(technische) Analyse Microsoft Office 365 & W10 Telemetry und Datenschutz

dn Systems

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Who am I

- Lukas Grunwald
  - Security Consulting since 1998
  - Founder DN-Systems Enterprise Internet Sol. GmbH
  - Speaker at BlackHat, DefCon, PoC, Coinsec …
  - Writes for Heise
    - https://www.heise.de/suche/?q=%22Lukas+Grunwald%22&search_submit.x=0&search_submit.y=0&rm=search&sort_by=date
- DN-Systems
  - Operates own Security Lab
  - Integral Security (not only ICT)
  - Malware and APT Analysis
  - Investigation / Digital Forensics
  - Consulting IT-Companies on global scale

Agenda

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- Back at the Blackhat 2008
- Lab setup and components
- Direction User to Microsoft
- Direction Microsoft to User
- Office 2013/2016/365
- Possible improvements

Microsoft Software Updates

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- Work presented 2008 at Blackhat
  - Demonstration of Infection Proxys
  - Unsecure Software Updates
  - Vulnerabilities used by FinFisher and Leonardo
    - Government SpySoftware by Gamma Intl. and Hacking Team
- Microsoft fixed the vulnerabilities rapidly and quickly
  - Worked with Blackhat on site Security Team
- But .. in 2015 came
  - Windows 10

Software update cures it all (excerpt 2008)

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- Vendors publish security patches via Software Updates
- Adobe plans to install / update software for the Acrobat Reader autonomously
  - No user control any more
  - Background process while user is online
- Apple updates Safari and iTunes with Apple Update
- Microsoft updates in Background
  - (XP, Vista, W7, Server)
- How trusted are these update mechanisms?

Update via Internet (excerpt 2008)

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1. DNS Resolve of update cluster / hosts
2. Connect to the update server
3. Get a index of actual version
4. Calculate the needed patches / updates
5. Download the patch / updates
6. Install them on the target system

Attacks to updates (excerpt 2008)

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- DNS Spoofing to redirect to a infection server
- Transparent infection Proxy
  - Can be sit on the wire, or as Trojan on the system
  - Drive-By-Exploits
  - Fake-Downloads from 3rd Party Download Sites
    - Google Search poisoning

Motivation for Poisoning (excerpt 2008)

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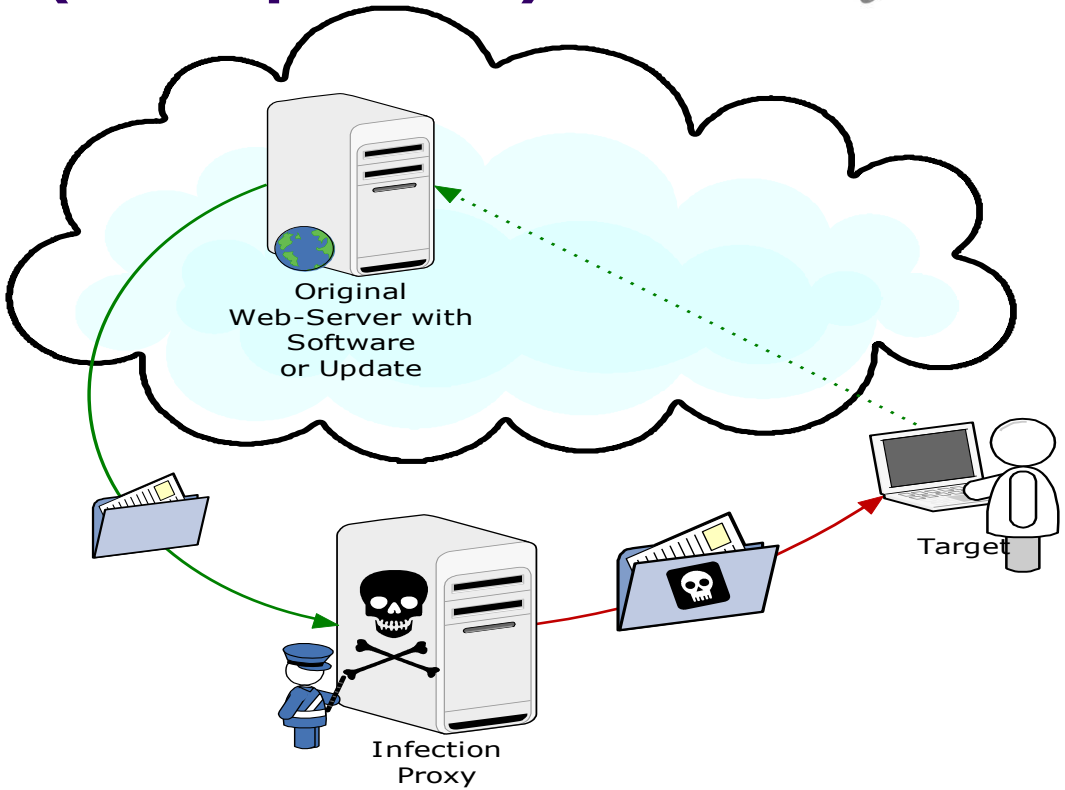
- Lawful Interception / Offensive Forensic
- Criminal Intention
  - Attack Home Banking
  - Zombie infection to get a Bot-Net Node
  - Referrer Poisoning go get sales margin
- Private Investigation
- Corporate Intelligence

Poisoned Downloads (excerpt 2008)

- Million of Firefox downloads on the first release day
- Take advantage of Internet software updates
- Support from software industry will make it easy
- Possible with every software download / upload



Microsoft Update (excerpt 2008)

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- Update is using CRL correct
  - Lost certificate is not fatal
  - Software segments are singed
  - Update uses HTTP (not HTTPS)
  - **Microsoft Update V6 is secure (XP, Vista, W7)**
- **Fixed by Microsoft 2 weeks after the BlackHat talk**

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Let’s check Windows 10 (back to the future 2015)

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- Windows 10 is cloud centric
- Telemetry is send periodically
- Cortana sends huge amount

  of personal data e.g.:

  Voice, Search, Handwriting

- WLAN-Keys, UserIDs, passwords, Edge Data etc are stored in cloud as well
- BitLocker Keys and Office 360 data are stored in the Microsoft cloud

