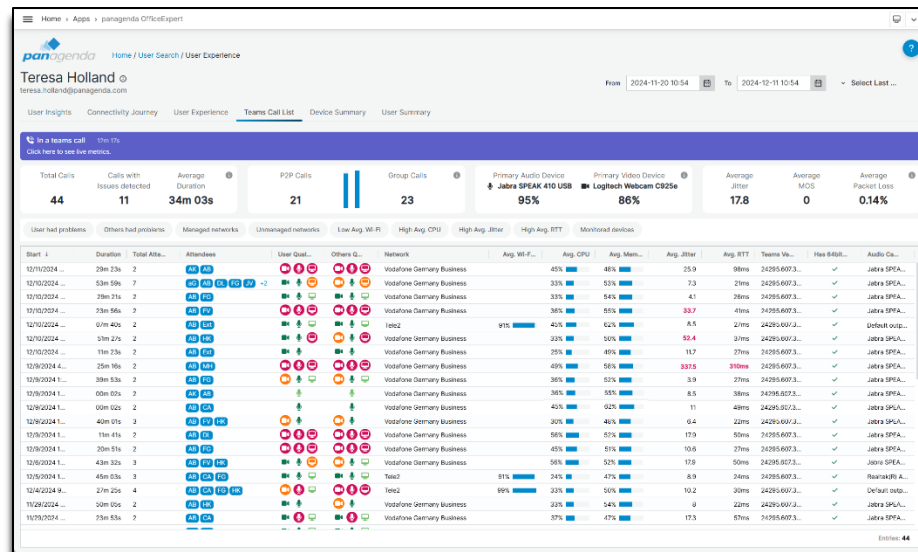
```
203 callee_video_MediaLine_OutboundStream_Payload_Video_PayloadType
204 callee_Endpoint_CPUName
205 callee_Endpoint_CPUNumberOfCores
206 callee_Endpoint_CPUProcessorSpeed
207 callee_Endpoint_OS
208 callee_Endpoint_VirtualizationFlag
209 callee_Endpoint_MachineInfo
210 callee_Endpoint_Name
211 callee_traceroute
212
```

# Summary

- A lot of Information
- Metrics are aggregated
- Easy retrieval
- Be aware of limitations



Want more ?  
Check out  
panagenda OfficeExpert TrueDEM



**THANK YOU!**