Annex 1

TECHNICAL ANALYSIS DIAGNOSTIC DATA DPIA
OFFICE 365 FOR THE WEB & MOBILE APPS

SLM RIJK, 31 MARCH 2020

Contents

Traffic analysis including telemetry events

1. Description of technical set-up and research methods

Privacy Company has inspected the outgoing traffic from the mobile Office apps on iOS and Android, and the traffic via Office for the Web. Privacy Company used specific test scenarios for the five most commonly used apps (Word, Outlook, Excel, PowerPoint and Teams).

Additional online services have been used in each of the apps, such as the Editor (spell checker), Translator (translation module) and Insert Online Pictures. Microsoft calls these extra online services 'Connected Experiences' since May 2019. The scenarios (see Appendix 2 to this report) have been written to best reproduce the everyday actions of users. The scenarios were executed on 20, 21 and 28 January 2020 (Teams).

Privacy Company applied two different investigation methods: interception and decoding of data traffic from the two smartphones and when using Office for the Web, and retrieving information from Microsoft as data processor via two different types of access requests as referred to in Article 15 of the GDPR. These methods are explained below.

Privacy Company has ensured that the research is reproducible and repeatable. This has been achieved by working with written scenarios in which the number of actions was limited. The scenarios are described in Appendix 2 to this report. There was a pause of 30 seconds between each action. Screenshots have been made of all actions. All data has been recorded.

1.1 Settings in test set-up

For this DPIA a test environment was created with the most privacy friendly settings possible.
The level of telemetry messages was set to the lowest level 'Neither'. All four types of Connected Experiences were turned Off. This means: the two types of Connected Experiences that analyse or download content, other Connected Experiences and the specific set of Additional Optional Connected Experiences for which Microsoft is the data controller. This group of services is related to the use of Bing, LinkedIn and the Microsoft Store. In the Office for the Web environment, Microsoft only offers the possibility to block the latter group of Controller Connected Experiences, not the first three types. So in the Office for the Web environment only the Controller Connected Experiences were blocked. Privacy Company has tested as many Connected Experiences as possible in the mobile apps and in Office for the Web. If a particular Connected Experience was not available, this is indicated in Appendix 2 with the executed test scenarios.

1.2 Tested versions Office for the Web and mobile Office apps

Microsoft does not display update data or version history for Office for the Web. Privacy Company tested the version of Office for the Web that was available on 20 January 2020 through the Office 365 license and performed the tests with a Chrome Browser, version 79.0.3945.117 (Official Build) (64-bit) on a Macbook pro, with OS version macOS Catalina version 10.15.0.

Word: 16.0.12528.32650
Powerpoint: 16.0.12528.35435
Excel: 16.0.12526.35050
Version numbers for other apps are not visible to Online

On iOS, Privacy Company has reviewed the following mobile versions of the Office apps on an iPhone 7 running iOS version 12.3.1: Excel/2.33.20010900, OneDrive/11.15.8, PowerPoint/2.33.20010900, Microsoft Office Word/2.33.109, Outlook/3623017 and Teams version 2.0.1.

On Android, Privacy Company has investigated the following mobile versions of the Office apps on a Pixel 3 XL, with Android operating system version 10, security patch level 1 January 2020. The

following versions of the apps have been tested: Microsoft OneDrive 5.46, Microsoft Excel 16.0.12325, Microsoft Office Word 16.0.12325, Microsoft PowerPoint 16.0.12325, Microsoft Outlook 4.1.9 and Microsoft Teams version 1416/1.0.0.2020012501.

1.3 Interception outgoing data traffic

Privacy Company has intercepted the outgoing telemetry data from the two smartphones with Mitmproxy version 5.0.1 (software that makes it possible to inspect the content of traffic with and without TLS encryption).

The Mitmproxy was used as follows:
- Configure the laptop or phone to use the proxy
- Start the Mitmproxy
- Launch the specific mobile application
- Log in with an Office365 account as needed
- Run the scripted scenario. Make screenshots of each step.
- Once the script is fully executed, stop the Mitmproxy.

Privacy Company has saved the log files and compared the network endpoints with the limited public information Microsoft publishes about them.[1]

1.4 Telemetry events in Office for the Web and in the mobile Office apps

A striking difference in the technical data collection via Office for the Web compared to the earlier version discussed in the public DPIA for SLM Microsoft Rijk published on 23 July 2019 is that Microsoft also collects telemetry data when using the browser version of Office 365. Until now, this was only the case for the mobile apps and the installed Office 365 ProPlus software.

Although Microsoft has been offering a data viewer tool for telemetry traffic from the installed Office 365 ProPlus software since June 2019, this tool is not suitable to decode the telemetry traffic from Office for the Web and the mobile apps.

A word of caution. Even though Privacy Company has carefully chosen the test scenarios to mimic the everyday actions of a student or employee, the intercepted data do not give a complete picture of the processing of telemetry data from the mobile Office apps.

It is technically not possible to fully analyse the captured data from the mobile devices. Because Microsoft has not published documentation with the specifications of the binary format in which it enciphers the data, Privacy Company has made a best effort to distil the contents from the collected telemetry data.

The telemetry messages are encrypted in a non-publicly documented binary format. Some telemetry messages are also base64 encoded. This makes it difficult to analyse the content of the messages. The structure of the messages is not completely clear, so there is uncertainty about the beginning and end of individual messages. Pieces of text are easy to recognize, but some parts of a message are not stored as readable text and are therefore not easy to understand. Privacy Company has only viewed the human readable data, not the binary data. The raw text data have been queried in a structured way, with specific search scripts, based on the content of the test scenarios.

In the network traffic, two endpoints can be identified as telemetry endpoints: browser.pipe.microsoft.com (Office for the Web, all investigated Office applications on iOS and OneDrive on Android) and mobile.pipe.aria.microsoft.com (Outlook and OneDrive on iOS).

From experience with Office ProPlus and Windows telemetry, the researchers at Privacy Company know that there are no empty fields. So every time there is a field name in the decrypted telemetry data with no content, it is likely that information has been sent via this field, even if the example does not show binary, distorted data.

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[1] Microsoft, Office 365 endpoints, URL: https://docs.microsoft.com/en-us/office365/enterprise/office-365-endpoints, specifically Worldwide endpoints, https://docs.microsoft.com/en-us/office365/enterprise/urls-and-ip-address-ranges.

It is also plausible that all diagnostic messages, just like the messages Microsoft collects on Windows and Office ProPlus, contain a header, and content. A typical diagnostic message contains a unique number, a few unique identifiers for the end user, their account and/or the license administrator (the tenant) and/or their device. These are typical header data. In addition, the messages contain content about the individual use of the various applications.

Microsoft describes the telemetry events from Office 365 ProPlus as follows:

> "*There is some information about events that is common to all events, regardless of category or data subtype. This common information, which is sometimes referred to as data contracts, is organized into categories. Each category contains fields, and these fields are the metadata and properties of an individual event. You can view this information by using the Diagnostic Data Viewer.*
>
> *The categories of information that is collected about events can be divided into two groups:*
>
> > *Information common to all events*
> > *Information that specifically supports diagnostic data collection.*"[2]

All messages from the mobile Office applications on the two operating systems contain at least the device identifier DeviceInfo.Id. On all three platforms the telemetry contains a field 'UserInfo.Id' that contains two types of identifiers, depending on whether Microsoft qualifies the account as a Business account or as a Consumer account. The distinction is remarkable, because Privacy Company was in all cases logged in with a work account.

The user ID found is 'i:0h.f|membership|1003200094bb100d@live.com' for the telemetry messages marked as Business account and '268175d7-ee44-40a1-95ec-d3475c23a6a6' for the accounts marked as Consumer account.

In the long example telemetry message from Word in Office for the Web quoted below, the Business account identity is indicated as 'anonymous', but at the same time, the message contains a pseudonymous User.PrimaryIdentityHash for, and the tenant's hash ID several times. So there is no 'anonymous' account.

On all platforms, the timestamp of a specific event/action occurs as EventInfo.Time. This telemetry message contains the unique identifier of the device and the exact time, up to seven decimal places, that the event took place. The fields marked in yellow in the four examples below show the unique identifiers, and the fields that allow Microsoft to link different activities of a single user over time.

Example telemetry event Teams ADALauth (Active Directory Authentication Library) on iOS

```
\xbb\xb3\xde\xf9\x84\x96\x9b\xad4\xf2;\xff/\x94R\xe5\x19\xbd\xdf\x01IH\xceP7:UI+\xdb\x12\
x96m          \x0b\x01J8f77bb4ba71b494d9bdb459034b2626f-b3ec83c9-2cb7-4ce0-aad0-
308ad8fc7f3f-7615
\x01)\x06ClientI\x12act_default_sourcei\x078.6.3.0\x8d          \x01
service_id\x011\xa9$E992661D-B764-4B6E-B484-
910CEA65342C\xd1\x06\xde\xc7\x93\xc6\xfd[\xd0\x07\x04\xcb\x08
\x01)$73C7FA80-76BD-42B2-B06E-
426B33041694q\xea\x88\x93\xc6\xfd[\xa9\x06custom\xc9\x06\x08adalauth\xcd
          /\x12EventInfo.Sequence\x041430\x10AppInfo.Language\x05en-
GB\x12DeviceInfo.OsBuild\x1dVersion 12.3.1 (Build
16F203)\x1dMicrosoft.ADAL.api_error_code\x12AD_ERROR_SUCCEEDED*Microsoft.ADAL.extended
_expires_on_setting\x02no\x1dMicrosoft.ADAL.authority_type\x03aad\x1bMicrosoft.ADAL.x_client
_cpu\x0264\x0cUserInfo.Mri,8:orgid:9c866cc5-8b0c-431a-b3d4-
47f847af4865\x1aMicrosoft.ADAL.x_client_dm\x06iPhone\x1aMicrosoft.ADAL.x_client_os\x0612.3.
1\x16DeviceInfo.DetailModel          iPhone9,1\x11UserInfo.TimeZone\x06+01:00
Microsoft.ADAL.cache_event_count\x011\x1fMicrosoft.ADAL.application_name\x19com.microsoft.s
kype.teams\x0eEventInfo.Time\x182020-01-
```

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[2] Microsoft, Required diagnostic data for Office, 21 February 2020, URL: https://docs.microsoft.com/en-gb/deployoffice/privacy/required-diagnostic-data.

*28T13:41:08.277Z\x1bMicrosoft.ADAL.x_client_sku\x03iOS"Microsoft.ADAL.application_version\x1 00100772020011301\x1dMicrosoft.ADAL.is_successfull\x03yes\x11DeviceInfo.OsName\x03iOS\x0 fUserInfo.Region\x04emea\x15Microsoft.ADAL.api_id\x019\x1cMicrosoft.ADAL.response_time 13.468981\x1dMicrosoft.ADAL.correlation_id$607B9766-0F7B-4E25-810F-91D24EEFE11C\x1aDeviceInfo.NetworkProvider Telfort NL\x10DeviceInfo.Model\x1ciPhone 7 (A1660/A1779/A1780)\x16DeviceInfo.NetworkType\x04Wifi\x11DeviceInfo.SDKUid$AA751EF0-6A81-4362-8E34-FBB7D8109AEF\x14EventInfo.SdkVersion\x1bACT-iOS-ObjC-no-8.6.3.0-ECS\x11UserInfo.Language\x05en-NL\x0bUserInfo.Id$9c866cc5-8b0c-431a-b3d4-47f847af4865\x0cAppInfo_ETag."ntgm7nDvPq7kXgSkslAAwxUipMz/OXqD+CaDE9omFMM="\x11Us erInfo.TenantId$cc7df247-60ce-4a0f-9d75-704cf60efc64 DeviceInfo.Id$8ABE25E4-14DD-4698-81D3-319AE2AC2E06\x10EventInfo.InitId$36C2B541-8C8B-4B57-AD1C-946433A9248B\x19Microsoft.ADAL.request_id$9E004FB7-8337-43E0-842C-798251B8166A\x10EventInfo.Source\x12act_default_source eventpriority\x012\x0fDeviceInfo.Make\x05Apple\x18Microsoft.ADAL.device_id@b11a64c21333fb8 ca230e5097a866b3894f1b30c163586797a8a628c67c47414\x1eMicrosoft.ADAL.prompt_behavior\ x0eAD_PROMPT_AUTO\x0fAppInfo.Version\x161417/1.0.77.2020011301 Session.Id$1007E236-E063-4FAF-B397-0A5B48CE9425\x15Microsoft.ADAL.status succeeded\x14DeviceInfo.OsVersion\x0612.3. 1\x1bMicrosoft.ADAL.x_client_ver\x062.6.10\x0eEventInfo.Name\x08adalauth*Microsoft.ADAL.aut hority_validation_status\x03yes\xd0\x18\x02\x00\x00\x00*

Example telemetry event changetextselection from OneDrive on Android:

m\u0009\u000B\u0001J30b97846c6c640ed90e3b4e06d98a986-b6251ed6-9d7f-4e24-8ace-044e9613d08b-7662\u000A\u0001I\u0012act_default_source\u00A9$53f5c06a-b210-4783-9b65-24025a68a0c4\u00D1\u0006\u00A6\u00B3\u00DD\u00D4\u00F9[\u00CB\u0008\u000A\u0002)$ eeeca129-5e06-41a0-90a3-0b98f1a17ff4q\u00AE\u0093\u00DD\u00D4\u00F9[\u00A9\u0006custom\u00C9\u0006\u000Bqu erychange\u00CD\u000D\u0009\u0009\u0017\u0013clientCorrelationId$33f1afe2-7b0a-af4c-fb16-d61c7586b0fa\u001BsuggestionListCorrelationId$4de287a8-1a44-46a8-993f-6637cef169ad\u000AclientType\u000DOfficeAndroid\u0007version\u000E1.20190813.8.2\u0007e ventId\u0012QueryChangedAction\u000EhostAppVersion\u00031.0\u000BhostAppRing\u0008Inte rnal\u000BhostAppName\u0008TestHost\u000FhostAppPlatform\u0007Android\u000AexportType\ u000FUserInteraction\u000AexportName\u000BQueryChange\u0009eventType\u0005Trace\u0006 region\u0009NO_REGION\u000BUserInfo.Id$e66b155d-dcd6-4370-b8c3-673499af7b06\u000EUserInfo.MsaId\u00101003200094BB100D\u0014UserInfo.OMSTenantId$cc7 df247-60ce-4a0f-9d75-704cf60efc64\u000CAppInfo.Name\u0013Live Persona Picker\u0011UserInfo.TimeZone\u0006+01:00\u0010EventInfo.InitId$212ca241-59dd-48a3-8981-9f5dc878a47e\u0012EventInfo.Sequence\u00012\u0014EventInfo.SdkVersion\u0010AWT-Web-JS-1.8.5\u000EEventInfo.Name\u000Bquerychange\u000EEventInfo.Time\u00182020-01-22T12:48:04.311Z\u00CD"\u0009\u0008\u0001\u000FUserInfo.IdType\u0000\u0000\u0000\u00 00\u0000\u0000\u0018@\u0000)$0da17ec4-ec8a-4fff-95f6-5566b0e20bbdq\u009A\u0093\u00DD\u00D4\u00F9[\u00A9\u0006custom\u00C9\u0006\u0013c hangetextselection\u00CD\u000D\u0009\u0009\u0017\u0013clientCorrelationId$33f1afe2-7b0a-af4c-fb16-d61c7586b0fa\u001BsuggestionListCorrelationId$4de287a8-1a44-46a8-993f-6637cef169ad\u000AclientType\u000DOfficeAndroid\u0007version\u000E1.20190813.8.2\u0007e ventId\u001BInputSelectionChangedAction\u000EhostAppVersion\u00031.0\u000BhostAppRing\u 0008Internal\u000BhostAppName\u0008TestHost\u000FhostAppPlatform\u0007Android\u000Aexp ortType\u000FUserInteraction\u000AexportName\u0013ChangeTextSelection\u0009eventType\u0 005Trace\u0006region\u0009NO_REGION\u000BUserInfo.Id$e66b155d-dcd6-4370-b8c3-673499af7b06\u000EUserInfo.MsaId\u00101003200094BB100D\u0014UserInfo.OMSTenantId$cc7 df247-60ce-4a0f-9d75-704cf60efc64\u000CAppInfo.Name\u0013Live Persona Picker\u0011UserInfo.TimeZone\u0006+01:00\u0010EventInfo.InitId$212ca241-59dd-48a3-8981-9f5dc878a47e\u0012EventInfo.Sequence\u00011\u0014EventInfo.SdkVersion\u0010AWT-Web-JS-1.8.5\u000EEventInfo.Name\u0013changetextselection\u000EEventInfo.Time\u00182020-01-22T12:48:04.301Z\u00CD"\u0009\u0008\u0001\u000FUserInfo.IdType\u0000\u0000\u0000\u00 00\u0000\u0000\u0018@\u0000\u0000\u0000

Example telemetry event trap_token_manager from Teams on Android:

m   \x0b\x03Jbaca4c4fb3c842318f5c83f97f9553df-80107ba9-5800-4f70-a301-ed4d91f875d7-6887