Test setup for interception

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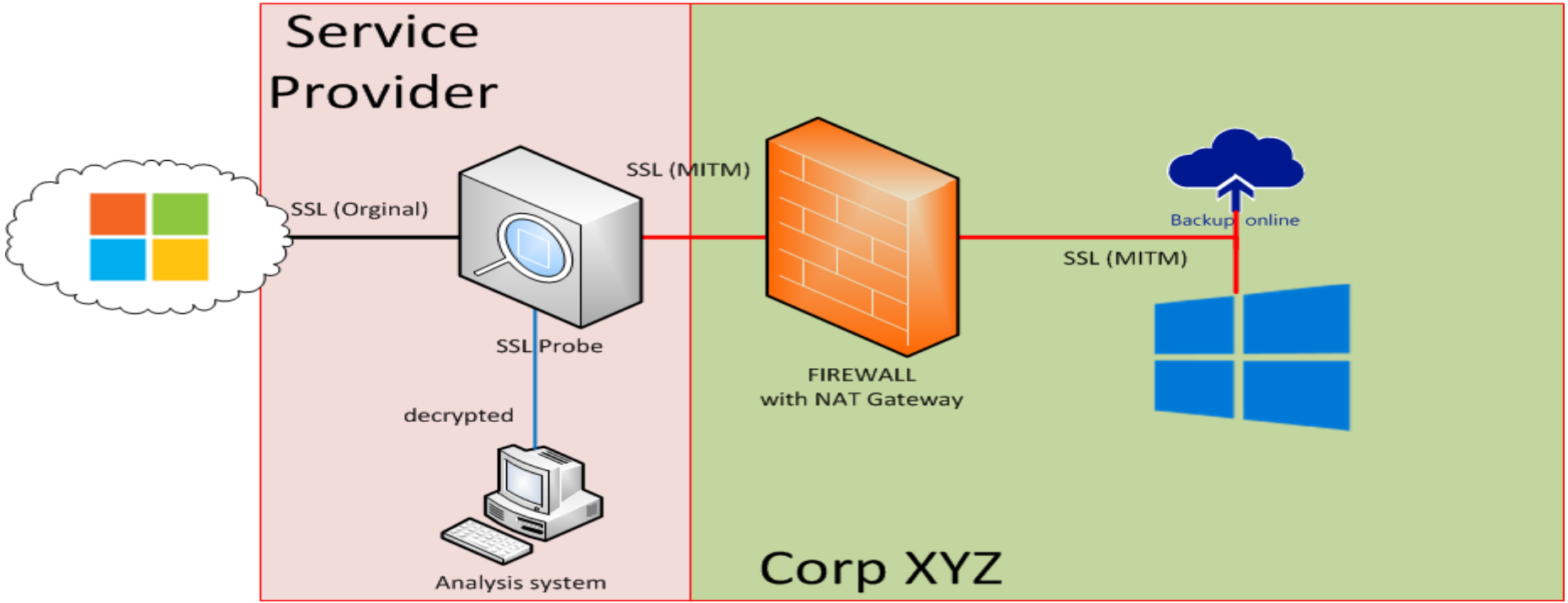

One Machine implementation

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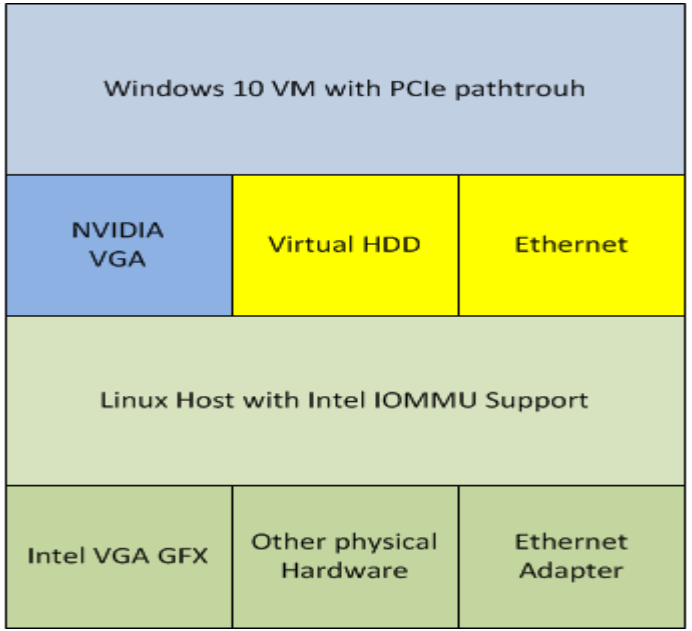
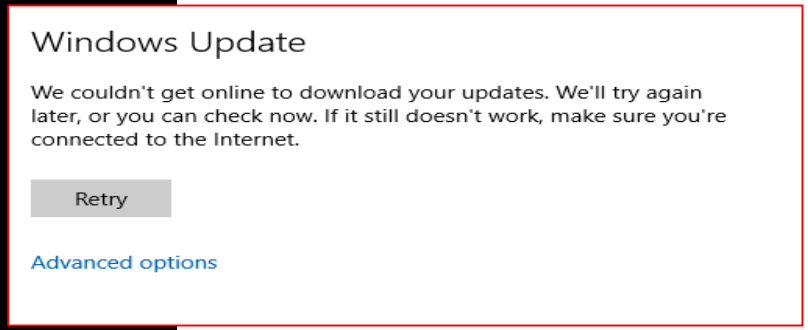
- Not all hardware components are virtualized
- On Linux-Host are based:
  - Infection Proxy
  - Man in the Middle (SSL Proxy)
  - Analysis Tools
- Setup explained in the iX article in detail



Ups they did it again …

- The bug from 2008 is back
- Windows Update (and the store) is secure, but the rest is total interceptable

```
[..]
X-MSEdge-ExternalExpType: JointCoord
X-MSEdge-ExternalExp: d-thshld39,d-thshldspcl40,d-thshld42
Content-type: text/xml
X-Search-SafeSearch: Moderate
X-Device-SKU: To be filled by O.E.M.
X-Device-MachineId: {7A00EF93-FD60-45AA-ACB0-06629146C562}
X-BM-Market: DE
X-BM-DateFormat: M/d/yyyy
X-Device-OSSKU: 48
X-Device-NetworkType: ethernet
X-BM-DTZ: 120
X-DeviceID: 0100040C0900369F
X-BM-DeviceScale: 100
X-Device-Manufacturer: Gigabyte Technology Co., Ltd.
X-BM-Theme: ffffff;004275
X-BM-DeviceDimensionsLogical: 344x520
X-BM-DeviceDimensions: 344x520
[..]
```



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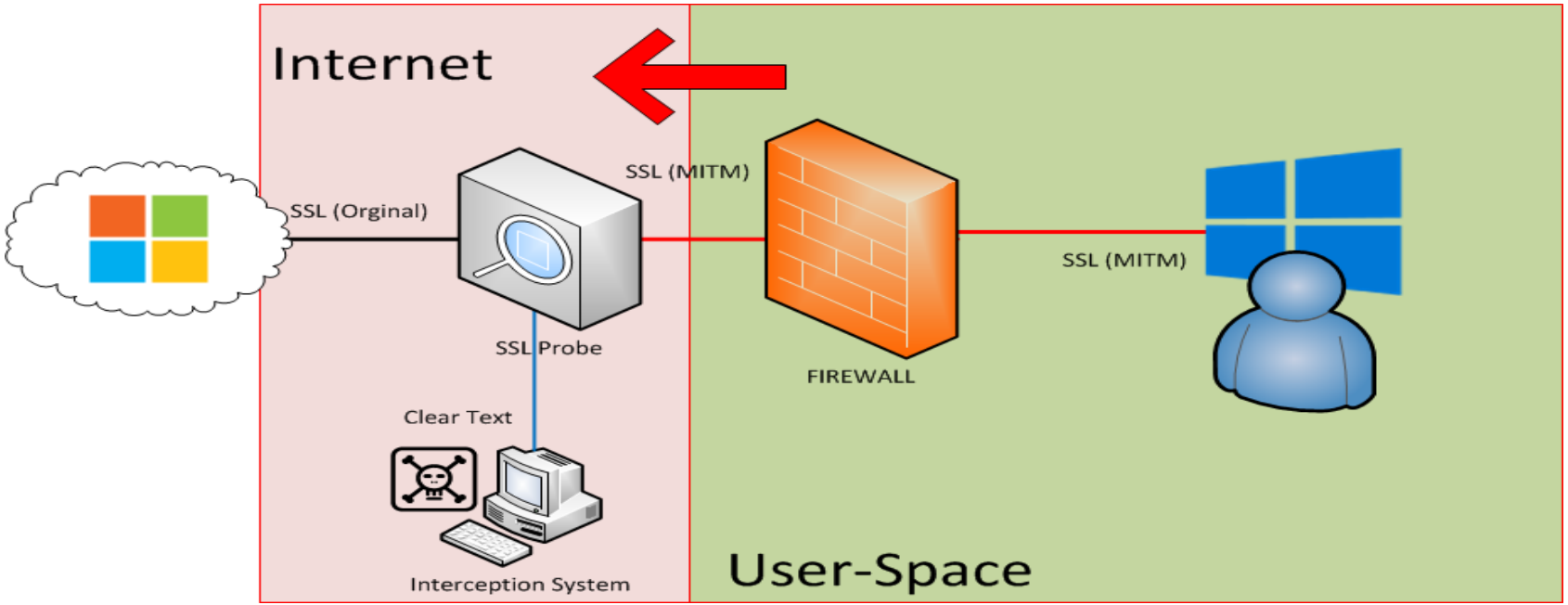
Direction – User to Microsoft (Cloud)



SSL in the Middle attack

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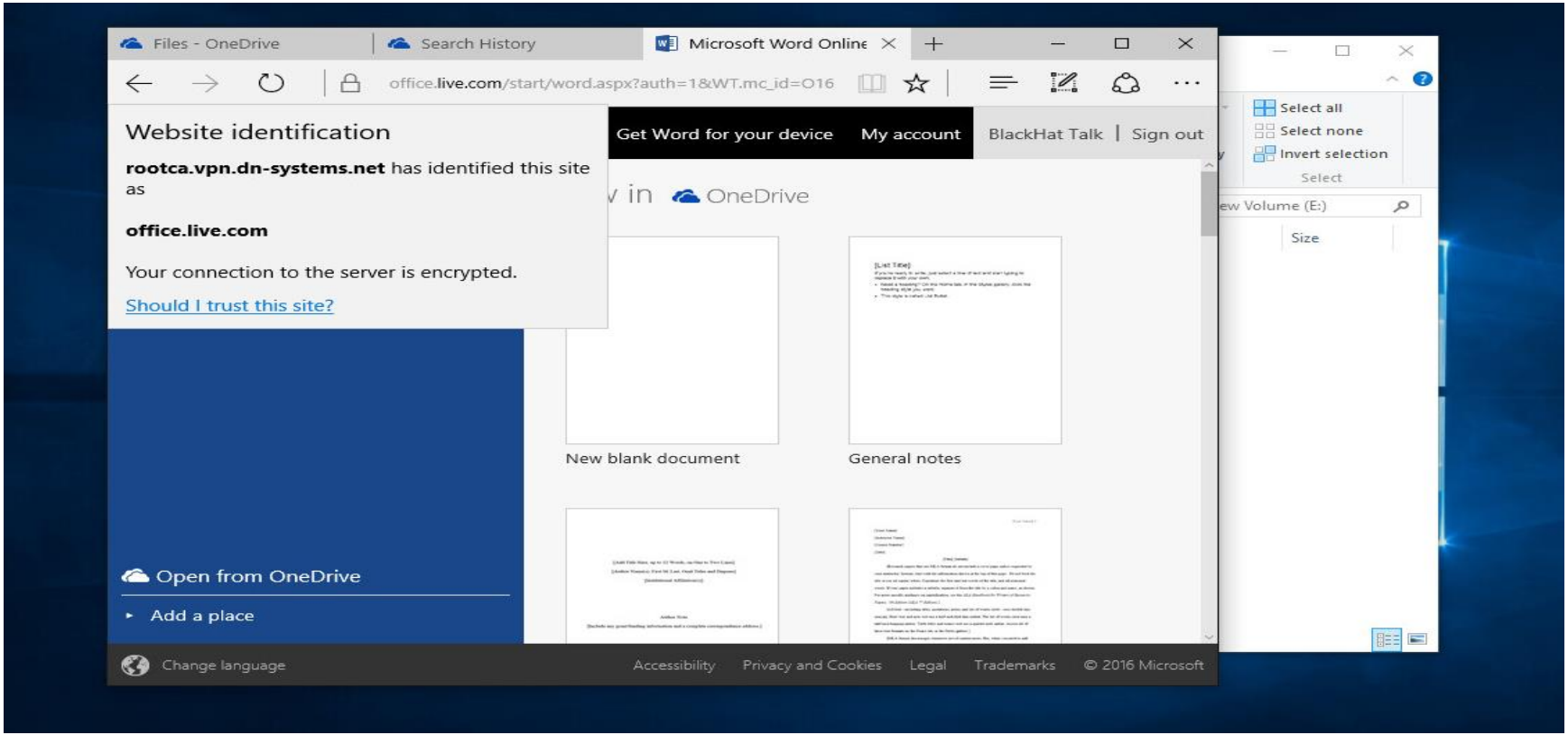

Smart-Screen send URL to Microsoft

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- EDGE Browser sending URLs to MS

```
POST /urs.asmx?MSURS-Client-Key=5178pvN3uGdwzGWbvvu6Nw%3d%3d&MSURS-MAC=q0Asz9t12ok%3d HTTP/1.1
Accept: text/*
Content-Type: text/xml; charset=utf-8
User-Agent: VCSoapClient
Host: urs.microsoft.com
Content-Length: 571
Cache-Control: no-cache
<RepLookup v="5"><G>379BDC39-D58D-44AA-986B-FD2CBFFA75A6</G><O>80E6C742-3F85-4A5C-9405-
0930AB345910</O><D>10.0.8110.6</D><C>11.00.10240.16384</C><OS>10.0.10240.0.0</OS><I>9.11.10240
.16384</I><L>de-
DE</L><RU>aHR0cDovL3d3dy5oZWlzZS5kZS8=</RU><RI>0.0.0.0</RI><R><Rq><URL>aHR0cDovL3d3dy5oZWlzZS5
kZS8=</URL><O>PRE</O><T>TOP</T><HIP>2a00:1450:4005:0800:0000:0000:0000:100b</HIP></Rq><Rq><URL
>aHR0cDovL1syYTAwOjE0NTA6NDAwNTowODAwOjAwMDA6MDAwMDowMDAwOjEwMGJdLw==</URL><O>PRE</O><T>IP</T>
<HIP>[2a00:1450:4005:0800:0000:0000:0000:100b]</HIP></Rq></R><WA/><PRT>219</PRT></RepLookup>
```

```
aHR0cDovL1syYTAwOjE0NTA6NDAwNTowODAwOjAwMDA6MDAwMDowMDAwOjEwMGJdL
w==http://[2a00:1450:4005:0800:0000:0000:0000:100b]
aHR0cDovL3d3dy5oZWlzZS5kZS8= http://www.heise.de/
```