\x01)\x06ClientI\x12act_default_sourcei
5.0.93.258\xa9$c7d7d288-87b8-493d-8f8d-d25f63b85bb6\xd1\x06\x92\xae\xb0\xc5\xfd[\xcb\x08
\x02)$50b626be-81b2-4e49-906f-f6cbee494d49q\x80\xe1\xaf\xc5\xfd[\xa9\x06Custom\xc9\x06\x12trap_token_manager\xcd
                    \x1d\x0fAppInfo.EcsEtag\x02""\x0fAppInfo.Version\x151416/1.0.0.2019121
201
DeviceInfo.Id\x1416455807172234515524\x10DeviceInfo.Model
Pixel 3
XL\x16DeviceInfo.NetworkType\x04Wifi\x11DeviceInfo.OsName\x07Android\x14DeviceInfo.OsVersion\x0210\x10EventInfo.InitId$0821ea51-460e-44eb-b3fe-a8ffd0ee8f61\x0eEventInfo.Name\x12trap_token_manager\x14EventInfo.SdkVersion\x1eSCT2-Android-C++-No-5.0.93.258\x12EventInfo.Sequence\x011\x0e<mark>EventInfo.Time\x182020-01-28T13:27:34.720Z</mark>\x11<mark>LoggedInUserCount\x010</mark>\x04Ring\x07general\x1eSkype_InitiatingUser_Ui
Version\x151416/1.0.0.2019121201\x08<mark>TenantId$cc7df247-60ce-4a0f-9d75-704cf60efc64</mark>\x0eact_session_id$232c5056-4aa0-4ec9-b9b3-5b823c6d3b66
eventpdclevel\x012
eventpriority\x012\x14request.backoffCount\x010\x0frequest.endTime\x010\x13request.httpReqTime\x0c372163977207\x0erequest.reason\x17no relay token in
cache\x1frequest.skypeTokenAvailableTime\x010\x11request.startTime\x0c372163975773\x15request.tokenDuration\x14-7840533716888860587\x16start.cacheValiditySec\x02-1
start.time\x0c372163975066\x0cuserpdclevel\x010\xd0\x18\x02\x00)$10aa4f92-212c-4543-ae1e-32535474569bq\xb8\xe5\xaf\xc5\xfd[\xa9\x06Custom\xc9\x06\x12trap_token_manager\xcd
                    \x1d\x0fAppInfo.EcsEtag\x02""\x0fAppInfo.Version\x151416/1.0.0.2019121
201
DeviceInfo.Id\x1416455807172234515524\x10DeviceInfo.Model
Pixel 3
XL\x16DeviceInfo.NetworkType\x04Wifi\x11DeviceInfo.OsName\x07Android\x14DeviceInfo.OsVersion\x0210\x10EventInfo.InitId$0821ea51-460e-44eb-b3fe-a8ffd0ee8f61\x0e<mark>EventInfo.Name\x12trap_token_manager</mark>\x14EventInfo.SdkVersion\x1eSCT2-Android-C++-No-5.0.93.258\x12EventInfo.Sequence\x012\x0e<mark>EventInfo.Time\x182020-01-28T13:27:35.004Z</mark>\x11LoggedInUserCount\x010\x04Ring\x07general\x1eSkype_InitiatingUser_Ui
Version\x151416/1.0.0.2019121201\x08<mark>TenantId$cc7df247-60ce-4a0f-9d75-704cf60efc64</mark>\x0eact_session_id$232c5056-4aa0-4ec9-b9b3-5b823c6d3b66
eventpdclevel\x012
eventpriority\x012\x14request.backoffCount\x010\x0frequest.endTime\x0c372164262330\x13request.httpReqTime\x010\x0erequest.result\x02OK\x1frequest.skypeTokenAvailableTime\x010\x11request.startTime\x010\x15request.tokenDuration\x06604800\x16start.cacheValiditySec\x02-1
start.time\x0c372163975066\x0cuserpdclevel\x010\xd0\x18\x02\x00\x00Jeab9f6f272f94c0380e89c46324ede7a-34dc0748-fb55-4485-b82c-ea7753fb9887-7371
\x01)\x06ClientI\x12act_default_sourcei
5.0.93.258\xa9$d51238d9-e126-4a78-ac3f-53e73488a43b\xd1\x06\x92\xae\xb0\xc5\xfd[\xcb\x08
\x01)$b6201685-d537-43ac-8439-5402f89bc652q\xa8\xe3\xaf\xc5\xfd[\xa9\x06Custom\xc9\x06\x16mdsc_mediaagentmanager\xcd
                    \x1b
APIErrorCount\x010\x0fAPIWarningCount\x012\x0fAppInfo.EcsEtag\x02""\x0fAppInfo.Version\x151416/1.0.0.2019121201
DeviceInfo.Id\x1416455807172234515524\x10DeviceInfo.Model
Pixel 3
XL\x16DeviceInfo.NetworkType\x04Wifi\x11DeviceInfo.OsName\x07Android\x14DeviceInfo.OsVersion\x0210\x10EventInfo.InitId$afcf7444-5aa2-41b4-84c8-1eaed779b81e\x0eEventInfo.Name\x16mdsc_mediaagentmanager\x14EventInfo.SdkVersion\x1eSCT2-Android-C++-No-5.0.93.258\x12EventInfo.Sequence\x011\x10EventInfo.Source   mds
agent\x0e<mark>EventInfo.Time\x182020-01-</mark>

28T13:27:34.868Z\x11EventTimestampBagh{"eventStart":"1580218054597","events":[{"SkylibSt
art":"47"},{"Initialize":"54"},{"Initialized":"271"}]}\x11LoggedInUserCount\x010
MediaInitMode\x011\x04Ring\x07general\x1eSkype_InitiatingUser_UiVersion\x151416/1.0.0.2019
121201\x10Skype_ResultCode\x03200\x12Skype_ResultDetail\x07Success\x08TenantId$cc7df247
-60ce-4a0f-9d75-704cf60efc64\x0eact_session_id$232c5056-4aa0-4ec9-b9b3-5b823c6d3b66
eventpdclevel\x013
eventpriority\x012\x0cuserpdclevel\x010\xd0\x18\x02\x00\x00J53fdaa090eb946b5a1d6cbdeb4f2
ef66-bcbf6380-2590-41cc-ae60-9e467cd51835-7413
\x01)\x06ClientI\x12act_default_sourcei
5.0.93.258\xa9$cab99f7f-86a4-44fd-a4fe-d49478ac1de2\xd1\x06\x92\xae\xb0\xc5\xfd[\xcb\x08
\x02)$277dddb9-8220-42d0-aad1-
854f5f5b63d7q\xb8\xe5\xaf\xc5\xfd[\xa9\x06Custom\xc9\x067skypecosi_concore_native_callsign
alingagent_httprequest\xcd
                        0\x0fAppInfo.EcsEtag\x02""\x0fAppInfo.Version\x151416/1.0.0.201912120
1
==DeviceInfo.Id\x141645580717223451524==\x10DeviceInfo.Model
Pixel 3
XL\x16DeviceInfo.NetworkType\x04Wifi\x11DeviceInfo.OsName\x07Android\x14DeviceInfo.OsVers
ion\x0210
EndpointId$2656cac7-b0e3-be72-b0e3-42c442c4b0e3\x10EventInfo.InitId$e3d9cadd-8347-4b5e-
a381-
31c5a4d52be6\x0eEventInfo.Name7skypecosi_concore_native_callsignalingagent_httprequest\x14
EventInfo.SdkVersion\x1eSCT2-Android-C++-No-
5.0.93.258\x12EventInfo.Sequence\x011\x10EventInfo.Source\x0cskypeconcore\x0eEventInfo.Ti
me\x182020-01-
28T13:27:35.004Z\x16HttpEventTimestampBag1\xd1\x06{"eventStart":"1580218054739","event
s":[{"HTTPSTACK_INFO_UNDEFINED":"1","data":"sendRequest(Raw)"},{"HTTPSTACK_INFO_BAC
KEND":"6"},{"HTTPSTACK_INFO_API_REQUEST_OPEN":"0"},{"HTTPSTACK_INFO_API_REQUEST_
SEND":"0"},{"HTTPSTACK_INFO_BE_REQUEST_START":"0"},{"HTTPSTACK_INFO_BE_PROXY_AU
TH_TYPE":"1"},{"RT_VIA_PROXY":"1"},{"RT_CONNECT_TIME":"92"},{"RT_TCP_CONNECT_TIME":
"53"},{"RT_TLS_TIME":"26"},{"RT_PROXY_TIME":"12"},{"HTTPSTACK_INFO_BE_WRITE_FIRST":
"93"},{"HTTPSTACK_INFO_BE_WRITE_COUNT":"1"},{"HTTPSTACK_INFO_BE_WRITE_SIZE":"941"
},{"HTTPSTACK_INFO_BE_WRITE_LAST":"93"},{"HTTPSTACK_INFO_BE_READ_FIRST":"219"},{"
HTTPSTACK_INFO_BE_READ_COUNT":"2"},{"HTTPSTACK_INFO_BE_READ_SIZE":"537"},{"HTTPS
TACK_INFO_BE_READ_LAST":"263"},{"HTTPSTACK_INFO_BE_HTTP_STATUS_CODE":"200"},{"HT
TPSTACK_INFO_BE_REQUEST_END":"263"},{"HTTPSTACK_INFO_ON_RESPONSE_RECEIVED":"26
3"}]}\x16HttpEventTimestampBag4i{"eventStart":"1580218054735","events":[{"GetToken":"3"},
{"ExecRequest":"3"},{"ResponseReceived":"268"}]}\x12HttpStackErrorCode\x010\x13HttpStackE
rrorCode1\x010\x0eHttpStatusCode\x03200\x0fHttpStatusCode1\x03200\x16IsEncryptedHttpEna
bled\x010\x15IsMinifiedBodyEnabled\x011\x17IsRequestHedgingEnabled\x011\x11IsUdpContextV
alid\x010\x1aIsUdpIncomingCanaryEnabled\x011\x14IsUdpIncomingEnabled\x011\x11IsUdpKeyA
vailable\x010\x1aIsUdpOutgoingCanaryEnabled\x011\x14IsUdpOutgoingEnabled\x011\x11Logged
InUserCount\x010\x0fRequestAttempts\x011\x0eRequestLogName\x11GET-SessionTicket
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ResultCode\x010\x0bResultCode1\x010\x04Ring\x07general\x16RoundTripTimeInSeconds\x03265
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eventpriority\x012\x0cuserpdclevel\x010\xd0\x18\x02\x00)$a043dd6f-0426-452a-b8de-
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alingagent_httprequest\xcd
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Pixel 3
XL\x16DeviceInfo.NetworkType\x04Wifi\x11DeviceInfo.OsName\x07Android\x14DeviceInfo.OsVers
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Examples from 1 very long telemetry event with two event names, namely: Office.Online.Test.Prototype.TS.Ribbon.Action and office_word_online_useraction_ reporttabswitch **from Word on Office for the Web**

m   \x0b\x02J79b56d2f6f2444f1a3d7f7c7f12bcc0c-f47f5fe6-ed89-42f6-8a43-cea0f5930b17- 7407
\x01I\x12act_default_source\xa9$4bab4e26-7a2f-45da-bcc2- 5e88b28445ad\xd1\x06\xc0\xeb\xc1\x88\xf9[\xcb\x08
\x02)$1a1ad7bb-5b2d-47a2-8daa- 8f05edbb7865q\x84\xe5\xc1\x88\xf9[\xa9\x06custom\xc9\x06- office_online_test_prototype_ts_ribbon_action\xcd
                    0
Event.Name- Office.Online.Test.Prototype.TS.Ribbon.Action\x0cEvent.Source\x06OTelJS\x08App.Name\x04Wor d\x0cApp.Platform\x03Web\x0bApp.Version\x1016.0.12516.33703\x06zC.App\x03App
Session.Id$101d02fa-1d9b-48aa-aaaa-c4953476d4ba
zC.Session\x07Session\x15Release.AudienceGroup
Production
zC.Release\x07Release\x0cBrowser.Name\x06Chrome\x0fBrowser.Version   79.0.3945
zC.Browser\x07Browser\x12Culture.UiLanguage\x05en-GB
zC.Culture\x07Culture\x08WAC.Host\x11SharePoint Online\x0fWAC.ServerDocId$192fc7e2-d513- 4ef5-8fb7- a02b75e798ef\x0eWAC.Datacenter\x03EU2\x13WAC.ApplicationMode\x07Unified\x1bWAC.Applica tionModeExtended\x0cUNIFIED_EDIT\x13WAC.BrowserLanguage\x05en- GB\x13WAC.ContentLanguage\x05en-US
WAC.OsVersion\x11Mac OS
X(10.15.2)\x08WAC.Ring\x015\x06zC.WAC\x03WAC\x18User.PrimaryIdentityHash\x10100320009 4bb100d\x19User.PrimaryIdentitySpace   OrgIdPuid

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office_online_test_prototype_ts_ribbon_action\xcd
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Event.Name-
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d\x0cApp.Platform\x03Web\x0bApp.Version\x1016.0.12516.33703\x06zC.App\x03App
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Production
zC.Release\x07Release\x0cBrowser.Name\x06Chrome\x0fBrowser.Version   79.0.3945
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Production

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tionModeExtended\x0cUNIFIED_EDIT\x13WAC.BrowserLanguage\x05en-
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\x1dData.UserAction.TriggerMethod\x07Unknown\x12zC.Data.UserAction\x18Office.System.UserA
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ce.System.UserAction\x13Data.OTelJS.Version\x063.1.26\x11UserInfo.Language\x05en-
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020-01-
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switch\xcd
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Event.Name'Office.Word.Online.UserAction.TabSwitch\x0cEvent.Source\x06OTelJS\x0eEvent.Contr
act\x16Office.System.Activity\x0bzC.Activity\x16Office.System.Activity\x08App.Name\x04Word\x
0cApp.Platform\x03Web\x0bApp.Version\x1016.0.12516.33703\x06zC.App\x03App
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Production
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X(10.15.2)\x08WAC.Ring\x015\x06zC.WAC\x03WAC\x18User.PrimaryIdentityHash\x101003200094bb100d\x19User.PrimaryIdentitySpace   OrgIdPuid
User.TenantId$cc7df247-60ce-4a0f-9d75-704cf60efc64\x07zC.User\x04User\x10Device.OsVersion\x03N/A\x0eDevice.OsBuild\x03N/A   z
C.Device\x06Device   Data.Mode\x04edit\x14Data.UserAction.Name   TabSwitch
\x1eData.UserAction.CommandSurface\x06ribbon\x1aData.UserAction.ParentName\x06Review\x1dData.UserAction.TriggerMethod\x05mouse\x12zC.Data.UserAction\x18Office.System.UserAction\x13Data.OTelJS.Version\x063.1.26\x11UserInfo.Language\x05en-GB\x11UserInfo.TimeZone\x06+01:00\x16DeviceInfo.BrowserName\x06Chrome\x19DeviceInfo.BrowserVersion
79.0.3945.117\x11DeviceInfo.OsName\x08Mac OS
X\x14DeviceInfo.OsVersion\x0210\x10EventInfo.InitId$182a9e14-4c90-4929-8826-06d0dda0a886\x12EventInfo.Sequence\x019\x14EventInfo.SdkVersion\x10AWT-Web-JS-1.8.5\x0eEventInfo.Name'office_word_online_useraction_tabswitch\x0eEventInfo.Time\x182020-01-21T14:36:06.799Z\xcd\x1f   \x02\x05\x10Activity.Success\x01\x0fWAC.IsSynthetic\x00\x12WAC.IsBusinessUser\x01   WAC.Isxxx\x01\x10User.IsAnonymous\x00\xcd \x11\x01
Event.Time\x80\xcc\xfe\xff\xe7\x9f\xcf\xd7\x11\xcd!   \x11\x08\x0eEvent.Sequence6\x11Activity.Duration\x00\x0eActivity.Count\x02\x10Activity.AggMode\x00\x10Data.CustomData1\x00\x10Data.CustomData2\x00\x11Data.ActiveDocKey\x02\x12Data.UserAction.Id\x92\xb1\xa2\xeb\x02\x00)$8cb7a377-9b43-4009-b6be-dc92f92b3b9dq\x9a\xcc\xc1\x88\xf9[\xa9\x06custom\xc9\x06-office_word_online_useraction_reporttabswitch\xcd

Privacy Company has seen telemetry messages from a number of Office apps on iOS without Userinfo.id. These messages differ in content from other telemetry messages. They may have been recorded before the user was logged in.