Local command are visible to Microsoft as well

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- Cortana is sending local system commands to Microsoft as well


```
","K":1001,"Q":"cmd","Val":"CG","Ho":2,"Gr":3,"HC":1,"DeviceSigna
ls":{"Rank":0,"PHits":null,"Id":"C:\\WINDOWS\\system32\\cmd.exe",
"DName":"cmd"}}]},{"T":"D.LocalApps","AppNS":"SmartSearch","Servi
ce":"AutoSuggest","Scenario":"LocalApps","SC":1,"DS":[{"T":"D.Url
","Tx":"Command Prompt","K":1002,"Q":"Command
Prompt","Val":"PP","Ho":2,"Gr":0,"DeviceSignals":{"Rank":990,"PHi
ts":{"0":"System.FileName","1":"System.ParsingName"},"Id":"{1AC14
E77-02E7-4E5D-B744-2EB1AE5198B7}\\cmd.exe","DName":"Command
Prompt","LAD":"2015-07-
31T11:28:57.852Z","AppLnch":7,"Args":0,"MDN":0},"RankerSignals":{
"rankingScore":7.1706970837152 29,"featureStore":{"0":0.18786,"1":
1,"2":7,"3":0.00257,"5":"0.001","6":131218.02,"7":990,"8":1,"
```

Backup to skydrive ?

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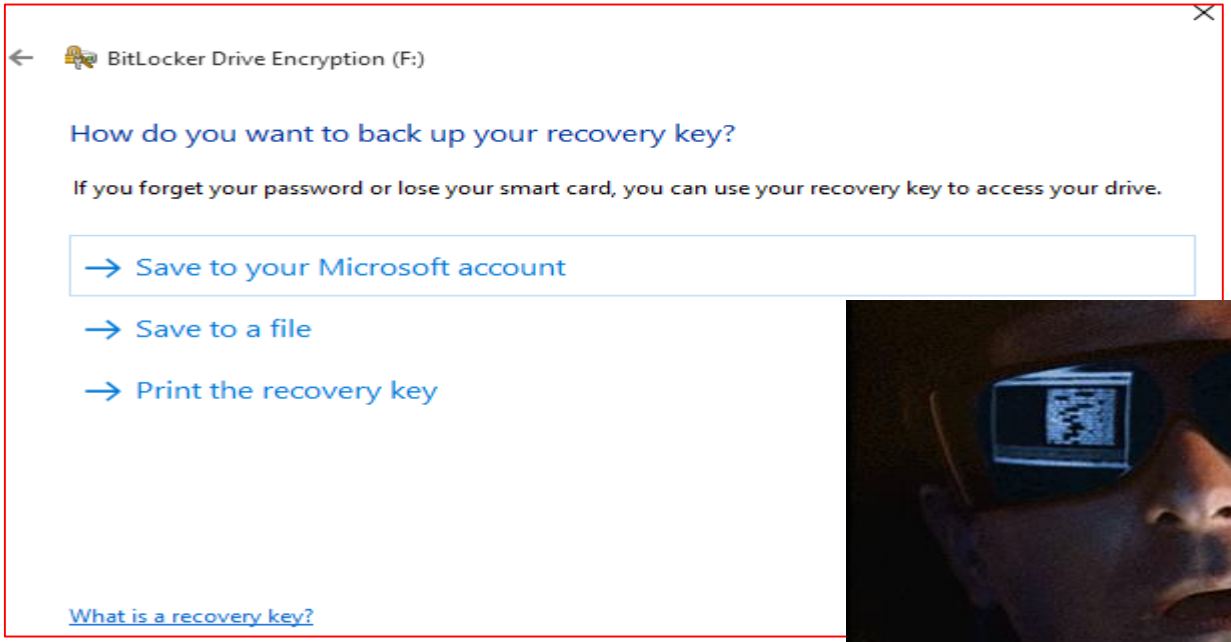
- Windows 10 allows you to backup recovery key to Microsoft, but you never know what happens on the way there and in the cloud