Example telemetry event PowerPoint dismissinput on iOS

m\u0009\u000B\u0001J30b97846c6c640ed90e3b4e06d98a986-b6251ed6-9d7f-4e24-8ace-044e9613d08b-7662\u000A\u0001I\u0012act_default_source\u00A9$d290852f-7d87-4709-94a0-7a21876795db\u00D1\u0006\u0094\u0086\u00E0\u008C\u00F9[\u00CB\u0008\u000A\u0001)$bf889326-ff57-4d53-a75f-130ed2f19ed3q\u0086\u00E6\u00DF\u008C\u00F9[\u00A9\u0006custom\u00C9\u0006\u000Cdismissinput\u00CD\u000D\u0009\u0009\u0017\u0013clientCorrelationId$07385648-4c26-2669-f363-f25a3ee90be3\u001BsuggestionListCorrelationId$5ff0648f-fd46-4c77-9bf7-07b471997723\u000AclientType\u0009OfficeiOS\u0007version\u000E1.20190813.8.2\u0007eventId\u0013TextInputBlurAction\u000EhostAppVersion\u00031.0\u000BhostAppRing\u0008Internal\u000BhostAppName\u0008TestHost\u000FhostAppPlatform\u0003iOS\u000AexportType\u000FUserInteraction\u000AexportName\u000CDismissInput\u0009eventType\u0005Trace\u0006region\u0009NO_REGION\u000BUserInfo.Id\u0007NO_USER\u000EUserInfo.MsaId\u0007NO_USER\u0014UserInfo.OMSTenantId\u0009NO_TENANT\u000CAppInfo.Name\u0013Live Persona Picker\u0011UserInfo.TimeZone\u0006+01:00\u0010EventInfo.InitId$d85d56b4-2408-45ba-a25e-6823343d01f4\u0012EventInfo.Sequence\u00011\u0014EventInfo.SdkVersion\u0010AWT-Web-JS-1.8.5\u000EEventInfo.Name\u000Cdismissinput\u000EEventInfo.Time\u00182020-01-21T15:50:08.515Z\u00CD"\u0009\u0008\u0001\u000FUserInfo.IdType\u0000\u0000\u0000\u0000\u0000\u0000\u0018@\u0000\u0000\u0000

Example telemetry event dismissinput in Word on iOS

m\u0009\u000B\u0001J30b97846c6c640ed90e3b4e06d98a986-b6251ed6-9d7f-4e24-8ace-044e9613d08b-7662\u000A\u0001I\u0012act_default_source\u00A9$3f7d7572-8487-448f-8dbb-5a94db8e7bc0\u00D1\u0006\u00C0\u00C7\u00DB\u0089\u00F9[\u00CB\u0008\u000A\u0001)$c2ce365d-ad68-4618-8c07-19123943539aq\u00EE\u00A7\u00DB\u0089\u00F9[\u00A9\u0006custom\u00C9\u0006\u000Cdismissinput\u00CD\u000D\u0009\u0009\u0017\u0013clientCorrelationId$58e8db6e-2a22-84b3-a4ed-69ac8c2ca5ad\u001BsuggestionListCorrelationId$296e28ec-4d91-42c0-84a7-330a19e5cee0\u000AclientType\u0009OfficeiOS\u0007version\u000E1.20190813.8.2\u0007eventId\u0013TextInputBlurAction\u000EhostAppVersion\u00031.0\u000BhostAppRing\u0008Internal\u000BhostAppName\u0008TestHost\u000FhostAppPlatform\u0003iOS\u000AexportType\u000FUserInteraction\u000AexportName\u000CDismissInput\u0009eventType\u0005Trace\u0006region\u0009NO_REGION\u000BUserInfo.Id\u0007NO_USER\u000EUserInfo.MsaId\u0007NO_USER\u0014U

serInfo.OMSTenantId\u0009NO_TENANT\u000CAppInfo.Name\u0013Live Persona
Picker\u0011UserInfo.TimeZone\u0006+01:00\u0010EventInfo.InitId$2a283979-1e8a-4874-
a909-de338b7161b5\u0012EventInfo.Sequence\u00011\u0014EventInfo.SdkVersion\u0010AWT-
Web-JS-1.8.5\u000EEventInfo.Name\u000Cdismissinput\u000EEventInfo.Time\u00182020-01-
21T14:57:06.039Z\u00CD"\u0009\u0008\u0001\u000FUserInfo.IdType\u0000\u0000\u0000\u00
00\u0000\u0000\u0018@\u0000\u0000\u0000

Example event dismissinput in Word on iOS

m   ..J30b97846c6c640ed90e3b4e06d98a986-b6251ed6-9d7f-4e24-8ace-044e9613d08b-7662
.I.act_default_source©$2f567f2c-7c60-4cfb-86de-733d99a54031Ñ.¢½·.ù[Ë.
.)$d52e45f9-d683-46cc-a4c6-b50a346a4153q².·.ù[©.customÉ..dismissinputÍ
            ..clientCorrelationId$1c146b2d-8d76-d306-a867-
7bb2c456400d.suggestionListCorrelationId$6abeb52a-1d8c-4caa-8db5-402f33ea9ffc
clientType
        OfficeiOS.version.1.20190813.8.2.eventId.TextInputBlurAction.hostAppVersion.1.0.hostAp
pRing.Internal.hostAppName.TestHost.hostAppPlatform.iOS
exportType.UserInteraction
exportName.DismissInput   eventType.Trace.region
        NO_REGION.UserInfo.Id.NO_USER.UserInfo.MsaId.NO_USER.UserInfo.OMSTenantId
        NO_TENANT.AppInfo.Name.Live Persona
Picker.UserInfo.TimeZone.+01:00.EventInfo.InitId$0e087805-992c-47b5-9574-
338af26fd866.EventInfo.Sequence.1.EventInfo.SdkVersion.AWT-Web-JS-
1.8.5.EventInfo.Name.dismissinput.EventInfo.Time.2020-01-21T14:17:13.305ZÍ"
        ...UserInfo.IdType.......@...

1.5 Access Requests

Two test accounts have been created and used for this research. The account f.f.terra@[anonymised].nl was used to test Android and Office for the Web. The account s.nas@[anonymised].nl was used to test the processing of data on iOS.

In order to be able to compare the collected data from outgoing traffic with data that Microsoft collects, Privacy Company has made two different types of access requests for these two test accounts.

When using Office for the Web, Microsoft not only processes telemetry messages sent through the user's browser, but also processes diagnostic data on its own cloud servers. This data flow cannot be monitored from the users' terminal devices. After all, the data is only processed on Microsoft's own servers. Therefore, at the request of Privacy Company, the system administrator for the tenant filed automated access requests via Microsoft's Data Subject Request tool for the two test accounts. The results of these DSAR are discussed in the DPIA.

In order to check what personal data Microsoft collects about the use of the mobile apps, Privacy Company has also submitted a formal access request to Microsoft for the two test accounts. The results of this request are also discussed in the DPIA.

1.6 Access results audit log

Because the results of the access request via Microsoft's automated tooling do not provide a representative picture of the personal data that Microsoft processes in its system generated server logs about the individual use of Office for the Web and the associated cloud services, a separate printout was made of the audit log at the request of Privacy Company. All log messages contain the following common fields:
- UserType
- UserKey
- RecordType
- Id
- UserId
- Version
- OrganizationId
- Workload

- Operation
- CreationTime
- ObjectId

In addition, depending on the type of action, these log messages contain additional unique identifiers such as IP address, information about the browser used, the apps used, content information such as file and path names, combined with information about actual actions.

FileModified
    CorrelationId
    ApplicationId
    ListItemUniqueId
    ItemType
    WebId
    EventSource
    ClientIP
    SourceFileName
    Site
    SiteUrl
    ListId
    ApplicationDisplayName
    UserAgent
    SourceFileExtension
    SourceRelativeUrl

TeamsSessionStarted

UserLoggedIn
    ApplicationId
    InterSystemsId
    SupportTicketId
    ResultStatus
    ClientIP
    ActorContextId
    Target
    Actor
    ExtendedProperties
    AzureActiveDirectoryEventType
    IntraSystemId
    ModifiedProperties
    ActorIpAddress
    LogonError
    TargetContextId

FileModifiedExtended
    CorrelationId
    ApplicationId
    ListItemUniqueId
    ItemType
    WebId
    EventSource
    ClientIP
    SourceFileName
    Site
    SiteUrl
    ListId
    ApplicationDisplayName
    UserAgent
    SourceFileExtension
    SourceRelativeUrl

FilePreviewed
    ApplicationId
    CorrelationId
    ListItemUniqueId
    ItemType

    WebId
    EventSource
    ClientIP
    SourceFileName
    Site
    SiteUrl
    ListId
    UserAgent
    SourceFileExtension
    SourceRelativeUrl

FileAccessed
    CorrelationId
    ApplicationId
    ListItemUniqueId
    ItemType
    WebId
    EventSource
    ClientIP
    SourceFileName
    Site
    SiteUrl
    ListId
    ApplicationDisplayName
    UserAgent
    SourceFileExtension
    SourceRelativeUrl

FileUploaded
    CorrelationId
    ApplicationId
    ListItemUniqueId
    ItemType
    WebId
    UserAgent
    EventSource
    ClientIP
    SourceFileName
    Site
    SiteUrl
    ListId
    ApplicationDisplayName
    ImplicitShare
    SourceFileExtension
    SourceRelativeUrl

FileRenamed
    CorrelationId
    ApplicationId
    ListItemUniqueId
    ItemType
    WebId
    DestinationFileName
    DestinationRelativeUrl
    EventSource
    ClientIP
    SourceFileName

Site
SiteUrl
ListId
UserAgent
DestinationFileExtension
SourceFileExtension
SourceRelativeUrl

PageViewed
CorrelationId
ListItemUniqueId
ItemType
WebId
UserAgent
EventSource
ClientIP
Site
CustomUniqueId

FileDownloaded
ApplicationId
CorrelationId
ListItemUniqueId
ItemType
WebId
EventSource
ClientIP
SourceFileName
Site
SiteUrl
ListId
UserAgent
SourceFileExtension
SourceRelativeUrl

FolderCreated
CorrelationId
ApplicationId
ListItemUniqueId
ItemType
WebId
EventSource
ClientIP
SourceFileName
Site
SiteUrl
ListId
UserAgent
SourceFileExtension
SourceRelativeUrl

SharingSet
ApplicationId
CorrelationId
ListItemUniqueId
ItemType
WebId
EventSource
EventData
ClientIP
SourceFileName
Site
TargetUserOrGroupType
SourceRelativeUrl
SiteUrl
ListId

ApplicationDisplayName
UserAgent
SourceFileExtension
TargetUserOrGroupName

FolderModified
CorrelationId
ApplicationId
ListItemUniqueId
ItemType
WebId
EventSource
ClientIP
SourceFileName
Site
SiteUrl
ListId
ApplicationDisplayName
UserAgent
SourceFileExtension
SourceRelativeUrl

FileAccessedExtended
CorrelationId
ListItemUniqueId
ItemType
WebId
EventSource
ClientIP
SourceFileName
Site
SiteUrl
ListId
UserAgent
SourceFileExtension
SourceRelativeUrl

SharingInheritanceBroken
ApplicationId
CorrelationId
ListItemUniqueId
ItemType
WebId
EventSource
EventData
ClientIP
SourceFileName
Site
SiteUrl
ListId
ApplicationDisplayName
UserAgent
SourceFileExtension
SourceRelativeUrl

ListUpdated
ApplicationId
CorrelationId
ListBaseType
ItemType
ListTitle
WebId
EventSource
ListBaseTemplateType
ClientIP
Site

ListId
ApplicationDisplayName
UserAgent
SharingRevoked
ApplicationId
CorrelationId
ListItemUniqueId
ItemType
WebId
EventSource
ClientIP
SourceFileName
Site
TargetUserOrGroupType
SourceRelativeUrl
SiteUrl
ListId
ApplicationDisplayName
UserAgent
SourceFileExtension
TargetUserOrGroupName
ListColumnCreated
ApplicationId
CorrelationId
ListBaseType
ItemType
ListTitle
WebId
EventSource
ListBaseTemplateType
ClientIP
Site
ListId
ApplicationDisplayName
UserAgent
SiteColumnCreated
CorrelationId
ItemType
ListTitle
WebId
EventSource
ClientIP
Site
ListId
UserAgent
PermissionLevelAdded
CorrelationId
ItemType
WebId
EventSource
EventData
ClientIP
Site
UserAgent
GroupAdded
CorrelationId
ItemType
ClientIP
EventSource
Site
ModifiedProperties
UserAgent

AddedToGroup
CorrelationId
ItemType
WebId
EventSource
EventData
ClientIP
Site
TargetUserOrGroupType
SiteUrl
UserAgent
TargetUserOrGroupName
AddedToSecureLink
CorrelationId
UniqueSharingId
ListItemUniqueId
ItemType
WebId
EventSource
EventData
ClientIP
SourceFileName
Site
TargetUserOrGroupType
SourceRelativeUrl
SiteUrl
ListId
UserAgent
SourceFileExtension
TargetUserOrGroupName
SecureLinkCreated
CorrelationId
UniqueSharingId
ListItemUniqueId
ItemType
WebId
EventSource
EventData
ClientIP
SourceFileName
Site
SiteUrl
ListId
UserAgent
SourceFileExtension
SourceRelativeUrl
ListCreated
ApplicationId
ListBaseType
CorrelationId
ItemType
ListTitle
WebId
EventSource
ListBaseTemplateType
ClientIP
Site
ListId

ApplicationDisplayName
UserAgent

2. Description of investigation results

Privacy Company has found telemetry traffic to the following eight external parties: Adjust, Akamai, Cloudflare, Giphy, Helpshift, HockeyApp, Optimizely and UserVoice.

This traffic and the relationship of these companies to Microsoft is explained per party below.

There is a difference between the mobile apps and Office for the Web. Microsoft does not publish any information about the parties with which it collaborates in providing its consumer services. The mobile Office apps belong to those consumer services. Office for the Web, on the other hand, is a so-called Core Online Service. Microsoft publishes an exhaustive list of subprocessors for these services.

Via the mobile Office apps, traffic goes to five American companies: Akamai, Cloudflare, Giphy, Helpshift and UserVoice and to one German company: Adjust GmbH. Via Office for the Web, traffic goes to the two American companies Giphy and Optimizely. The company HockeyApp has been owned by Microsoft since 2004, so this is not a third party.

Microsoft has concluded a processing agreement with Akamai as a content delivery network for the online services. But it is not clear whether Microsoft has concluded a processor agreement with the remaining six third-party companies.

When using OneDrive in Office for the Web, Microsoft forwards personal data to the U.S. companies Optimizely and Giphy. Optimizely is a platform for A/B testing for marketing and product teams. Microsoft sends traffic to Optimizely when using OneDrive via Office for the Web. Giphy delivers images when a user wants to insert an image into Teams. Teams sends the information to Giphy the moment a user clicks on an image to use it, before the user has seen information about Giphy or an option. Giphy and Optimizely are missing from the limitative list of subprocessors for the Core Online Services.

Microsoft sends personal data via the mobile Office apps on iOS to the German company Adjust (via the OneDrive and Outlook apps) and to four American companies. This is done from the Word app to Cloudflare, from the Outlook app to Helpshift and UserVoice and from the Teams app to Giphy.

2.1 Adjust

Privacy Company has detected traffic to the German company Adjust GMbH from the OneDrive and the Outlook app on iOS.

Adjust specializes in measuring the reach of, and combating fraud with, mobile ads. The company indicates that it processes diagnostic data for four purposes: Event Tracking, Impression Tracking, Install Tracking and Retargeting. In its privacy policy, it states that it acts as a processor for app customers for the following purposes:

"We use the aforementioned data for providing mobile analytics and attribution services to our Customers, and thereby allow our customers to track their marketing performance, to match You to their campaigns and to understand how You engage with our Customer's app. Furthermore, we enable our Customers to track Your interactions in their apps in real time in order to see how You engage over their full lifetime."

For these purposes, Adjust processes the following types of personal data::

"Our SDK and APIs (collectively the "adjust technology") may process some of the following data from You as the End User:

hashed IP address
Mobile identifiers such as the ID for Advertising for iOS (IDFA), Google Advertising ID or similar mobile identifiers
Installation and first opening of an app on Your mobile device

Your interactions within an app (e.g. in-app purchases, registration)
Information regarding which advertisements You have seen or clicked on
For the Unbotify/Fraud product additionally: sensory data including touch events, counting text changes, accelerometer, gyroscope, battery, light sensor, device hardware specifications and operating system version."[3]

What data Adjust collects, follows from the example below of a telemetry event via the OneDrive app on iOS.

bundle_id: com.microsoft.skydrive
tracking_enabled: 1
language: en
country: NL
app_version: 11.15.8
device_name: iPhone9,1
cpu_type: CPU_SUBTYPE_ARM64_V8
app_version_short: 11.15.8
attribution_deeplink: 1
needs_response_details: 1
os_build: 16F203
last_interval: 86273
install_receipt:
MIISmAYJKoZIhvcNAQcCoIISiTCCEoUCAQExCzAJBgUrDgMCGgUAMIICOQYJKoZIhvcNAQcBoIICKgS
CAiYxggIiMAoCARQCAQEEAgwAMAsCARkCAQEEAwIBAzAMAgEKAgEBBAQWAjQrMAwCAQ4CAQEEBA
ICAIkwDQIBCwIBAQQFAgMBOicwDQIBDQIBAQQFAgMB1e0wDgIBAQIBAQQGAgQcdqamMA4CAQkC
AQEEBgIEUDI1MzAOAgEQAgEBBAYCBDG7R0QwEAIBDwIBAQQIAgYcQRVzdbcwEQIBAwIBAQQJDAc
xMS4xNS44MBECARMCAQEECQwHMTEuMTUuODAUAgEAAgEBBAwCClByb2R1Y3Rpb24wGAIBBAIB
AgQQZrqkeTmH7BbIVr3McPaCvjAcAgEFAgEBBBT3TVfl6xo98An7a8RHEVQeOrwUKjAeAgEIAgEBBBY
WFDIwMjAtMDEtMjBUMDk6MjM6MTlaMB4CAQwCAQEEFhYUMjAyMC0wMS0yMFQwOToyMzoyMFowH
gIBEgIBAQQWFhQyMDIwLTAxLTIwVDA5OjIzOjIwWjAgAgECAgEBBBgMFmNvbS5taWNyb3NvZnQuc
2t5ZHJpdmUwPAIBBwIBAQQ0243Z/7D8mzRZkqsN4NWZiJRzxycJ1HuAuBcyTjnrUom1rxVR0stj14VB
7IrT8FnNadA5RDBXAgEGAgEBBE+qvgHmp61aE19w9vZOTDKtiSPTyVcUUqmcyLtU518wo50Dk0t0V
9Hc0NAWTOTn/9H7FAuu/qmNX55+UPKsnWK1tSINIeJSdjIiwJu69QO1oIIOZTCCBXwwggRkoAMCAQ
ICCA7rV4fnngmNMA0GCSqGSIb3DQEBBQUAMIGWMQswCQYDVQQGEwJVUzETMBEGA1UECgwKQX
BwbGUgSW5jLjEsMCoGA1UECwwjQXBwbGUgV29ybGR3aWRlIERldmVsb3BlciBSZWxhdGlvbnMxRDB
CBgNVBAMMO0FwcGxlIFdvcmxkd2lkZSBEZXZlbG9wZXIgUmVsYXRpb25zIENlcnRpZmljYXRpb24gQ
XV0aG9yaXR5MB4XDTE1MTExMzAyMTUwOVoXDTIzMDIwNzIxNDg0N1owgYkxNzA1BgNVBAMMLk1h
YyBBcHAgU3RvcmUgYW5kIGlUdW5lcyBTdG9yZSBSZWNlaXB0IFNpZ25pbmcxLDAqBgNVBAsMI04Fwc
GxlIFdvcmxkd2lkZSBEZXZlbG9wZXIgUmVsYXRpb25zMRMwEQYDVQQKDApBcHBsZSBJbmMuMQsw
CQYDVQQGEwJVUzCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEBAKXPgf0looFb1oftI9ozHI
7iI8ClxCbLPcaf7EoNVYb/pALXl8o5VG19f7JUGJ3ELFJxjmR7gs6JuknWCOW0iHHPP1tGLsbEHbgDqViiB
D4heNXbt9COEo2DTFsqaDeTwvK9HsTSoQxKWFKrEuPt3R+YFZA1LcLMEsqNSIH3WHhUa+iMMTYfSg
YMR1TzN5C4spKJfV+khUrhwJzguqS7gpdj9CuTwf0+b8rB9Typj1IawCUKdg7e/pn+/8Jr9VterHNRSQh
WicxDkMyOgQLQoJe2XLGhaWmHkBBoJiY5uB0Qc7AKXcVz0N92O9gt2Yge4+wHz+KO0NP6JlWB7+I
DSSMCAwEAAaOCAdcwggHTMD8GCCsGAQUFBwEBBDMwMTAvBggrBgEFBQcwAYYjaHR0cDovL29jc3
AuYXBwbGUuY29tL29jc3AwMy13d2RyMDQwHQYDVR0OBBYEFJGknPzEdrefoIr0TfWPNl3tKwSFMAw
GA1UdEwEB/wQCMAAwHwYDVR0jBBgwFoAUiCcXCam2GGCL7Ou69kdZxVJUo7cwggEeBgNVHSAEgg
EVMIIBETCCAQ0GCiqGSIb3Y2QFBgEwgf4wgcMGCCsGAQUFBwICMIG2DIGzUmVsaWFuY2Ugb24gdG
hpcyBjZXJ0aWZpY2F0ZSBieSBhbnkgcGFydHkgYXNzdW1lcyBhY2NlcHRhbmNlIG9mIHRoZSB0aGVu
IGFwcGxpY2FibGUgc3RhbmRhcmQgdGVybXMgYW5kIGNvbmRpdGlvbnMgb2YgdXNlLCBjZXJ0aWZpY
2F0ZSBwb2xpY3kgYW5kIGNlcnRpZmljYXRpb24gcHJhY3RpY2Ugc3RhdGVtZW50cy4wNgYIKwYBBQU
HAgEWKmh0dHA6Ly93d3cuYXBwbGUuY29tL2NlcnRpZmljYXRlYXV0aG9yaXR5LzAOBgNVHQ8BAf8E
BAMCB4AwEAYKKoZIhvdjZAYLAQQCBQAwDQYJKoZIhvcNAQEFBQADggEBAA2mG9MuPeNbKwduQp
Zs0+iMQzCCX+Bc0Y2+vQ+9GvwIktuMhcOAWd/j4tcuBRSsDdu2uP78NS58y60Xa45/H+R3ubFnlbQT
XqYZhnb4WiCV52OMD3P86O3GH66Z+GVIXKDgKDrAEDctuaAEOR9zucgF/fLefxoqKm4rAfygIFzZ630
npjP49ZjgvkTbsUxn/G4KT8niBqjSl/OnjmtRolqEdWXRFgRi48Ff9Qipz2jZkgDJwYyz+I0AZLpYYMB8r4
91ymm5WyrWHWHumEL1TKc3GZvMOxx6GUPzo22/SGAGDDaSK+zeGLUR2i0j0I78oGmcFxuegHs5R
0UwYS/HE6gwggQiMIIDCqADAgECAggB7rzEOW2gEDANBgkqhkiG9w0BAQUFADBiMQswCQYDVQQG
EwJVUzETMBEGA1UEChMKQXBwbGUgSW5jLjEmMCQGA1UECxMdQXBwbGUgQ2VydGlmaWNhdGlvb
iBBdXRob3JpdHkxFjAUBgNVBAMTDUFwcGxlIFJvb3QgQ0EwHhcNMTMwMjA3MjE0ODQ3WhcNMjMwM

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[3] Idem.

jA3MjE0ODQ3WjCBljELMAkGA1UEBhMCVVMxEzARBgNVBAoMCkFwcGxlIEluYy4xLDAqBgNVBAsMI0F
wcGxlIFdvcmxkd2lkZSBEZXZlbG9wZXIgUmVsYXRpb25zMUQwQgYDVQQDDtBcHBsZSBXb3JsZHdp
ZGUgRGV2ZWxvcGVyIFJlbGF0aW9ucyBDZXJ0aWZpY2F0aW9uIEF1dGhvcml0eTCCASIwDQYJKoZIh
vcNAQEBBQADggEPADCCAQoCggEBAMo4VKbLVqrIJDlI6Yzu7F+4fyaRvDRTes58Y4Bhd2RepQcjtjn+
UC0VVlhwLX7EbsFKhT4v8N6EGqFXya97GP9q+hUSSRUIGayq2yoy7ZZjaFIVPYyK7L9rGJXgA6wBfZc
FZ84OhZU3au0Jtq5nzVFkn8Zc0bxXbmc1gHY2pIeBbjiP2CsVTnsl2Fq/ToPBjdKT1RpxtWCcnTNOVfkS
WAyGuBYNweV3RY1QSLorLeSUheHoxJ3GaKWwo/xnfnC6AllLd0KRObn1zeFM78A7SIym5SFd/Wpqu
6cWNWDS5q3zRinJ6MOL6XnAamFnFbLw/eVovGJfbs+Z3e8bY/6SZasCAwEAAaOBpjCBozAdBgNVHQ
4EFgQUiCcXCam2GGCL7Ou69kdZxVJUo7cwDwYDVR0TAQH/BAUwAwEB/zAfBgNVHSMEGDAWgBQr
0GlHlHYJ/vRrjS5ApvdHTX8IXjAuBgNVHR8EJzAlMCOgIaAfhh1odHRwOi8vY3JsLmFwcGxlLmNvbS9yb
290LmNybDAOBgNVHQ8BAf8EBAMCAYYwEAYKKoZIhvdjZAYCAQQCBQAwDQYJKoZIhvcNAQEFBQAD
DggEBAE/P71m+LPWybC+P7hOHMugFNahui33JaQy52Re8dyzUZ+L9mm06WVzfgwG9sq4qYXKxr83
DRTCPo4MNzh1HtPGTiqN0m6TDmHKHOz6vRQuSVLkyu5AYU2sKThC22R1QbCGAColOV4xrWzw9pv
3e9w0jHQtKJoc/upGSTKQZEhltV/V6WId7aIrkhoxK6+JJFKql3VUAqa67SzCu4aCxvCmA5gl35b40ogH
Kf9ziCuY7uLvsumKV8wVjQYLNDzsdTJWk26v5yZXpT+RN5yaZgem8+bQp0gF6ZuEujPYhisX4eOGBrr
/TkJ2prfOv/TgalmcwHFGlXOxxioK0bA8MFR8wggS7MIIDo6ADAgECAgECMA0GCSqGSIb3DQEBBQUA
MGIxCzAJBgNVBAYTAlVTMRMwEQYDVQQKEwpBcHBsZSBJbmMuMSYwJAYDVQQLEx1BcHBsZSBDZX
J0aWZpY2F0aW9uIEF1dGhvcml0eTEWMBQGA1UEAxMNQXBwbGUgUm9vdCBDQTAeFw0wNjA0MjUy
MTQwMzZaFw0zNTAyMDkyMTQwMzZaMGIxCzAJBgNVBAYTAlVTMRMwEQYDVQQKEwpBcHBsZSBJb
mMuMSYwJAYDVQQLEx1BcHBsZSBDZXJ0aWZpY2F0aW9uIEF1dGhvcml0eTEWMBQGA1UEAxMNQX
BwbGUgUm9vdCBDQTCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEBAOSRqQkfkdseR1DrB
e1eeYQt6zaiV0xV7IsZid75S2z1B6siMALoGD74UAnTf0GomPnRymacJGsR0KO75Bsqwx+VnnoMpEeL
W9QWNzPLxA9NzhRp0ckZcvVdDtV/X5vyJQO6VY9NXQ3xZDUjFUsVWR2zlPf2nJ7PULrBWFBnjwi0IPfL
rCwgb3C2PwEwjLdDzw+dPfMrSSgayP7OtbkO2V4c1ss9tTqt9A8OAJILsSEWLnTVPA3bYharo3GSR1N
Vwa8vQbP4++NwzeajTEV+H0xrUJZBicR0YgsQg0GHM4qBsTBY7FoEMoxos48d3mVz/2deZbxJ2HafM
xRloXeUyS0CAwEAAaOCAXowggF2MA4GA1UdDwEB/wQEAwIBBjAPBgNVHRMBAf8EBTADAQH/MB0
GA1UdDgQWBBQr0GlHlHYJ/vRrjS5ApvdHTX8IXjAfBgNVHSMEGDAWgBQr0GlHlHYJ/vRrjS5ApvdHTX
8IXjCCAREGA1UdIASCAQgwggEEMIIBAAYJKoZIhvdjZAUBMIHyMCoGCCsGAQUFBwIBFh5odHRwczo
vL3d3dy5hcHBsZS5jb20vYXBwbGVjYS8wgcMGCCsGAQUFBwICMIG2GoGzUmVsaWFuY2Ugb24gdGh
pcyBjZXJ0aWZpY2F0ZSBieSBhbnkgcGFydHkgYXNzdW1lcyBhY2NlcHRhbmNlIG9mIHRoZSB0aGVuIG
FwcGxpY2FibGUgc3RhbmRhcmQgdGVybXMgYW5kIGNvbmRpdGlvbnMgb2YgdXNlLCBjZXJ0aWZpY2F
0ZSBwb2xpY3kgYW5kIGNlcnRpZmljYXRpb24gcHJhY3RpY2Ugc3RhdGVtZW50cy4wDQYJKoZIhvcNA
QEFBQADggEBAFw2mUwteLftjJvc83eb8nbSdzBPwR+Fg4UbmT1HN/Kpm0COLNSxkBLYvvRzm+7SZ
A/LeU802KI++Xj/a8gH7H05g4tTINM4xLG/mk8Ka/8r/FmnBQl8F0BWER5007eLIztHo9VvJOLr0bdw3
w9F4SfK8W147ee1Fxeo3H4iNcol1dkP1mvUoiQjEfehrI9zgWDGG1sJL5Ky+ERI8GA4nhX1PSZnIIozav
cNgs/e66Mv+VNqW2TAYzN39zoHLFbr2g8hDtq6cxlPtdk2f8GHVdmnmbkyQvvY1XGefqFStxu9k0IkEir
HDx22TZxeY8hLgBdQqorV2uT80AkHN7B1dSExggHLMIIBxwIBATCBozCBljELMAkGA1UEBhMCVVMxE
zARBgNVBAoMCkFwcGxlIEluYy4xLDAqBgNVBAsMI0FwcGxlIFdvcmxkd2lkZSBEZXZlbG9wZXIgUmVs
YXRpb25zMUQwQgYDVQQDDtBcHBsZSBXb3JsZHdpZGUgRGV2ZWxvcGVyIFJlbGF0aW9ucyBDZXJ0
aWZpY2F0aW9uIEII1DutXh+eeCY0wCQYFKw4DAhoFADANBgkqhkiG9w0BAQEFAASC
AQBWIfrG+JZX5Yo2Qru5EMQBTqcgTwJ/Ipe1tWe9sUtKVIMiMUVDEpGGNHuJJh3oau/Ebnkzs3fNAEKt
B6nuhrWbY/Arrq6v+PjnDYExyOxx09PjLUfWTpKmMTaAjGq6bL1tQ0fXENZyPrf5Q0ww3nKFbYjlyw7E
nLpnJ5kZSJVpPU7+cIfuBH3a8CaGXAabOJdIXGjpXpNkEQAM79wOAZJRgN2C8dQ9ZCIGNdibPbAtxcB
erllhNydVal9HxnzhGKGkEwRhia0bSAepH1F1+JdlriiYQixNgG2745RUCq84A98BPrgysNvD3a9Zb8IZu
kqnqK/kr08Wbl5gsGymj5UI

os_name: ios
session_count: 3
session_length: 154
event_buffering_enabled: 0
persistent_ios_uuid: 8381f709-bf90-45c2-a4cf-2042272ef6d4
environment: production
hardware_name: D10AP
idfv: 8ABE25E4-14DD-4698-81D3-319AE2AC2E06
os_version: 12.3.1
app_token: bos64a0h2ps0
subsession_count: 3
time_spent: 116
created_at: 2020-01-21T11:41:37.946Z+0100
device_type: iPhone
idfa: 0EE91183-48FE-410E-9F42-26D1BDA73C16
sent_at: 2020-01-21T11:42:41.174Z+0100

<u>Adjust is not mentioned on Microsoft's list of subprocessors for the Online Services, as last updated on 5 September 2019.</u>[4]

Microsoft mentions the domain app.adjust.com in its list of worldwide network endpoints, as no. 110, explaining: "Default Optional, Notes: Outlook for Android and iOS: Adjust integration". The interpretation 'Optional' (instead of Required) means that the administrator should in principle be able to block this traffic. Microsoft explains: "*In addition to basic internet services, there are third-party services that are only used to integrate functionality. While these are needed for integration, they're marked as optional in the Office 365 endpoints article which means core functionality of the service will continue to function if the endpoint isn't accessible.*"[5]

Microsoft does not mention the OneDrive app. Privacy Company has not seen any traffic to this domain from the Android app.

2.2 Akamai

Akamai is a content delivery network. Akamai offers copies of information through a variety of proprietary data centers, as close to the users as possible to increase the speed of access to the information. Through these domains static content is retrieved (fonts, images, javascripts, etc.).

Privacy Company has seen traffic from four apps on Office for the Web (OneDrive, Word, Excel and Powerpoint) and from the Outlook and Teams apps on iOS to the domains spoprod-a.akamaihd.net, img-prod-cms-rt-microsoft-com.akamaized.net and statics-marketing sites-neu-ms-com.akamaized.net.