Even Bitlocker Key is ^h^h was send

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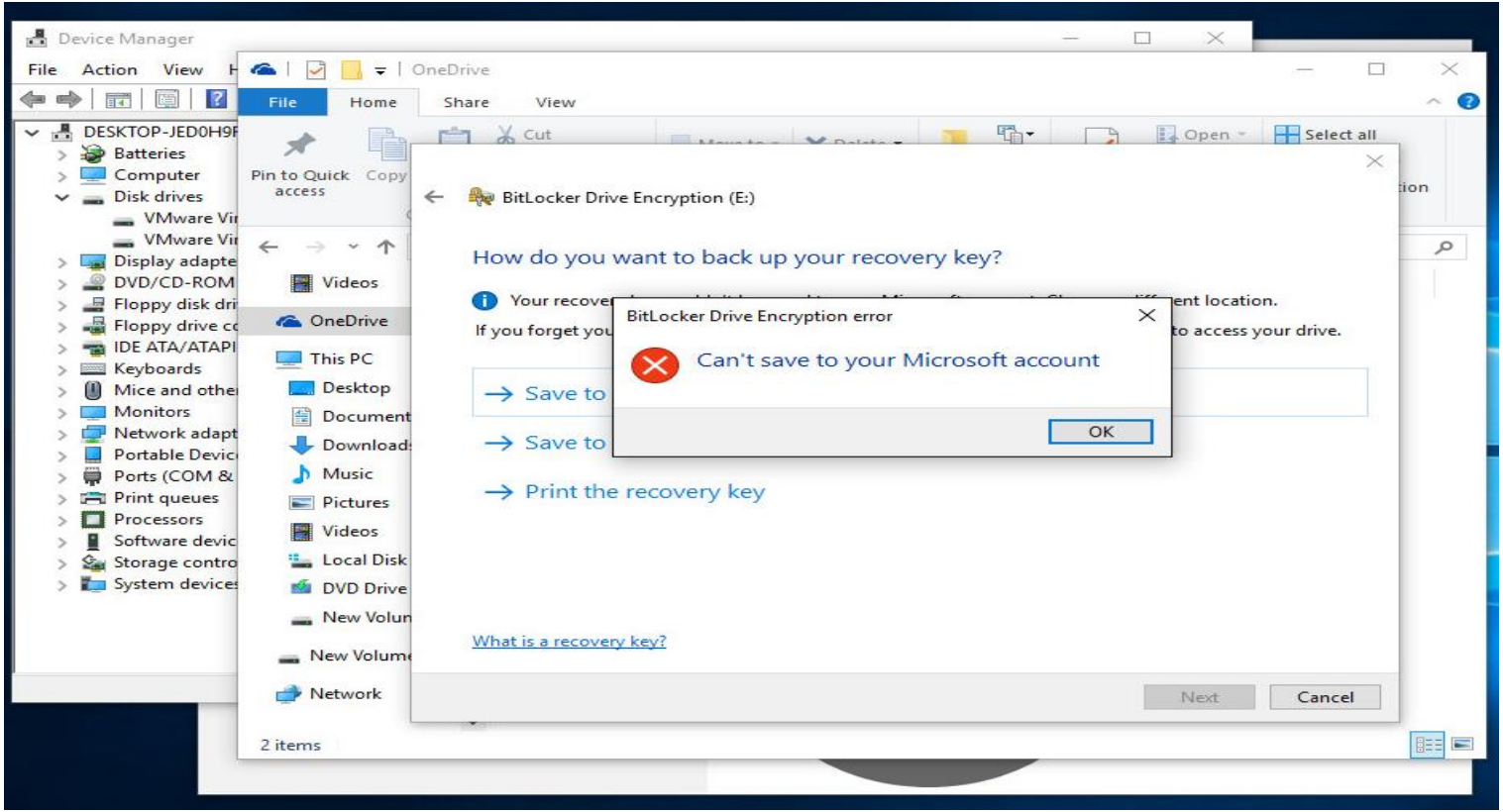
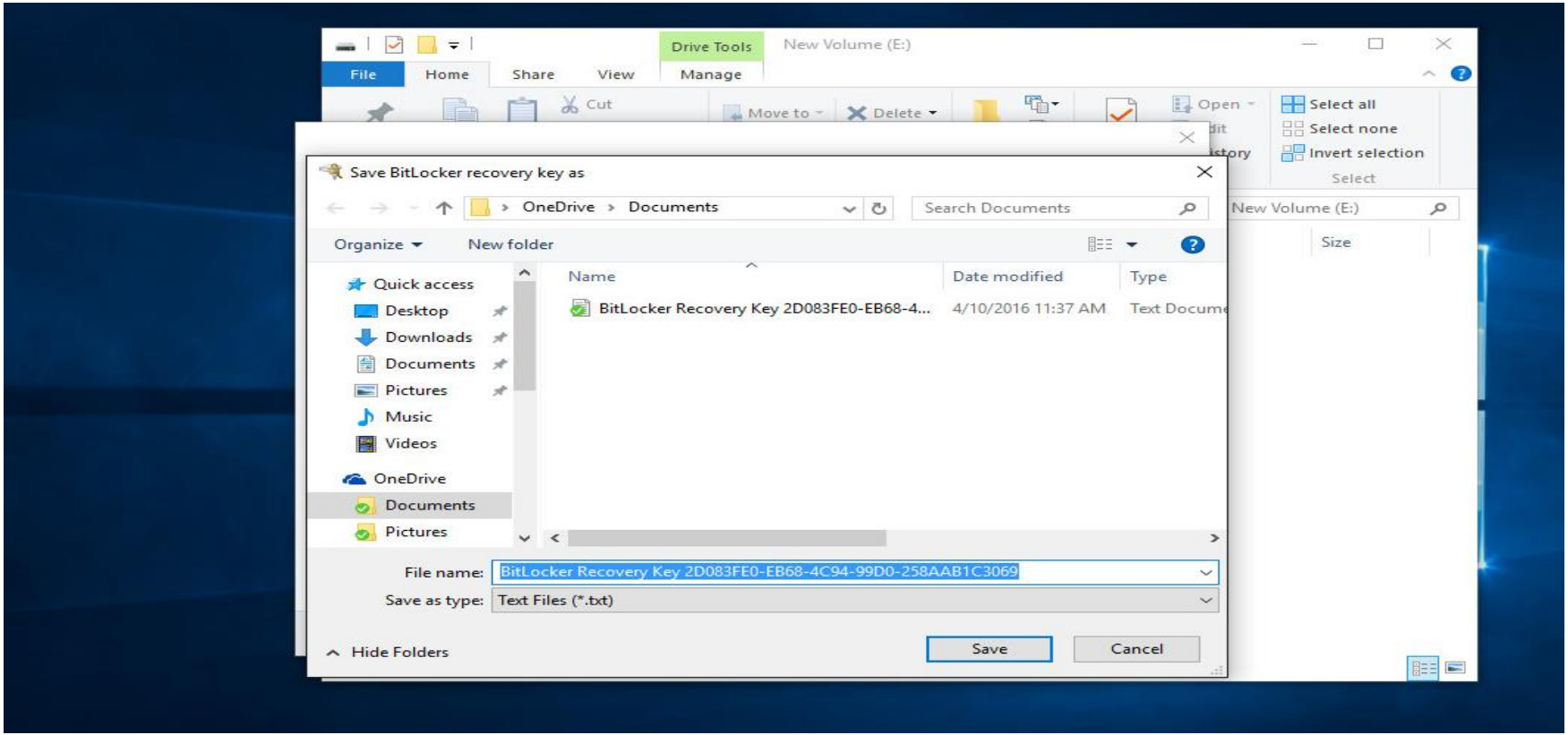
```
User-Agent: Microsoft SkyDriveSync 17.3.5907.0716 ship; Windows NT 10.0 (10240)
X-TransactionId: Plat.17.3.5907.0716.357c54f5-4c12-4b9f-a5ba-4a09a8adbb09
X-RequestStats: did=fe86480b-79e4-6cd3-1401-214f65e1f20d
Wlc-Version: 23
Host: act-3-blu.mesh.com
HTTP/1.1 200 OK
Cache-Control: no-store,no-cache
Pragma: no-cache
Transfer-Encoding: chunked
Content-Type: application/octet-stream;v0
Last-Modified: Sun, 02 Aug 2015 17:35:12 GMT
ETag: 0
Date: Sun, 02 Aug 2015 17:35:19 GMT
act-3-blu.mesh.comd
4S7ZFSJDEZMZ5YKVWT7UJVUJTQe
-urn:uuid:c992bfe4-2623-9e59-e155-b4ff44d6899c
```

No warning about wrong certificate, but it stopped working



But it can still be saved to OneDrive



Create a Microsoft Login User

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```
- <s:Envelope>
  - <s:Header>
    - <wsa:Action s:mustUnderstand="1">
        http://schemas.xmlsoap.org/ws/2005/02/trust/RST/Issue
      </wsa:Action>
      <wsa:To s:mustUnderstand="1">https://login.live.com:443/RST2.srf</wsa:To>
      <wsa:MessageID>1460307907</wsa:MessageID>
    - <ps:AuthInfo Id="PPAuthInfo">
        <ps:HostingApp>{DF60E2DF-88AD-4526-AE21-83D130EF0F68}</ps:HostingApp>
        <ps:BinaryVersion>12</ps:BinaryVersion>
        <ps:UIVersion>1</ps:UIVersion>
        <ps:InlineUX>TokenBroker</ps:InlineUX>
        <ps:IsAdmin>1</ps:IsAdmin>
      - <ps:InlineFT>
          DUmCDUTICD0bYjKJFmB0Za*14QFiYOTSGMKR4e6278i0XtrukpflhYCglhvmJTzwV1SYMXCwsaP7F9CQ09nwS5zJv*UsUVo*U
        </ps:InlineFT>
        <ps:Cookies/>
        <ps:RequestParams>AQAAAAIAAABsYwQAAAAxMDMz</ps:RequestParams>
        <ps:WindowsClientString>GYiC9MzxVTvX57n8/RSuuc87wOt4Pb8tPe5T+Zs8ZeE=</ps:WindowsClientString>
      </ps:AuthInfo>
    - <wsse:Security>
      - <wsse:UsernameToken wsu:Id="user">
          <wsse:Username>bh16talk@outlook.com</wsse:Username>
          <wsse:Password>LVPassword</wsse:Password>
          <wsse:LoginOption>16908291</wsse:LoginOption>
        </wsse:UsernameToken>
```

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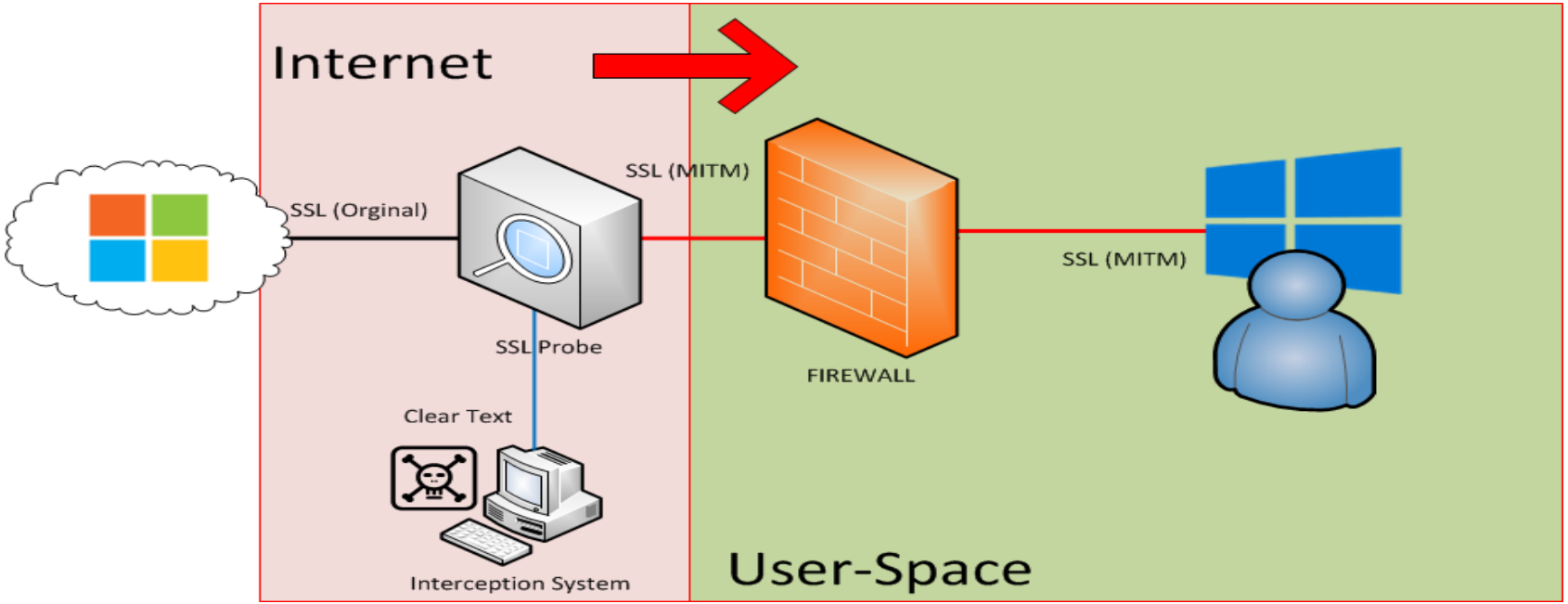
Direction – Microsoft (Cloud) to User



Microsoft sends strange data to the user system

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- Within the interception, data send to Cortana could be intercepted as well …
- For a full list see appendix - some highlight here …