It is a transfer of personal data because the traffic includes at least the IP addresses of visitors, their geographic location, telemetry data and websites visited, as well as any personal data contained in the content of cached information.[6]

Akamai has published a separate Data Protection Addendum about the processing of personal data in compliance with the GDPR, including Standard Contractual Clauses.[7]

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[4] Microsoft Trust Center, https://servicetrust.microsoft.com/ViewPage/TrustDocumentsV3
Version 5 September 2019, tab to the right with overview subprocessors, with hyperlink to:
https://go.microsoft.com/fwlink/p/?linkid=2096306
[5] Microsoft, Managing Office 365 endpoint, URL: https://docs.microsoft.com/en-gb/office365/enterprise/managing-office-365-endpoints
[6] Akamai describes these data in the Data Processing Addendum as follows: In providing services to Customer, Akamai may process one or more of the following categories of data:
(i) Personal Data in Customer Content: Personal data included within Customer Content that is
cached or stored on Akamai's servers for purposes of optimization, is provided by a customer for storage on Akamai servers, or that otherwise transits the Akamai servers as part of a data subject's session with the customer's web property ("End User Personal Data"). End User Personal Data may include,
a. Login credentials
b. Subscriber name and contact information
c. Financial or other transaction information
d. Other information relating to the individual data subject as requested or provided by the
customer through the use of its web property.
"Customer Content", means content and applications, including any third-party content or applications, provided to Akamai for delivery via or use by the Akamai network.
(ii) Personal Data in Akamai Logged Data: Akamai Network Data, logged by Akamai servers,
relating to the delivery of information over the Akamai platform, as well as logged personal data associated with user activity and interaction with web and internet protocol sessions transiting Akamai's servers as part of a data subject's session with the Customer's web property ("Logged Personal Data"). Logged Personal Data may include,
a. End user IP addresses
b. Page activity data and URLs of sites visited with time stamps (when combined with an associated IP address)
c. Geographic location based upon IP address and location of Akamai server (no more granular than city level)
d. Telemetry data (e.g., mouse clicks, movement rates, and user agent and related browser data)."
[7] Akamai, Data Protection Addendum, 25 May 2018, URL:
https://www.akamai.com/us/en/multimedia/documents/akamai/akamai-data-protection-addendum.pdf

Separate from the SCC, Akamai also relies on the EU-US Privacy Shield for the transfer of personal data[8]

Akamai is on the list of subprocessors of Microsoft for the Online Services.[9]

Microsoft mentions several domains of Akamai in its list of worldwide network endpoints.[10]

2.3 Cloudflare

Privacy Company has seen traffic to the U.S. company Cloudflare from the Word app on iOS. Cloudflare provides DNS services and has its own content delivery network, with data centers in Amsterdam, for example. Like Akamai, Cloudflare can therefore display locally stored copies of websites. Because the websites are already downloaded and compressed, the pages load faster. Cloudflare also provides security services, such as checking blacklists of IP addresses of known hackers and spammers.[11] According to an article on its own website, Cloudflare provides DDoS protection to websites hosted in Microsoft Azure..[12]

According to its privacy statement[13], Cloudflare collects the following information about end users of its services, that is, when people use the domains, websites or mobile apps of Cloudflare Customers (in this case: Microsoft):

"*This information may include but is not limited to IP addresses, system configuration information, and other information about traffic to and from Customers' websites or networks (collectively, "Log Data"). We collect and use Log Data to operate, maintain, and improve our Services in performance of our obligations under our Customer agreements.*"[14]

It concerns the transfer of personal data, because the traffic contains at least the IP addresses of visitors, plus log data.

Cloudflare can process these personal data for the following purposes:
- *"Provide, operate, maintain, improve, and promote the Website and Services for all users of the Website and Services;*
- *Enable you to access and use the Website and Services;*
- *Process and complete transactions, and send you related information, including purchase confirmations and invoices;*
- *Send transactional messages, including responses to your comments, questions, and requests; provide customer service and support; and send you technical notices, updates, security alerts, and support and administrative messages;*
- *Send commercial communications, in accordance with your communication preferences, such as providing you with information about products and services, features, surveys, newsletters, offers, promotions, contests, and events about us and our partners; and send other news or information about us and our partners. See Section 9 below for information on managing your communication preferences.*
- *Process and deliver contest or sweepstakes entries and rewards;*
- *Monitor and analyze trends, usage, and activities in connection with the Websites and Services and for marketing or advertising purposes;*
- *Comply with legal obligations as well as to investigate and prevent fraudulent transactions, unauthorized access to the Services, and other illegal activities;*
- *Personalize the Websites and Services, including by providing features or content that match your interests and preferences; and*
- *Process for other purposes for which we obtain your consent.*"[15]

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[8] Privacy Shield Policy Statement, 30 August 2016, "Akamai Technologies, Inc. ("Akamai"), including its wholly-owned subsidiaries, complies with the U.S.-EU Privacy Shield Framework." URL: https://www.akamai.com/us/en/privacy-policies/privacy-shield-policy.jsp
[9] Microsoft Trust Center
[10] Microsoft, Office 365 Worldwide endpoints.
[11] Dutch Blog, Cloudflare, wat is het? En wat zijn de voor- en nadelen? 1 February 2019, URL: https://www.vaneldijk.nl/artikelen/cloudflare-wat-is-het-en-wat-zijn-de-voor-en-nadelen
[12] Cloudflare, URL: https://www.cloudflare.com/integrations/microsoft-azure/
[13] Cloudflare Privacy Policy, effective 31 October 2019, URL: https://www.cloudflare.com/privacypolicy/
[14] Idem.
[15] Idem.

Cloudflare states that for end users in the EU it is acting as a data processor and processes personal data only on behalf of its customers. It is not clear whether or not the above purposes are authorised by Microsoft.

Cloudflare uses both the Privacy Shield and Standard Contractual Clauses for the transfer of personal data to the US.[16]

Cloudflare is not mentioned on Microsoft's list of subprocessors for the Online Services, as last updated on 5 September 2019.

Microsoft does not mention domains of Cloudflare in its list of worldwide network endpoints.

2.4 Giphy

When using Teams, both in Office for the Web and on iOS, Microsoft sends personal data to the U.S. company Giphy, based in New York with a representative in Hamburg. Giphy offers a large collection of images (GIFs and animated GIFs) that users can insert into all kinds of chat programs and social media.

Traffic goes to Giphy when a user wants to insert an image into a Team Conversation. At that moment, the data is automatically sent to Giphy, without the user getting any information or having a choice.

Giphy explains in its Privacy Statement that it automatically collects IP address, unique device identifier, cookie information, and Android and iOS specific ad identifiers from each user of its services. "*. We automatically receive and record information from your web browser or device when you interact with the Services, including your IP address, device ID, and cookie information (...) We may also collect advertising identifiers from your mobile device.*"[17]

Giphy reserves the right to use the IP address for targeted advertising: "*Your IP address may be used to send you geographically-targeted advertisements.*"[18]

In addition, Giphy allows itself to use secret pixels from advertising networks in the images. "*To increase the effectiveness of ad delivery, we may deliver a file (known as a "web beacon") from an ad network to you through the Services. Web beacons allow ad networks to provide anonymized, aggregated auditing, research and reporting for us and for advertisers. Web beacons also enable ad networks to serve targeted advertisements to you when you visit other websites.*"[19]

For users in the EU Giphy specifically mentions that the company is not a data processor, but a controller: "*We will be the controller of your Personal Data processed in connection with the Services.*"[20]

Giphy relies on the EU.-U.S. Privacy Shield Framework for the transfer of personal data from the EU to the USA.[21]

Giphy Cloudflare is not mentioned on Microsoft's list of subprocessors for the Online Services, as last updated on 5 September 2019.

Microsoft does not mention Giphy's domains in its list of worldwide network endpoints. However, administrators can centrally block traffic to Giphy from Office for the Web from work accounts.

2.5 Helpshift

Privacy Company has detected traffic to the U.S. company Helpshift from the Outlook app on iOS, to the domain acompli.helpshift.com.

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[16] Idem.
[17] Idem.
[18] Idem.
[19] Idem.
[20] Idem.
[21] Idem.

Helpshift, based in San Francisco, provides tools to improve customer service. Helpshift publishes a special case study on its website about its partnership with Microsoft.[22] In it, Helpshift describes that it processes personal data from Outlook (user and device data):

"*With more than 75 million monthly users, Microsoft Outlook's in-app customer support efficiently addresses user issues at scale. Outlook benefits immensely from Helpshift's effective self-service options and automatically-collected user and device data. With the support platform's modern messaging and sophisticated routing, the Outlook team is able to respond to most issues within two hours, maintain a 4+ CSAT rating, and keep the cost of each chat under $1.*"

In its privacy statement, Helpshift writes that it can conduct in-app helpdesk conversations for data controllers: "*In the course of using our Services, our customers and their end-users may submit or upload certain content, communications, data, attachments or files to our Services for hosting and processing by us. For example, if an end-user communicates with our customer's support staff using Helpshift's In-App Chat features, then we will process the end-user's name, email address and support request on behalf of our customers (as a data processor) and in accordance with their instructions. Our privacy practices in such cases will be governed by the contract that we have in place with them.*"[23]

Helpshift describes that it can use cookies and beacons for various purposes, such as personalizing the content of web pages but also to display targeted advertisements.[24]

An example of the data that Helpshift processes from Outlook on iOS:

```
POST data:
id:        8ABE25E4-14DD-4698-81D3-319AE2AC2E06
uid:       hsft_anon_20200121171330124-d38jk1xxdm1pst2
platform-id: acompli_platform_20150114070731627-c098a5fd322bf1d
timestamp:  1579623210.381
os:        12.3.1
s:         ios
cc:        nl
dm:        iPhone 7 (CDMA)
sm:        {
  "ia" : true,
  "rs" : true,
  "atai_v2" : true,
  "fp" : true,
  "cb" : true,
  "clc" : true
}
did:       8ABE25E4-14DD-4698-81D3-319AE2AC2E06
e:         [{"t":"a","ts":"1579623210.273"}]
ln:        en
token:     22625C37-A83C-48CD-9CC4-75954D42012B-680-00000039B1CE76AD
v:         7.6.3
av:        4.20.0
signature:  374993b66a4933cba1186c8698d2c9098cd59df2f86f0594d77286524436dc3b
```

Helpshift relies for transfer of personal data on the EU-US Privacy Shield.

<u>Helpshift is not mentioned on Microsoft's list of subprocessors for the Online Services, as last updated on 5 September 2019.</u>

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[22] Helpshift, How Microsoft's Outlook on User Feedback Creates Happier Customers at a Dramatically Reduced Cost, URL: https://www.helpshift.com/resources/case-study-how-microsofts-outlook-on-user-feedback-creates-happier-customers-at-a-dramatically-reduced-cost/
[23] Helpshift privacy effective date 27 March 2018, URL: https://www.helpshift.com/legal/privacy/ *For the purposes of European Data Protection Law, the Data Controller of EEA individual's personal information Helpshift, Inc.* https://www.helpshift.com/company/contact-us/ explains where Helpshift Inc is headquartered: Helpshift Headquarters
343 Sansome Street, 5th Floor, San Francisco, CA 94104.
[24] Idem.

Microsoft mentions the domains accompli. helpshift.com en *.helpshift.com in its list of worldwide network endpoints. Microsoft mentions accompli. helpshift.com as number 112, explaining: "Default Optional, Notes: Outlook for Android and iOS: Helpshift integration." Microsoft mentions *.helphift.com as number 68, explaining: "Default Optional, Notes: Portal and shared: 3rd party office integration. (including CDNs)". The interpretation 'Optional' (instead of Required) means that the administrator should in principle be able to block traffic to this domain. Privacy Company itself has not seen any traffic to this domain from the Android app.

2.6 Hockeyapp

Privacy Company has seen traffic from the iOS apps OneDrive, Teams and Outlook to the domain gate.hockeyapp.net. HockeyApp is a company that processes diagnostic data for crash analytics. It was acquired by Microsoft in December 2014.[25] Although it looks like traffic to an external party, the traffic is collected by Microsoft itself.

An example of the traffic Hockeyapp collects in Outlook: POST https://gate.hockeyapp.net/v2/track

```
{
  "iKey": "640f2bb5-09e3-fa20-de3a-8500b8daea57",
  "name": "Microsoft.ApplicationInsights.SessionState",
  "time": "2020-01-21T16:13:28.184Z",
  "data": {
    "baseData": {
      "ver": 2,
      "state": 0
    },
    "baseType": "SessionStateData"
  },
  "ver": 1,
  "sampleRate": 100,
  "tags": {
    "ai.device.screenResolution": "1334x750",
    "ai.user.id": "F5830B80-67E7-48B8-B5FF-B2FD8FCB2D66",
    "ai.device.locale": "en_NL",
    "ai.device.model": "iPhone9,1",
    "ai.application.ver": "4.20.0 (3623017)",
    "ai.device.type": "Phone",
    "ai.internal.sdkVersion": "ios:5.1.2",
    "ai.device.oemName": "Apple",
    "ai.device.osVersion": "12.3.1 (16F203)",
    "ai.session.isFirst": "true",
    "ai.device.id": "F5830B80-67E7-48B8-B5FF-B2FD8FCB2D66",
    "ai.session.id": "83000929-7514-4693-8D8F-9B0BB660806B",
    "ai.device.language": "en-GB",
    "ai.session.isNew": "true",
    "ai.device.os": "iOS"
  }
}
```

Microsoft mentions several domains of hockeyapp.net in its list of worldwide network endpoints as Default Optional.[26]

2.7 Optimizely

Privacy Company has observed traffic to San Francisco-based Optimizely when using Office for the Web, when visiting OneDrive's website to log in. Through this traffic personal data was sent to the

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[25] Press release Hockeyapp, HockeyApp Joins Microsoft, 11 December 2014, URL:
https://hockeyapp.net/blog/2014/12/11/hockeyapp-joins-microsoft.html
[26] Microsoft, Office 365 Worldwide endpoints, URL: https://docs.microsoft.com/en-us/office365/enterprise/urls-and-ip-address-ranges

domains cdn.optimizely.com and to logx.optimizely.com (including account id, a number of pseudonymized identifiers and a timestamp).

Visiting this website is necessary if people want to look at their files in OneDrive without having an explorer like Windows 10. Optimizely describes itself as "*the world's leading experimentation platform, empowering marketing and product teams to test, learn and deploy winning digital experiences, every time.*"[27]

A Dutch market research agency summarizes Optimizely's processing purposes as follows: "*In addition to A/B testing, Optimizely also allows you to perform multivariate tests and create different visitor segments for testing. Of course, you can also test on mobile devices. Optimizely has a simplified URL pattern and supports A/B testing for iOS applications. In contrast to Google Optimize 360, Optimizely <u>does</u> look at the number of visitors that participate in the test.*"[28]

Optimizely processes the data collected in accordance with its privacy statement for a large number of commercial purposes:

- "*process your orders and requests and respond to your questions and concerns; for example, if you inquire about our services or submit an application to Optimizely, we may use your data to respond to and process these requests;*
- *provide you with products and services, and personalize your experience; for example, we may use information on your prior activities or job function to tailor the features and content on the Optimizely Services or Sites, or we may use technical data to remember your preferences;*
- *communicate with you about your account or transactions, and provide you with product-related communications, such as information about new features and policy updates;*
- *operate, maintain, analyze, develop, update and improve our Sites, the Optimizely Service, and other products and services we offer. For example, we may administer and track users' activities on our Sites and the Optimizely Service to determine how to improve our content and features, or we may analyze trends and gather demographic information about our user base to better tailor our marketing efforts;*
- *detect, investigate and prevent activities that may violate our policies, including our Acceptable Use Policy, or applicable laws (such as fraud detection and prevention) or that may threaten the security, integrity or availability of our or another party's products, systems and services;*
- *send you news, updates, promotions, product information, event announcements, and other marketing communications. Please see the section entitled "Your Controls and Choices" for an explanation of your choices relating to these communications;*
- *provide you with and target advertising based on your activity and interests, both on our own Sites and applications and on third-party sites and applications;*
- *act pursuant to your consent for a specific purpose not listed in this policy. For example, with your consent, we may post your testimonial along with your name on our Sites. If you wish to update or delete your testimonial, please contact us as explained below; and*
- *perform the activities described in our Cookie Policy.*"[29]

Optimizely processes unique user and device identifiers in the traffic, and therefore, personal data of users of Office for the Web. This can be seen from the example of traffic to Optimizely below:

```
{
  "account_id": "2506380422",
  "anonymize_ip": true,
  "client_name": "js",
  "client_version": "0.134.1",
  "project_id": "2523150420",
  "revision": "3707",
  "visitors": [
    {
```

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[27] Optimizely, URL: https://www.optimizely.com/homepage/
[28] Traffic Builders, URL: https://www.traffic-builders.com/tools/wat-is-optimizely/
[29] Optimizely Privacy Policy, 3. How We Use Information.

```
      "visitor_id":
"oeu1579514394396r0.985035654518291",
      "session_id": "AUTO",
      "attributes": [
       {
         "e": null,
         "k": "",
         "t": "browserId",
         "v": "gc"
       },
       {
         "e": "13323510248",
         "k": "13323510248",
         "t": "custom",
         "v": "en-us"
       },
       {
         "e": null,
         "k": "",
         "t": "device",
         "v": "desktop"
       },
       {
         "e": null,
         "k": "",
         "t": "device_type",
         "v": "desktop_laptop"
       },
       {
         "e": null,
         "k": "",
         "t": "referrer",
         "v":     "https:\/\/onedrive.live.com\/about\/en-
gb\/"
       },
       {
         "e": null,
         "k": "",
         "t": "source_type",
         "v": "search"
       },
       {
         "e": null,
         "k": "",
         "t": "currentTimestamp",
         "v": 1579603509553
       },
       {
         "e": null,
         "k": "",
         "t": "offset",
         "v": -60
       }
      ],
      "snapshots": [
       {
         "activationTimestamp": 1579603509534,
         "decisions": [

         ],
         "events": [
          {
            "e": null,
```

```
        "y": "client_activation",
        "u":              "e4a9e10f-9fa5-4a9a-bef4-
8e0c697f96ef",
        "t": 1579603509554
      },
      {
        "e": "13292500562-16927852380",
        "k": "multi-event",
        "t": 1579603509561,
        "u":              "85bb48d2-b0f6-4db4-bcb5-
2bf845666de0",
        "y": "view_activated",
        "a": {

        }
      }
     ]
    }
   ]
  }
 ]
}
```

Optimizely relies on the EU-US Privacy Shield for the transfer of personal data..[30]

Optimizely is not mentioned on Microsoft's list of subprocessors for the Online Services, as last updated on 5 September 2019.