```
[..]
{"are you afraid of clowns" : {"LL" : [["are you afraid of clowns",2,0.72775],["are you afraid of clowns?",2,0.[illegible]4]], "TSK": [illegible], "SUP": []}}
{"are you better than siri" : {"LL" : [["are you better than siri?",2,0.282],["are you better than siri",2,0.52[illegible]]], "TSK": [illegible], "SUP": []}}
[..]
{"daemon tools" : {"LL" : [["daemon tools lite",0,0.17548],["daemon tools",11,0.05972],["http://www.daemon-
tools.cc",11,0.30059],["searchmystuff",101,0.31453]], "TSK": [2017], "SUP": []}}
[..]
{"do you have nightmares" : {"LL" : [["do you have nightmares?",2,0.20188],["do you have nightmares",2,0.75405]], "TSK": [], "SUP": []}}
{"do you know siri" : {"LL" : [["do you know siri?",2,0.31014],["do you know siri",2,0.51049]], "TSK": [], "SUP": []}}
{"do you know siri?" : {"LL" : [["do you know siri?",2,0.81344]], "TSK": [], "SUP": []}}
{"do you like dogs" : {"LL" : [["do you like dogs",2,0.58014],["do you like dogs?",2,0.28826]], "TSK": [], "SUP": []}}
{"do you like me" : {"LL" : [["do you like me?",2,0.29925],["do you like me",2,0.57161]], "TSK": [], "SUP": []}}
{"do you like me?" : {"LL" : [["do you like me?",2,0.88864]], "TSK": [], "SUP": []}}
{"do you like siri" : {"LL" : [["do you like siri?",2,0.18319],["do you like siri",2,0.3669],["searchtheweb",100,0.34127]], "TSK": [], "SUP":
[]}}
{"do you love me" : {"LL" : [["do you love me?",2,0.31556],["do you love me",2,0.52486]], "TSK": [], "SUP": []}}
{"do you love me?" : {"LL" : [["do you love me?",2,0.82589]], "TSK": [], "SUP": []}}
[..]
{"good night" : {"LL" : [["good night",2,0.8072]], "TSK": [], "SUP": []}}
[..]
{"i love you cortana" : {"LL" : [["i love you cortana",11,0.05048],["i love you cortana",2,0.79747]], "TSK": [], "SUP": []}}
```

Microsoft sends strange data to the user system

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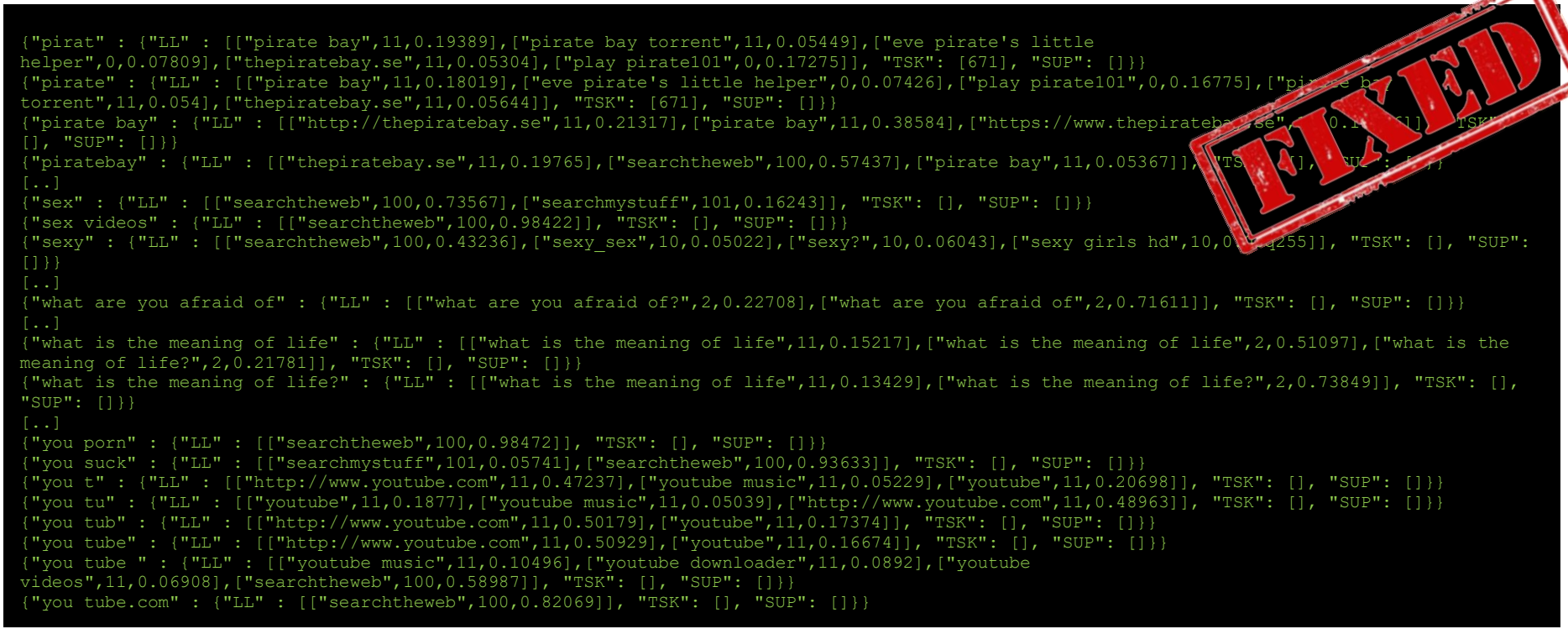

Strange Telemetry data

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- Microsoft sends Software-strings
  - Any idea for this ?


```
{"709" : ["C:\\Tor Browser\\Browser\\firefox.exe","1"]}
[..]
{"3262" : ["{7C5A40EF-A0FB-4BFC-874A-C0F2E0B9FA8E}\\GNU\\GnuPG\\gpa.exe","1"]}
{"3263" : ["{7C5A40EF-A0FB-4BFC-874A-C0F2E0B9FA8E}\\GNU\\GnuPG\\kleopatra.exe","1"]}
[..]
{"4013" : ["{7C5A40EF-A0FB-4BFC-874A-C0F2E0B9FA8E}\\PGP Corporation\\PGP
Desktop\\PGPdesk.exe","1"]}
[..]

{"4761" : ["{7C5A40EF-A0FB-4BFC-874A-C0F2E0B9FA8E}\\aMule\\amule.exe","1"]}
[..]
{"4779" : ["{7C5A40EF-A0FB-4BFC-874A-C0F2E0B9FA8E}\\eMuleTorrent\\eMuleTorrent.exe","1"]}
{"4780" : ["{7C5A40EF-A0FB-4BFC-874A-C0F2E0B9FA8E}\\eMule\\emule.exe","1"]}
```

- Why is Microsoft interested in installed encryption or privacy software ?

7C5A40EF-A0FB-4BFC-874A-C0F2E0B9FA8E = C:\ProgramFilesX86

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Office is worse (Office 2013/ Office 2016)

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- Office sends every configuration and interaction to Microsoft
  - Access, Excel, OneNote, PowerPoint, Project, Publisher, Visio and Word
    - Telemetry sends Hardware, Software (Office Clicks and Use, complete user data and use data, etc …)
  - File name, File format (extension), Size, Author, Location, Title, Office Version,
- All send to a US Datacenter

https://technet.microsoft.com/en-us/library/mt599629(v=office.16).aspx#TelemetryApps

Office collection example Word

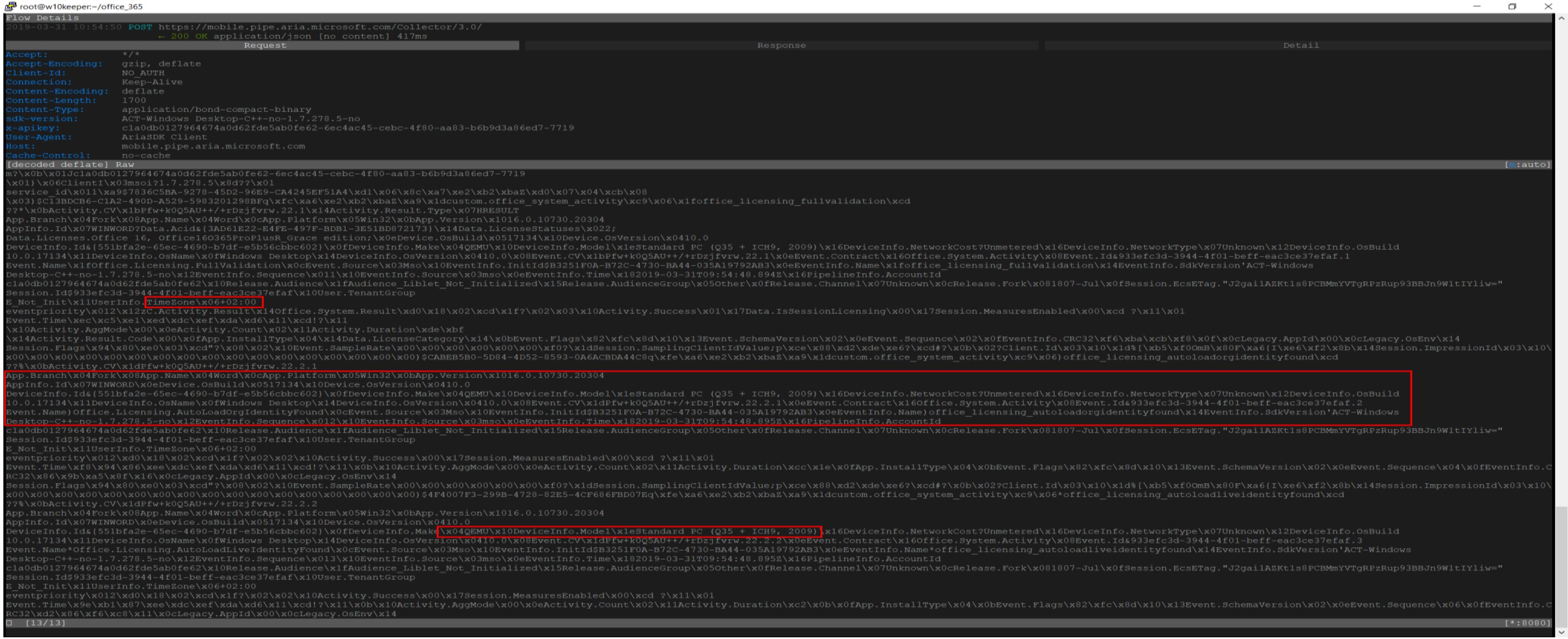
```
User-Agent: Microsoft Office/16.0 (Windows NT 10.0; Microsoft Word 16.0.6701; Pro)
X-IDCRL_ACCEPTED: t
X-Office-Version: 16.0.6701
X-Office-Application: 0
X-Office-Platform: Win32
X-Office-SqmUserId: {35BEEC9A-0FA6-41A0-B05E-4656C64464EC}
X-Office-LastUpdate: 2016-08-22T20:32:43Z
X-Office-SusClientId: 82e544ce-1a72-4842-ab5f-2506eef2c8fe
Host: officeclient.microsoft.com
GET /ab?&clientid=%7b35BEEC9A-0FA6-41A0-B05E-4656C64464EC%7d HTTP/1.1
Connection: Keep-Alive
User-Agent: Microsoft Office  2014
X-MSEdge-AppID: word
X-OCAS-Platform: win32
X-OCAS-IsEnterprise: 1
X-OCAS-Build: 16.0.6741
X-OCAS-IsSubscription: 0
X-MSEdge-IG: 8899FE7B-24AD-4A3A-ABD4-83F4CBC6FB2D
Host: ocos-office365-s2s.msedge.net
VGET /ab?&clientid=%7b35BEEC9A-0FA6-41A0-B05E-4656C64464EC%7d HTTP/1.1