Microsoft lists the domains *.log.optimizely.com and cdn.optimizely com as numbers 32 and 53 in its list of worldwide Office network endpoints. Traffic to *.log.optimizely.com is Default Optional according to Microsoft, commenting: "*Notes: OneDrive for Business: supportability, telemetry, APIs, and embedded email links.*"

Microsoft describes the traffic to cdn.optimizely com (for Office for the Web) as required. This means that administrators cannot block this traffic.

2.8 UserVoice

Privacy Company found traffic to UserVoice in Outlook on iOS to the domain by.uservoice.com.

UserVoice is a U.S. company based in Raleigh and San Francisco. [31]) that specializes in digital customer research. The company describes itself as follows: "*a product management platform that enables product teams to make data-driven decisions about what they build based on customer feedback.*"[32]

The company has published a case study on working with Microsoft to better assess the priority of customer improvement requests in the Service Center Configuration Manager and Microsoft Intune.[33] UserVoice describes its processing activities as follows: "*UserVoice helps them hear directly from all of their customers, and gives them both the data and context they need to build products their customers love. Both Intune and Configuration Manager have large communities of followers who actively share their ideas on how to make the product better. UserVoice aggregates feedback from all these customers into a single place, streamlining workflows for the Program Managers who are tasked with carefully listening to what customers are saying and reporting key findings to the leadership team.*"[34] From this it can be concluded that UserVoice combines diagnostic data with questions/complaints that users publish on the internet.

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[30] Optimizely Privacy Policy.
[31] Uservoice, About us, URL: https://www.uservoice.com/about/
[32] Uservoice, How Microsoft Intune and System Center Configuration Manager take product feedback from concept to release and beyond, URL: https://www.uservoice.com/case-studies/microsoft-intune/
[33] Idem.
[34] Ibid.

The case study shows that other Microsoft teams, apparently including the product developers of the Outlook app for iOS, were already using UserVoice: "*The teams at Intune and Configuration Manager implemented UserVoice after hearing success stories from several other teams at Microsoft using the platform.*"

The case study also shows that Microsoft can identify the individual customers about whom UserVoice processes data: "***I was then able to use UserVoice to identify customers, I was able to send all 53 supporters of this item an email and get more context***. *It wasn't on our radar at all before but now it's on our things to do." says Tyler Castaldo, Program Manager.*"[35]

In its privacy statement UserVoice describes the purposes of the data processing as follows:[36]: "*UserVoice uses the information it collects from you to deliver UserVoice Services to you and continuously enhance your user experience. Generally speaking, we use the collected information to communicate with you, fulfil your requests, customize the content, improve our products and services, protect our and your rights, and comply with laws and regulations.*

We may use your personal information to send you promotional information and updates regarding UserVoice and its products and services. You may choose not to receive such information and opt-out of such future communications. All such communications sent to you will also contain instructions for opting-out.

The information that we collect from you may be used in aggregate form in various ways to optimize and improve UserVoice Services. While such information may be based on information about you, it will not identify you personally. We may use such information for the following purposes: website management, administration and security, promotional activities, and research and analysis."[37]

UserVoice describes that it can act as a processor for third parties (in this case: Microsoft), but at the same time process data for its own purposes:

"*We offer a product to companies that allows them to collect and analyze product feedback provided by individuals who may reside in the EU. In this case, through our contract with the company who is our customer, we are acting as a data processor. We collect, store, and retrieve data on their behalf and at their request.*

We also use our own product to collect, store, and retrieve data to analyze our own product. In this capacity, we are both a data controller and data processor, since the data processing is happening for our own purposes."[38]

An example of traffic to UserVoice:

GET request to: https://by.uservoice.com/t/k/outlook/x/g/track.js?_=1579623209&c=_
This sets a cookie with the following content (unique identifier):
__cfduid=d32eaf30688c14afc403ccd3e258e2f281579623210; expires=Thu, 20-Feb-20 16:13:30 GMT; path=/; domain=.uservoice.com; HttpOnly; SameSite=Lax

UserVoice relies on the EU-US Privacy Shield for the transfer of personal data. This is also evident from the separate Data Processing Addendum that UserVoice offers to customers..[39]

UserVoice is not included in Microsoft's list of subprocessors for Online Services.[40]

Microsoft lists the domains outlook.uservoice.com as numbers 68 and 106, staffhub.uservoice.com as number 75, and by.uservoice.com as number 106 in its list of worldwide Office network endpoints.

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[35] Ibid.
[36] Uservoice, Privacy Policy, Effective as of December 9, 2019, URL: https://www.uservoice.com/privacy/
[37] Idem.
[38] Ibid.
[39] UserVoice's Data Processing Addendum ("DPA"), 26 March 2018, URL: https://www.uservoice.com/assets/docs/compliance/UserVoice_Customer_DPA_encrypted_.pdf
[40] Microsoft Trust Center.

For all three domains the traffic is Default - Optional. Microsoft provides the following explanations: outlook.uservoice.com: Notes: Portal and shared: 3rd party office integration. (including CDNs), staffhub.uservoice.com: Notes: Graph.windows.net, Office 365 Management Pack for Operations Manager, SecureScore, Azure AD Device Registration, Forms, StaffHub, Application Insights, captcha services and by.uservoice.com: Notes: Outlook for Android and iOS: User voice integration.

Privacy Company only found traffic to the domain by.uservoice.com in the Outlook app on iOS. Since Microsoft has marked the traffic as Optional, administrators should be able to block it centrally.

3 Technical research results

3.1 Research results Office for the Web: domains found in network traffic

OFFICE FOR THE WEB Domains	One Drive	Word	Excel	Power point	Teams	Out look
c.bing.com	x	x	x			
media1.giphy.com					x	
media2.giphy.com					x	
accounts.google.com *Chrome browser does an account check itself*	x				x	
adservice.google.com *When loading www.google.com outside Office*	x					
apis.google.com					x	
android.clients.google.com					x	
clients1.google.com *No referrer, appears to come from the Chrome browser*	x	x	x	x	x	x
clients4.google.com		x		x	x	
consent.google.com *When loading www.google.com*	x					
id.google.com	x					
ogs.google.com					x	
play.google.com					x	
www.google.com *Chrome urlbalk autocomplete*	x	x	x		x	
clientservices.googleapis.com *From the Chrome browser*	x	x			x	
fonts.googleapis.com *No referer, no cookie, origin unknown*	X					
oauthaccountmanager googleapis.com					x	

OFFICE FOR THE WEB Domains	One Drive	Word	Excel	Power point	Teams	Out look
safebrowsing.googleapis.com *Chome safebrowsing*	x	x	x	x	x	x
translate.googleapis.com *Likely Google translate language settings of the Chrome browser*	x					
update.googleapis.com *Chrome update proces*	x				x	
www.googleapis.com					x	
lh3.googleusercontent.com					x	
ssl.gstatic.com *Chrome plugin updates en safebrowsing configuration*	x				x	
www.gstatic.com *No cookies, no referrer, but we cannot determine the origin with certainty. We suspect that the Chrome browser is responsible for this.*	x				x	
office.iwriter365.com *add-in for Office*		x				
login.live.com		x	x			
euc-excel.officeapps.live.com	x		x			
euc-onenote.officeapps.live.com	x					
euc-powerpoint.officeapps. live.com	x			x		
euc-visio.officeapps.live.com	x					
euc-word-edit.officeapps. live.com	x	x				
euc-word-view.officeapps. live.com	x					
excel.officeapps.live.com			x			
mrodevicemgr.officeapps. live.com	x	x		x		
ocws.officeapps.live.com		x	x	x		
odc.officeapps.live.com	x	x	x			
powerpoint.officeapps.live.com				x		
shared.officeapps.live.com			x			
waconafd.officeapps.live.com			x			x
waconatm.officeapps.live.com	x		x			
word-edit.officeapps.live.com		x				
onedrive.live.com	x	x	x			
webdir.online.lync.com (now Skype for Business)						x
webdir0e.online.lync.com (now Skype for Business)						x
webdir1e.online.lync.com (now Skype for Business)						x
webdir2e.online.lync.com (now Skype for Business)						x
appsforoffice.microsoft.com	x	x		x		
browser.pipe.aria.microsoft. com	x	x	x	x	x	x
c1.microsoft.com	x	x	x			
web.vortex.data.microsoft.com	x	x	x			
fs.microsoft.com	x	x		x		
fs-edog.microsoft.com			x			
graph.microsoft.com		x	x	x		
officeclient.microsoft.com	x	x		x		

OFFICE FOR THE WEB Domains	One Drive	Word	Excel	Power point	Teams	Out look
query.prod.cms.rt.microsoft.com	x		x			
teams.microsoft.com					x	
eu-prod.asyncgw.teams.microsoft.com					x	
chatsvcagg.teams.microsoft.com					x	
config.teams.microsoft.com					x	
emea.ng.msg.teams.microsoft.com					x	
ukwest-prod.notifications.teams.microsoft.com					x	
presence.teams.microsoft.com					x	
statics.teams.microsoft.com					x	
go.trouter.teams.microsoft.com					x	
trouter2-neu.trouter.teams.microsoft.com					x	
trouter2-weu.trouter.teams.microsoft.com					x	
www.microsoft.com	x	x	x			
login.microsoftonline.com	x	x	x	x	x	x
blobs.officehome.msocdn.com	x	x	x			
shellprod.msocdn.com	x	x	x	x		
acdc-direct.office.com	x		x	x		x
atm-fp-direct.office.com			x	x		x
augloop.office.com	x	x		x		
loki.delve.office.com *Sharepoint retrieves configuration from this Delve domain, see example below of intercepted traffic*	x	x	x			
sfeur.loki.delve.office.com	x	x	x			x
lpcres.delve.office.com						x
0990a109955888fbfc1c99b7eeab9521.fp.measure.office.com		x				
1240fe6d8d4bb4ab76eaca2a4bc21019.fp.measure.office.com	x					
1bca7d9b054a1581e621a2d8fb170d63.fp.measure.office.com	x					
1bf9b20dbb2c1307c051a001bb37ce92.fp.measure.office.com			x			
4641530b18664737f0322e3dfae66560.fp.measure.office.com						x
84f448958286b8867bc5845d3c71260d.fp.measure.office.com			x			
aed40c7e1f97e1f5da3efdb630d83ae0.fp.measure.office.com						x
b5e24e3eb1bfc4396be5e3272243a7b5.fp.measure.office.com						x
ba0d5f905260e65686aca1e1d0a5dbb6.fp.measure.office.com				x		
config.fp.measure.office.com	x	x	x	x		x

OFFICE FOR THE WEB Domains	One Drive	Word	Excel	Power point	Teams	Out look
upload.fp.measure.office.com	x	x	x	x		x
messaging.office.com	x	x		x		
outlook.office.com		x				x
portal.office.com	x	x	x			
substrate.office.com	x	x	x	x	x	
webshell.suite.office.com	x	x	x	x		x
www.office.com		x	x	x		x
outlook.office365.com	x	x	x	x		x
ow1.res.office365.com	x					x
ow2.res.office365.com						x
r4.res.office365.com	x					x
onedrive.com		x	x			
cdn.optimizely.com	x	x	x			
logx.optimizely.com	x	x	x			
static.sharepointonline.com		x				
static2.sharepointonline.com	x	x	x	x		
eu-api.asm.skype.com					x	
swc.cdn.skype.com						x
swx.cdn.skype.com	x	x				x
a.config.skype.com						x
b.config.skype.com						x
config.edge.skype.com	x	x				
static-asm.secure.skypeassets.com					x	
fdgjncd	x					
jmfrhqbhutk					x	
kytabsb					x	
mem.gfx.ms	x	x				
0-westeurope1.pushp.svc.ms		x				
1-westeurope1.pushp.svc.ms	x					
5-westeurope1.pushp.svc.ms			x			
westeurope1-mediap.svc.ms		x				
westeurope4-sphomep.svc.ms	x	x	x			
spoprod-a.akamaihd.net *Retrieval of static content (fonts, images, javascripts, etc.)*	x	x	x	x		
myday.azureedge.net	x					
js.live.net	x					
az725175.vo.msecnd.net	x	x	x			
c1-excel-15.cdn.office.net	x		x			
c1-officeapps-15.cdn.office.net	x					
c1-onenote-15.cdn.office.net	x					
c1-powerpoint-15.cdn.office.net	x	x		x		
c1-shared-15.cdn.office.net			x			
c1-visio-15.cdn.office.net	x	x				
c1-word-edit-15.cdn.office.net		x				
c1-word-view-15.cdn.office.net	x	x				
statics.teams.cdn.office.net					x	
omextemplates.content.office.net		x	x	x		
contentstorage.osi.office.net	x					
hubblecontent.osi.office.net				x		
cdn.hubblecontent.osi.office.net				x		
nleditor.osi.office.net				x		
fa000000016.resources.office.net				x		

OFFICE FOR THE WEB Domains	One Drive	Word	Excel	Power point	Teams	Out look
login.windows.net	x	x	x	x		x
onedrive.nom	x					
qfmjgiqzf					x	
qurnnoxdnxzyqlx	x					
sdopqfuxw	x					

Example of data collected from Delve (not sent as such!):

```
{
    "EcsConfigIds": [
        "P-R-25288-11-1",
        "P-R-50421-6-6,P-R-50246-6-4,P-R-49880-6-5,P-R-49609-6-10,P-R-49329-6-6,P-R-47322-
6-9,P-R-46995-4-8,P-R-42068-6-11,P-R-40144-6-8,P-R-39288-6-52,P-R-39051-6-7,P-R-33157-6-
53,P-R-29562-6-25,P-R-29432-6-17,P-R-28869-6-17,P-R-28721-6-4,P-R-28455-6-11,P-R-27889-
12-9,P-R-27836-12-8,P-R-26733-1-7,P-R-26636-6-44,P-D-48783-6-1,P-D-48782-6-1,P-D-26538-
1-14,P-D-28290-1-65",
        "P-R-50630-1-3,P-R-50145-6-13,P-R-50010-1-5,P-R-49919-1-3,P-R-49876-1-4,P-R-49615-
1-5,P-R-49530-2-11,P-R-49401-1-3,P-R-49328-1-20,P-R-49311-3-5,P-R-49310-3-8,P-R-49309-3-
7,P-R-49307-4-8,P-R-49308-3-7,P-R-49073-1-6,P-R-49074-1-7,P-R-48790-3-15,P-R-48777-4-
10,P-R-48501-3-6,P-R-39358-6-38,P-R-47924-8-4,P-R-47896-1-8,P-R-48088-1-4,P-R-47847-5-
2,P-R-47997-9-12,P-R-47851-5-2,P-R-47897-4-6,P-R-47858-1-2,P-R-47801-6-2,P-R-47800-1-
2,P-R-47799-1-2,P-R-47797-3-2,P-R-47687-9-6,P-R-47609-4-7,P-R-47658-4-5,P-R-47654-1-2,P-
R-47652-1-5,P-R-47460-1-3,P-R-46994-1-2,P-R-46858-1-5,P-R-43328-2-2,P-R-46917-9-9,P-R-
46863-8-2,P-R-46862-1-2,P-R-46795-1-4,P-R-46794-1-4,P-R-46792-1-2,P-R-46857-1-4,P-R-
46796-6-3,P-R-46798-1-3,P-R-46793-1-4,P-R-46790-1-4,P-R-46097-1-28,P-R-45208-6-17,P-R-
45168-4-18,P-R-45124-4-19,P-R-45004-1-24,P-R-43265-1-2,P-R-43267-1-3,P-R-43207-1-10,P-R-
42951-1-2,P-R-42941-1-2,P-R-42939-1-2,P-R-42938-1-2,P-R-42935-1-3,P-R-42573-6-13,P-R-
42292-6-6,P-R-41681-6-12,P-R-40233-12-8,P-R-40234-12-18,P-R-38153-6-8,P-R-34458-12-5,P-
R-33782-6-34,P-R-33108-6-15,P-R-32990-12-17,P-R-28870-6-12,P-R-28867-6-16,P-R-28727-6-
10,P-R-28652-6-4,P-R-28424-3-129,P-R-28382-1-11,P-R-28034-12-6,P-R-27996-12-9,P-R-
27613-1-5,P-R-27580-6-9,P-R-27393-3-7,P-R-27212-6-56,P-D-48781-1-1,P-D-39434-6-1,P-D-
29517-6-1,P-D-27379-1-282",
        "P-R-29433-1-3",
        "P-E-50625-C1-4,P-E-45956-2-6,P-E-50338-1-2,P-R-49782-1-2,P-R-47291-4-7,P-R-47163-
10-17,P-R-46465-4-4,P-R-45684-6-8,P-R-45673-6-7,P-R-45563-1-5,P-R-42878-1-5,P-D-31828-5-
43",
        "P-D-36449-1-3",
        "P-R-46098-6-66,P-R-45896-6-9,P-R-42826-6-9,P-R-40843-6-15,P-R-39213-6-50,P-R-
37691-6-7,P-D-37661-1-16,P-D-37690-1-2",
        "P-R-50016-1-2,P-R-49958-1-6,P-R-49470-4-4,P-R-48428-4-5,P-R-48427-4-5,P-R-48033-1-
7,P-R-48026-1-2,P-R-47521-4-7,P-R-46921-9-10,P-R-46854-9-3,P-R-46334-24-14"
    ],
    "EcsEtag": "\"Jblg7v1gM9e9lUj14J33s40+oUOlTCnNSANBtMFG2rY=\"",
    "Flights": [
        "contacteditorcansetphoto",
        "disableauthtokendecoding",
        "ecsverification_livepeoplecards_shouldbeenabled",
        "ecsverification_shouldbeenabled",
        "emailsimmersive",
        "enablecenteredexpandedview",
        "enableoverviewinexpandedview",
        "enablepanelswithhighestinteractionontop",
        "gdprexportdatabuttonenabled",
        "groupcardreactnative",
        "groupmembersearch",
        "groupmembersmanagements",
        "groupupdatedcard",
        "imagevalidationusinghttprequests",
        "immersiveprofile",
        "iscardstickyonclickexpenabled",
        "ispreparepersonaoverwebsocketallowed",
        "linkedinsalesnavigatorenabled",
```

```
        "lpcdisablelokilogging",
        "lpcenablearialogging",
        "lpcforceintegratedlogger",
        "lpcstikkontakt",
        "personprovider",
        "profilephotopicker",
        "saveinsightviewenabled",
        "skypeconsumerintegration",
        "theming",
        "useworkloadchatcallback",
        "websocketserverping"
    ],
  "LokiUrl": "https://sfeur.loki.delve.office.com/",
  "Resources": {
    "livepersonacard_full": "https://lpcres.delve.office.com/lpc/versionless/livepersonacard_with-
react_2d8b92edf35522dc2a0b.js",
    "livepersonacard_global":
"https://lpcres.delve.office.com/lpc/versionless/livepersonacard_without-
react_a9fc1736c2b66b0f0854.js",
    "livepersonacard_owa":
"https://lpcres.delve.office.com/lpc/versionless/livepersonacard_with-
react_2d8b92edf35522dc2a0b.js",
    "livepersonacard_with-react":
"https://lpcres.delve.office.com/lpc/versionless/livepersonacard_with-
react_2d8b92edf35522dc2a0b.js",
    "livepersonacard_without-react":
"https://lpcres.delve.office.com/lpc/versionless/livepersonacard_without-
react_a9fc1736c2b66b0f0854.js",
    "livepersonacardstrings":
"https://lpcres.delve.office.com/lpc/versionless/livepersonacardstrings_1af1173fd45e0528db553b1
d3faf6c765a3f55d8.js",
    "livepersonacardstrings_full":
"https://lpcres.delve.office.com/lpc/versionless/livepersonacardstrings_8bbe8c5e7b4960c9996da6
843fa0f18a3627f370.js",
    "react-dom_static": "https://lpcres.delve.office.com/lpc/versionless/react-dom_16.8.6.js",
    "react_static": "https://lpcres.delve.office.com/lpc/versionless/react_16.8.6.js"
  },
  "TenantAadObjectId": "cc7df247-60ce-4a0f-9d75-704cf60efc64",
  "Upn": "f.f.terra@[anonymised].nl",
  "UserAadObjectId": "e66b155d-dcd6-4370-b8c3-673499af7b06",
  "UserDisplayName": "Terra, F. Floor",
  "UserPuid": "1003200094BB100D",
  "Workload": "Odsp"
}
```

3.2 Research results Office for the Web: number of telemetry messages sent to domain browser.pipe.aria.microsoft.com

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
ev_qoe	6	5	5			
ev_pageinit	4	3	3			
ev_nav	10	4	4			
ev_engagement	59	13	14			
ev_qos	390	323	136	10		
ev_experiment	19	5	5			
ev_experimentflight	17	8	7			
ev_plt	1	1	1			
ev_plthttprequest	11	11	10			
ev_rumonedataupload	5	4	3	1		
initializelivepersonacard_success	1	1	1			3

monitoring	5	7	7	2		
serverrequest	5	4	4	3		1
impression	6	7	5	4		9
livepersonacard_configurationset action	1	1	1			3
ev_page	4	1	1			
ev_beacon	20		4			
timer		1	2	2		1
click	1	2	2	2		2
awt_stats	12	46	16	37		15
performance	2	4	2	2		2
session	1	4	1	2		4
generic_impression		6	3	3		
performance_dump		22	20	28		1
generic_request		11	11	12		1
generic_event		19	7	12		4
generic_click		2	1	3		2
office_feedback_sdk			22	3	8	2
office_excel_online_health_kpi_cloud policysettingsrequestsuccess			4			
office_excel_online_health_kpi_afhs licensingsuccessfulhttpresponse			2			

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
office_excel_online_health_qos_pilla r			8			
office_excel_online_useraction_crea te document			1			
office_online_sessionstart	2	2	2	1		
office_online_test_prototype_flights	2	2	2	1		
office_excel_online_useraction_edit document			2			
office_excel_online_useraction_ribb ontabswitched			4			
office_excel_online_useraction_spell check			1			
office_excel_online_useraction_ope n accessibilitychecker			1			
office_excel_online_useraction_ contextmenuopen			2			
office_excel_online_useraction_ showautofiltermenu			1			
office_excel_online_useraction_inse rtpicture			1			
office_excel_online_useraction_dialo gaction			2			
office_excel_online_useraction_ menuopenfilemenu			1			
office_excel_online_useraction_ savetosharepoint			1			
office_excel_online_useraction_ menuclosefilemenu			1			
office_online_sessionend	2	2	2	1		
office_excel_online_useraction_ opendocument			1			
office_word_online_health_kpi_ cloudpolicysettingsrequestsuccess	4	4				
office_word_online_health_kpi_afhs licensingsuccessfulhttpresponse	2	2				
office_word_online_health_qos_pilla r	6	8				
office_word_online_useraction_ opendocument	2	1				
splash_screen_sign_in	1	2				
office_augloop_client_sessioninit	1	2				
office_augloop_client_websocketwor ker	1	2				
office_augloop_client_initruntime	1	2				
office_online_sdx_dmspackagelistne tworkcall	1	2		1		
office_online_sdx_sendrequestasync	1	2		2		
office_online_test_prototype_ts_rib bon_action	1	40		18		
office_word_online_nonuser_retriev eaddincommandsentitlementslist	1	2				
office_word_online_useraction_repo rtribbonmodeslr	1	2				
office_augloop_client_sendmessage	3	11				
office_augloop_client_processmessa ge	1					
office_augloop_client_processrespo nse	1	9				

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
ev_trace	6					
resource				1		1
clientstartupsuccess						3
client_qos						22
client_cosmos						8
owa_pageloadtime						3
client_event						116
client_network_request						25
livepersonacard_events						50
livepersonacard_qos						22
livepersonacard_events_useractions exported						2
openedexpandedpersonacard						1
editedcontact						1
office_docs_sharedcomments_ refreshatmentionauthtoken		1		1		
office_docs_sharedcomments_ resolveatmentioncapabilitystate		1		1		
office_docs_sharedcomments_ basecommentpaneconstruction		1		1		
office_docs_sharedcomments_ sharedcommentsuilazyload		1		1		
office_docs_sharedcomments_ enabledfeatures		1		1		
office_powerpoint_online_nonuser_ retrieveaddincommandsentitlements list				2		
office_powerpoint_online_nonuser_ updateopenmenu				2		
office_powerpoint_online_useraction _ createdocument				1		
office_powerpoint_online_health_kp i_ cloudpolicysettingsrequestsuccess				2		
office_powerpoint_online_health_kp i_ afhslicensingsuccessfulhttpresponse				1		
office_powerpoint_online_health_qo s_pillar				5		
office_powerpoint_online_useraction _ begineditshapetextforshapemoniker				2		
office_powerpoint_online_useraction _typing				9		
office_powerpoint_online_useraction _ editdocument				2		
office_powerpoint_online_useraction _ backspacecharacter				1		
office_powerpoint_online_useraction _ ribbontabswitched				6		
office_powerpoint_online_useraction _ reporttabswitch				6		
office_powerpoint_online_useraction _ reporttabreview				1		

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
office_online_sdx_packagelistretrieval				1		
office_powerpoint_online_useraction_powerpointeditorpane				1		
office_powerpoint_online_useraction_showfirstpartytaskpane				1		
office_extensibility_officejs_appinitializationx				2		
office_extensibility_officejs_appactivatedx				1		
office_extensibility_officejs_checkwachostx				1		
office_extensibility_officejs_scriptloadx				3		
office_online_sdx_activation				1		
office_online_sdx_pageload				1		
office_online_sdx_officejsready				1		
office_online_sdx_iframecreate				1		
office_online_sdx_manifestretrieval				1		
office_online_sdx_manifestparse				1		
office_online_sdx_cdnmanifestnetworkcall				1		
office_extensibility_officejs_apiusage				43		
office_extensibility_officejs_appinitialization				2		
office_extensibility_officejs_appactivated				1		
office_extensibility_officejs_checkwachost				1		
office_extensibility_officejs_scriptload				3		
office_powerpoint_online_useraction_opengrammarsettings				1		
office_powerpoint_online_useraction_dialogaction				5		
office_powerpoint_online_useraction_showcontextmenu				1		
office_powerpoint_online_useraction_takesuggestedcorrection0				1		
office_powerpoint_online_useraction_spellingcritiqueaccepted				1		
office_powerpoint_online_useraction_takesuggestedcorrection				1		
office_powerpoint_online_useraction_powerpointaccessibilitycheck				1		
office_powerpoint_online_health_kpi_peopleendpointgetusercontactsbrowser				1		

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
office_docs_sharedcomments_atmention lazyload		1		1		
office_docs_sharedcomments_update draftrendercontext		1		1		
office_docs_sharedcomments_requestinit commentsession		1		1		
office_docs_sharedcomments_clearcomment selectionaction		3		3		
office_docs_sharedcomments_session requeststartedandlockfocusaction		1		1		
office_powerpoint_online_useraction _sharedcommentsrequestinitcommentsession				1		
office_powerpoint_online_useraction _insert comment				1		
office_powerpoint_online_useraction _showhidecomments				2		
office_docs_sharedcomments_basic mentionsaction		1		1		
office_docs_sharedcomments_onget candidatesevent		1		1		
office_docs_sharedcomments_e2ep erftracker		3		3		
office_docs_sharedcomments_reloadcommentsaction		2		2		
office_docs_sharedcomments_apply commentchangesaction		3		4		
office_docs_sharedcomments_commitcomment		1		1		
office_docs_sharedcomments_commitdraftaction		1		1		
office_docs_sharedcomments_commitdraftcreateaction		1		1		
office_docs_sharedcomments_begin processingcommitaction		1		1		
office_powerpoint_online_useraction _sharedcommentscommitcomment				1		
office_powerpoint_online_useraction _sharedcommentscommitdraft				1		
office_powerpoint_online_useraction _sharedcommentscreatethread				1		
office_powerpoint_online_useraction _launchfilemenu				2		
office_powerpoint_online_useraction _reporttabhome				2		
office_powerpoint_online_useraction _newslide				1		
office_powerpoint_online_useraction _newslidewithlayout				1		
office_powerpoint_online_useraction _reporttabinsert				2		

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
office_powerpoint_online_useraction _insertpicture				1		
office_powerpoint_online_useraction _reporttabpicture				1		
office_powerpoint_online_useraction _insertpictureend				1		
office_powerpoint_online_useraction _finalizeinsertpicture				1		
office_powerpoint_online_useraction _insertpicturebegin				1		
office_powerpoint_online_useraction _applydesignersuggestion				1		
office_powerpoint_online_useraction _inserticondialog				1		
office_powerpoint_online_useraction _inserticons				1		
office_powerpoint_online_health_kp i_insertonlineimage				1		
office_powerpoint_online_useraction _moveshapes				1		
office_powerpoint_online_useraction _formatpaintercancel				1		
office_powerpoint_online_useraction _commitkeyboardshapemanipulatio n				1		
office_powerpoint_online_useraction _renamemostrecentlyusedfileentry				1		
office_powerpoint_online_useraction _renamefile				1		
office_word_online_useraction_crea tedocument		1				
office_word_online_useraction_sho wfloatie		5				
office_word_online_useraction_doub leclickselection		4				
office_word_online_useraction_past egiventext		2				
office_word_online_useraction_typin g		5				
office_word_online_useraction_editd ocument		2				
office_word_online_useraction_delet eforreplace		2				
office_word_online_useraction_delet ekey		2				
office_word_online_useraction_tabs witch		15				
office_word_online_useraction_repo rttabswitch		15				
office_word_online_useraction_repo rttabreview		3				
office_word_online_useraction_next spellingerror		6				
office_word_online_useraction_dialo gaction		9				
office_word_online_useraction_open grammarsettings		1				
office_word_online_useraction_open languagedialog		2				

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
office_word_online_useraction_setla nguage		2				
office_word_online_useraction_back space		1				
office_word_online_useraction_back spacecharacter		3				
office_word_online_useraction_sho wcontextmenu		4				
office_word_online_useraction_take suggestedcorrection0		1				
office_word_online_useraction_spell ingcritiqueaccepted		1				
office_word_online_useraction_take suggestedcorrection		1				
office_word_online_useraction_sho wwordcountdialog		1				
office_word_online_useraction_sho waccessibilitycheckerpane		1				
office_word_online_useraction_repo rttabreferences		2				
office_word_online_useraction_new comment		2				
office_word_online_useraction_sho wcommentpane		1				
office_word_online_nonuser_comme ntbeginsucceeded		1				
office_word_online_useraction_dism issfootnoteendnotecontrol		1				
office_word_online_useraction_drag selection		1				
office_word_online_health_kpi_peop leendpointgetusercontactsbrowser		1				
office_word_online_useraction_shar edcommentsrequestinitcommentses sion		1				
office_word_online_useraction_com mentnewcreated		1				
office_docs_sharedcomments_select commentaction		1				
office_word_online_useraction_shar edcommentsselectcomment		1				
office_word_online_useraction_shar edcommentscommitcomment		1				
office_word_online_useraction_shar edcommentscommitdraft		1				
office_word_online_useraction_com mentnewsaved		1				
office_word_online_useraction_shar edcommentscreatethread		1				
office_docs_sharedcomments_close pane		1				
office_word_online_useraction_hide commentpane		1				
office_word_online_useraction_repo rttablayout		2				
office_word_online_useraction_repo rttabinsert		2				
office_word_online_useraction_laun chappforofficedialog		1				

Eventname Office for the Web	One Drive	Word	Excel	Power point	Teams	Out look
office_word_online_useraction_insertpicturedialog		1				
office_word_online_useraction_reporttabpicture		2				
office_word_online_useraction_launchfilemenu		1				
office_word_online_useraction_reportfilemenupageswitch		2				
office_word_online_useraction_reportfilemenupageopen		1				
office_word_online_useraction_reportfilemenupagesaveas		1				
office_word_online_useraction_savetosharepoint		1				
office_word_online_useraction_savefilechange		1				
office_word_online_useraction_reporttabview		1				
office_word_online_useraction_reporttabhelp		2				
office_word_online_useraction_showaccessibilityhelpdialog		1				
office_word_online_useraction_reporttabhome		1				
office_word_online_useraction_dialogcancel		1				
office_word_online_useraction_toggledictation		1				
office_word_online_nonuser_dictationerror		1				
office_word_online_nonuser_dictationmicrophoneerror		1				
office_voice_online_dictationsession		1				

Example of telemetry event "Impression"

nProduction\nEvent.Name\x13Office_Feedback_SDK\x08Event.Id&2c3969c9-3d0b-467b-1746-
fa1717a50ab0.1\x0cEvent.Source\x07MsoThin\x13Event.SchemaVersion\x011\x0eEvent.Sequenc
e\x011\x10EventInfo.InitId$c1274d03-e0bf-4dba-9adf-
92c8d540edfd\x12EventInfo.Sequence\x011\x14EventInfo.SdkVersion\x11AWT-Web-CJS-
1.2.2\x0eEventInfo.Name\x13office_feedback_sdk\x0eEventInfo.Time\x182020-01-
21T15:54:52.940Z\x00\x00\x00+\n\x01I\x11JS_default_source\xa9$a149db9f-93ac-24cb-b385-
eacd6ca888b3\xd1\x06\xba\xd9\x82\x8d\xf9[\xcb\x08\n\x01)$01e6276c-68a8-c5d0-80a4-
e2df2f300a59q\xb6\xd9\x82\x8d\xf9[\xa9\nimpression\xc9\x06\nimpression\xcd\r\t\t#\x10Event
Info.Source\x11JS_default_source\x10EventInfo.InitId$7670e490-c89a-ccbd-9bca-
a3cc839e8b25\x12EventInfo.Sequence\x011\x0eEventInfo.Name\nimpression\x0eEventInfo.Time\
x182020-01-21T15:54:54.427Z\x14EventInfo.SdkVersion\x10ACT-Web-JS-
2.9.0\x11UserInfo.Language\x05en-GB\x11UserInfo.TimeZone\x07+0-
1:00\x16DeviceInfo.BrowserName\x06Chrome\x19DeviceInfo.BrowserVersion\r79.0.3945.117\x1
1DeviceInfo.OsName\x08Mac   OS
X\x14DeviceInfo.OsVersion\x0210\nAppInfo.Id\x07G2Shell\x0fAppInfo.Version\x0e16.00.3229.00
0\x0bContext_Env\x07WEUprod\x0cContext_Site\x03WAC\x11Context_SiteSubId\x15ShellPowerP
ointOnline\x15Context_WorkloadAppId\x10PowerPointOnline\x0cContext_Page\x9d\x05https://eu
c-powerpoint.officeapps.live.com/pods/ppt.aspx?wdPodsUrl=https%3A%2F%2Feuc-
powerpoint.officeapps.live.com%2Fpods%2F&wdPopsUrl=https%3A%2F%2Feuc-
powerpoint.officeapps.live.com%2F&fastBoot=true&sw=1198&sh=618&thPanel=671&ro=false&No
Auth=1&fileName=Presentation.pptx&wdTpl=TM00001230&wdlcid=2057&wdNewAndOpenCt=157
9622089093&wdPreviousSession=7a38bc7b-f837-476b-b472-
64f13ea4a6e7&wdOrigin=OFFICECOM-
WEB.START.TEMPLATES&wdoverrides=devicepixelratio:2,RenderGifSlideShow:true&ui=en-

GB&rs=en-US&mscc=1&postMessageToken=D1AF2D9F-90D3-2000-C50A-
669F3D9267CC&new=1&hid=D1AF2D9F-90D3-2000-C50A-669F3D9267CC&usid=ef4e4385-b0c5-
93d0-7f1a-6f4b1bb02864&fileGetUrlBool=false\x0bContext_SID$758bd921-2bda-4bf0-99db-
6fef07534ea2\x0bContext_CID$758bd921-2bda-4bf0-99db-6fef07534ea2\x0bContext_PID
1579622094423_0.5421076219341163\x0bContext_TID$cc7df247-60ce-4a0f-9d75-
704cf60efc64\x14UserInfo.OMSTenantId$cc7df247-60ce-4a0f-9d75-
704cf60efc64\x0bContext_UID$e66b155d-dcd6-4370-b8c3-
673499af7b06\x0cContext_PUID\x101003200094BB100D\x0bUserInfo.Id\x101003200094BB100D
\x0fUserInfo.IdType\x015\x12Context_IsConsumer\x05false\x0fContext_Flights\xbc\x0215GA,SE3
71947EnableFastPhotoControl,SE372001EnableNotifications,SE372034EmailForwardingAlertEnable
d,SE372089XXXThemingEnabled,SE404477SandboxIframes,SE404491EnableWebCrypto,SE404499
BootInfoCachingEnabled,SE404501PublishAppsPinnedData,SE404513EnableWhiteboard,SE404515
SupportHpaAsApp,SE404517AlertImpressionLogEnabled\x0fContext_Segment\x1c   [anonymised]
,OfficeProPlus\x0fImpression_Name\x0eNavBarLauncher\x13Impression_Category\x06NavBar\x12
Impression_Context\x00\x14Impression_ItemCount\x010\x00\x00\x00m\t\x0b\x01J66034bde775
d42a19f1a2d3d2e647e42-82d9432e-bacf-4067-bb5d-fe87f33fa915-
7384\n\x01I\x12act_default_source\xa9$aa118823-9879-4379-8a08-
b9192b171555\xd1\x06\xe0\xe2\x82\x8d\xf9[\xcb\x08\n\x0b)$dff457d2-845d-42e7-bc3f-
08a7017b0ccaq\x80\xc7\x82\x8d\xf9[\xa9\x06custom\xc9\x06\x13ev_rumonedataupload\xcd\r\t
\t"\x11CorrelationVector$d1af2d9f-90d3-2000-c50a-669f3d9267cc\x04Name\x1bUnifiedApp-
PowerPoint-
Other\x0fWebLog_FullName\x10RUMOneDataUpload\x10WebLog_EventType\x06single\x08Worklo
ad\nUnifiedApp/RUMOneDataUpload_dictionary_ServerCorrelationId$d1af2d9f-90d3-2000-c50a-
669f3d9267cc&RUMOneDataUpload_dictionary_ScenarioId\x1bUnifiedApp-PowerPoint-
Other%RUMOneDataUpload_dictionary_ServerUrl\xd8\x02https://[anonymised].my.sharepoint.co
m/:p:/r/personal/f_f_terra_[anonymised]_nl/_layouts/15/Doc.aspx?sourcedoc=%7B2E81425B-
A536-4E8F-8859-F4A197CFBA71

3.3 Research results iOS: domains found in network traffic

iOS Office apps Domains	One Drive	Word	Excel	Power point	Teams	Out look
app.adjust.com	x					x
cl4.apple.com *Use of iOS*			x			
iadsdk.apple.com *Use of iOS*	x				x	
gsp-ssl.ls.apple.com *Use of iOS*				x	x	
gsp64-ssl.ls.apple.com *Use of iOS*				x	x	
gspe19-ssl.ls.apple.com *Use of iOS S*					x	
gspe21-ssl.ls.apple.com *Use of iOS*					x	
gspe35-ssl.ls.apple.com *Use of iOS*					x	
mesu.apple.com *Use of iOS*					x	
ocsp.apple.com *Use of iOS*		x				
pancake.apple.com *Use of iOS*	x					
init-p01st.push.apple.com *Use of iOS*		x		x	x	
api.smoot.apple.com *Use of iOS*					x	
api-glb-ams.smoot.apple.com *Use of iOS*		x			x	
valid.apple.com *Use of iOS*		x		x		
ajax.aspnetcdn.com *Microsoft's own Ajax CDN*					x	
c.bing.com					x	
www.bing.com		x				
cdnjs.cloudflare.com		x				
media0.giphy.com					x	
media1.giphy.com					x	
media2.giphy.com					x	
media3.giphy.com					x	
clients3.google.com *Test performed by Google to check the network connectivity*					x	x
ajax.googleapis.com		x				
safebrowsing.googleapis.com	x	x		x	x	
acompli.helpshift.com						x
caldav.icloud.com *Probably iOS syncing in the background. User-agent is dataaccessd/1.0, not part of MS Office.*		x		x		
p66-sharedstreams.icloud.com *Use of iOS*					x	
login.live.com					x	
nexus.officeapps.live.com	x	x	x	x		
nexusrules.officeapps.live.com		x	x	x		

iOS Office apps Domains	One Drive	Word	Excel	Power point	Teams	Out look
ocws.officeapps.live.com	x	x	x	x		
odc.officeapps.live.com	x	x	x	x	x	x
ols.officeapps.live.com			x	x		
pptsgs.officeapps.live.com				x		
roaming.officeapps.live.com	x	x	x	x		
uci.officeapps.live.com		x				
browser.pipe.aria.microsoft.com	x	x	x	x	x	x
mobile.pipe.aria.microsoft.com	x				x	x
c1.microsoft.com					x	
web.vortex.data.microsoft.com					x	
fs.microsoft.com		x	x	x		
graph.microsoft.com	x	x	x	x		x
officeclient.microsoft.com		x	x	x		x
dgps.support.microsoft.com					x	
teams.microsoft.com					x	
authsvc.teams.microsoft.com					x	
chatsvcagg.teams.microsoft.com					x	
config.teams.microsoft.com					x	
api.flightproxy.teams.microsoft.com					x	
db3pv2.ng.msg.teams.microsoft.com					x	
emea.ng.msg.teams.microsoft.com					x	
emea-internal.ng.msg.teams.microsoft.com					x	
emea.msgapi.teams.microsoft.com					x	
uksouth-prod.notifications.teams.microsoft.com					x	
presence.teams.microsoft.com					x	
go.trouter.teams.microsoft.com					x	
trouter2-weu.trouter.teams.microsoft.com					x	
www.microsoft.com					x	
login.microsoftonline.com	x	x	x	x	x	x
outlook.office.com					x	
substrate.office.com	x	x	x	x		x
support.office.com					x	
templateservice.office.com		x	x	x		
outlook.office365.com						x
assignments.onenote.com					x	
autodiscover-s.outlook.com		x	x	x		
dataservice.protection.outlook.com	x	x	x	x		
eur02b.dataservice.protection.outlook.com	x	x	x	x		
eur02.oscs.protection.outlook.com	x					
na01.oscs.protection.outlook.com	x					

iOS Office apps Domains	One Drive	Word	Excel	Power point	Teams	Out look
r3.res.outlook.com						x
prod-autodetect. outlookmobile.com						x
prod-collecticon. outlookmobile.com						x
c.s-microsoft.com					x	
tuenl.sharepoint.com	x					x
tuenl-my.sharepoint.com	x	x	x	x	x	x
eu-api.asm.skype.com					x	
api.cc.skype.com					x	
config.edge.skype.com	x	x	x	x		
by.uservoice.com						x
mem.gfx.ms					x	
www.odwebp.svc.ms	x					
westeurope1-mediap.svc.ms	x					
westeurope4-sphomep.svc.ms						x
spoprod-a.akamaihd.net						x
img-prod-cms-rt-microsoft-com.akamaized.net					x	
statics-marketingsites-neu-ms-com.akamaized.net					x	
gate.hockeyapp.net	x				x	x
logincdn.msauth.net					x	
az725175.vo.msecnd.net					x	
outlookmobile-office365-tas.msedge.net						x
statics.teams.cdn.office.net					x	
omextemplates.content.office.net			x	x		
support.content.office.net					x	
contentstorage.onenote.office.net					x	
contentstorage.osi.office.net	x	x	x	x		
dev.virtualearth.net					x	
olmprodcollecticonblob.blob.core.windows.net						x
login.windows.net	x	x	x	x	x	x

3.4 Research results iOS: number of telemetry messages found to the domains browser.pipe.aria.microsoft.com and mobile.pipe.aria.microsoft.com

Eventname iOS	One Drive	Word	Excel	Power point	Teams	Out look
dismissinput		1	1	1		
applifecycle	8				34	10
usagemobile	133					
session	1				4	7
qosmobile	65					
expmobile	1					
composite_stats	4				4	
ev_pageinit	1					
ev_qoe	1					
pdf_action	2					
pdf_render_time	1					

Eventname iOS	One Drive	Word	Excel	Power point	Teams	Out look
pdf_property	1					
errorfileread					2	2
core_data_diagnostics						1
main_thread_blocked						3
account_consistency						1
account_action						2
intune_config						1
general_properties_log						1
accessibility_report						1
app_launch_report						1
telemetry_error						2
boot_time						1
feed_account_info						1
app_startup_reason						1
feature_flags						2
adal_login_result						20
single_sign_on						6
add_account						14
install_referral						1
iconic_sync						1
autodiscover_result						2
exo_get_user_info						2
mail_list_datasource_v2_performance						3
mamenrollmentoperation						7
mamenrollmentnetworkoperation						14
add_account_result						2
account_lifecycle						1
od4b_refresh_tokens						1
user_[anonymised]_action						1
inbox_component						7
mail_filter_component						6
heterogeneous_favorites						1
tab_component						6
cal_component						2
mail_compose						1
account_first_action						1
ev_trace						2
compose_mail_accessory						1
ev_engagement						9
ev_qos						70
send_message						1
core_data_performance						24
performance_record						1
combined_search_use						11
zero_query_view_more						1
feed_init_slab						1
cal_drawer_action						2
sidebar_action						4
act_stats					2	
mdsc_mediaagentmanager					4	
scenario					730	
auth_trace					35	
userbi					152	
trace					424	
trap_token_manager					2	

Eventname iOS	One Drive	Word	Excel	Power point	Teams	Out look
skypecosi_concore_native_call signalingagent_httprequest					2	
http					268	
act_teardown_stats					3	
adalauth					134	
ios_tracewarning					18	
notification					27	
edf_trouter_client_disconnected					4	
edf_trouter_client_connected					4	
reportdata					4	
apicalldata					6	
pageview					2	
office_feedback_sdk					1	

Example event name "ev_trace":

+\n\x01I\x11JS_default_source\xa9$a972d6dd-6db7-46ba-21b8-331419f8f1d1\xd1\x06\xb6\xa4\x94\x8e\xf9[\xcb\x08\n\x01)$df57c2e4-7b0f-bef8-32b3-c6e6d641725eq\xa2\xa4\x94\x8e\xf9[\xa9\x06custom\xc9\x06\x08ev_trace\xcd\r\t\t$\x10EventInfo.Source\x11JS_default_source\x10EventInfo.InitId$b205df9d-f884-b3e8-2a7d-a8fdaabc3246\x12EventInfo.Sequence\x011\x0eEventInfo.Name\x08ev_trace\x0eEventInfo.Time\x182020-01-21T16:14:47.057Z\x14EventInfo.SdkVersion\x10ACT-Web-JS-2.9.0\x11UserInfo.TimeZone\x07+0-1:00\x16DeviceInfo.BrowserName\x07Unknown\x19DeviceInfo.BrowserVersion\x07Unknown\x11DeviceInfo.OsName\x07Unknown\x14DeviceInfo.OsVersion\x07Unknown\rDeviceInfo.Id$299abc49-4cc6-6a03-fb36-952cefa4e5fa\x11UserInfo.Language\x05en-US\x0bUserInfo.Id+i:0h.f|membership|1003200094bb1013@live.com\x0fUserInfo.IdType\x00\x0fAppInfo.Session$176dfe42-e7be-463d-9fdc-94d4e4908574\x0bAccountType\x08Business\x0fBrowserIsMobile\x05false\rBrowserMajVer\x010\rBrowserMinVer\x010\x0bBrowserName\x02NA\x10BrowserUserAgent*Mozilla/5.0 ${Platform.OS} OneDrive Mobile\x0bEnvironment\x04prod\tFarmLabel\x10EMEA_211_Content\x0fIsAuthenticated\x011\x12SiteSubscriptionId$cc7df247-60ce-4a0f-9d75-704cf60efc64\x08Workload\x11Unknown.ItemsView\x11CorrelationVectorn00000000-0000-0000-0000-000000000000#4cb7bf7d-5e2d-4884-9eee-0edd2cb49fde#8ea908ef-54da-49b7-bc25-c3ffa1830946\x10ValidationErrors\x010\x0fWebLog_FullName\x12CaughtError,Trace,\x10WebLog_EventType\x06Single\x17WebLog_Type_CaughtError\x011\x11WebLog_Type_Trace\x011\rTrace_message   Can\'t   find   variable: performance\x11CaughtError_stack\xf0\x02_setFCP@2003.js:1:13547\ncollectSupplementaryData@2003.js:1:13897\n_uploadPerfData@2003.js:1:17335\n_checkTimeout@2003.js:1:16605\nloopForDataCompleteness@2003.js:1:15067\n1776.js:1:1261\nC@41.js:1:745\ncallTimers@41.js:1:2505\n__callFunction@16.js:1:3278\n16.js:1:870\n__guard@16.js:1:2599\ncallFunctionReturnFlushedQueue@16.js:1:845\ncallFunctionReturnFlushedQueue@[native code]\x15PrivacyClassification\x0frequiredService\x00\x00\x00

3.5 Research results Android: Domains found in network traffic

Android Office apps Domains	One Drive	Word	Excel	Power point	Teams	Outlook
google.com					x	
accounts.google.com	x			x	x	
clients3.google.com			x	x		
www.google.com			x	x	x	x
play.googleapis.com			x	x	x	x
update.googleapis.com	x					
connectivitycheck.gstatic.com			x	x	x	x
nexus.officeapps.live.com	x	x	x	x		
nexusrules.officeapps.live.com	x	x		x		
ocws.officeapps.live.com	x	x	x	x		
odc.officeapps.live.com	x	x		x		
ols.officeapps.live.com	x	x				
roaming.officeapps.live.com	x	x	x	x		
browser.pipe.aria.microsoft.com	x			x		
mobile.pipe.aria.microsoft.com					x	
fs.microsoft.com	x					
go.microsoft.com	x	x		x		
officeclient.microsoft.com	x	x		x		
teams.microsoft.com					x	
api.flightproxy.teams.microsoft.com					x	
go.trouter.teams.microsoft.com					x	
trouter2-neu.trouter.teams. microsoft.com					x	
login.microsoftonline.com	x	x	x	x		
loki.delve.office.com	x		x	x		
sfeur.loki.delve.office.com	x		x	x		
substrate.office.com	x	x	x	x		
templateservice.office.com	x					
dataservice.protection.outlook.com	x	x		x		
eur02b.dataservice.protection. outlook.com	x	x	x	x		
eur02.oscs.protection.outlook.com	x	x				
na01.oscs.protection.outlook.com	x					
tuenl.sharepoint.com	x					
tuenl-my.sharepoint.com	x	x	x	x		
api.cc.skype.com					x	
config.edge.skype.com	x	x		x		
erdxxwvuzklkjw				x		
focudbjzjjhbn					x	
hgzjuodeuje	x					
hxiykgxfxdpf					x	
hzhasqlqqdkbt	x					
jymxwzq				x		
oneclient.sfx.ms	x	x		x		x
clients.config.office.net	x	x		x		
omextemplates.content.office. net	x					
contentstorage.osi.office.net	x	x	x	x		
login.windows.net	x	x	x	x		
oclogjwohf	x					
rrpcxlcml				x		
zthadagtj					x	

3.6 Research results Android: number of telemetry messages found to the domains browser.pipe.aria.microsoft.com and mobile.pipe.aria.microsoft.com

Eventname Android	One Drive	Word	Excel	Power point	Teams	Out look
querychange	1			1		
changetextselection	1					
trap_token_manager					4	
mdsc_mediaagentmanager					2	
skypecosi_concore_native_call signalingagent_httprequest					4	
edf_trouter_client_host_and_listener_events					14	
edf_trouter_client_disconnected					5	
edf_trouter_client_connected					4	
edf_trouter_client_event					2	