Host: nexus.officeapps.live.com
Production_CBB Production NoNL::NoFlights Z97X-SLI+
Gigabyte Technology Co., Ltd.K
winword.exe en-US 10.0 78cf6450d9d71352_LiveId winword.exe 10.0 78cf6450d9d71352_LiveId
x64E To be filled by O.E.M. To be filled by O.E.M. 02025-010-47974016B7f 02025-010-47974016B7+ To be filled by O.E.M.
Z97X-SLI Gigabyte Technology Co., Ltd.f
```

Office collection example Excel

```
XLDesktop Command Execution:119
XLDesktop Command Execution:119d
FileIO::CMsoOLDocBase::Lockd
)FileIO::CMsoOLDocBase::HrReadWriteLockCmdd
4PlacesPickerFeatureServiceList::GetAppSaveAsFindFiled =<E@
3PlacesPickerFeatureServiceList::FGetDefaultFilePathd DocToIdentityMapping::Initd
3MsoDocs.DesktopBackstage.Navigation.ReadLocalFolderd 8MsoDocs.DesktopBackstage.Navigation.UpdateNavContentListd /{Tb0
1MsoDocs.DesktopBackstage.Navigation.SaveFileCached
2MsoDocs.DesktopBackstage.Navigation.ReadThisPCRootd
+FileIO::CMsoOLDocBaseImpIOLDoc2::BeginCmdExd
&Excel.DesktopBackstage.SaveAs.SaveFile FileIO::CMsoOLDocBase::LockdG
%Excel.DesktopBackstage.SaveAs.LoadCFD+FileIO::CMsoOLDocBaseImpIOLDoc2::BeginCmdExd
%Excel.DesktopBackstage.SaveAs.LoadCFD%Excel.DesktopBackstage.SaveAs.LoadCFDd&Excel.DesktopBackstage.SaveAs.SaveFile
,FileIO::CMsoOLDocBaseImpIOLDoc2::RecordEventd&Excel.DesktopBackstage.SaveAs.SaveFile
+FileIO::CMsoOLDocBaseImpIOLDoc2::BeginCmdExd+FileIO::CMsoOLDocBaseImpIOLDoc2::BeginCmdEx
FileIO::CMsoOLDocBase::Lockd&Excel.DesktopBackstage.SaveAs.SaveFile
)FileIO::CMsoOLDocBase::HrReadWriteLockCmddr q?
&Excel.DesktopBackstage.SaveAs.SaveFileMso.OpenXml.OpenPackageda2U0*
&Excel.DesktopBackstage.SaveAs.SaveFileXLShared ISAVE::HrSaved
XLDesktop Manual Save%FileIO::CMsoOLDocFile::HrDownloadTempdb2U0*
XLDesktop Manual SaveMso.OpenXml.OpenPackaged
XLDesktop Manual SaveXLDesktop Manual Saved
&Excel.DesktopBackstage.SaveAs.SaveFile
FileIO::CMsoOLDocFile::Saved
,FileIO::CMsoOLDocBaseImpIOLDoc2::RecordEvent
)FileIO::CMsoOLDocBase::HrReadWriteLockCmdd
,FileIO::CMsoOLDocBaseImpIOLDoc2::RecordEvent
,FileIO::CMsoOLDocBaseImpIOLDoc2::RecordEventd
,FileIO::CMsoOLDocBaseImpIOLDoc2::RecordEvent
1MsoDocs.DesktopBackstage.Navigation.LoadFileCachee
,DocToIdentityMapping::TryIdentityParentMatche
'DocToIdentityMapping::GetIdentityForVUrl
'DocToIdentityMapping::GetIdentityForUrle
1MsoDocs.DesktopBackstage.Navigation.SaveFileCachee
```

Office 365



root@w10keeper:~/office_365
Flow Details
2019-03-31 10:54:50 POST https://mobile.pipe.aria.microsoft.com/Collector/3.0/
← 200 OK application/json [no content] 417ms
Request
Response
Detail
Accept: */*
Accept-Encoding: gzip, deflate
Client-Id: NO_AUTH
Connection: Keep-Alive
Content-Encoding: deflate
Content-Length: 1700
Content-Type: application/bond-compact-binary
sdk-version: ACT-Windows Desktop-C++-no-1.7.278.5-no
x-apikey: c1a0db0127964674a0d62fde5ab0fe62-6ec4ac45-cebc-4f80-aa83-b6b9d3a86ed7-7719
User-Agent: AriaSDK Client
Host: mobile.pipe.aria.microsoft.com
Cache-Control: no-cache
[decoded deflate] Raw
TimeZone\x06+02:00
\x04QEMU\x10DeviceInfo.Model\x1eStandard PC (Q35 + ICH9, 2009)
[13/13]
[*:8080]

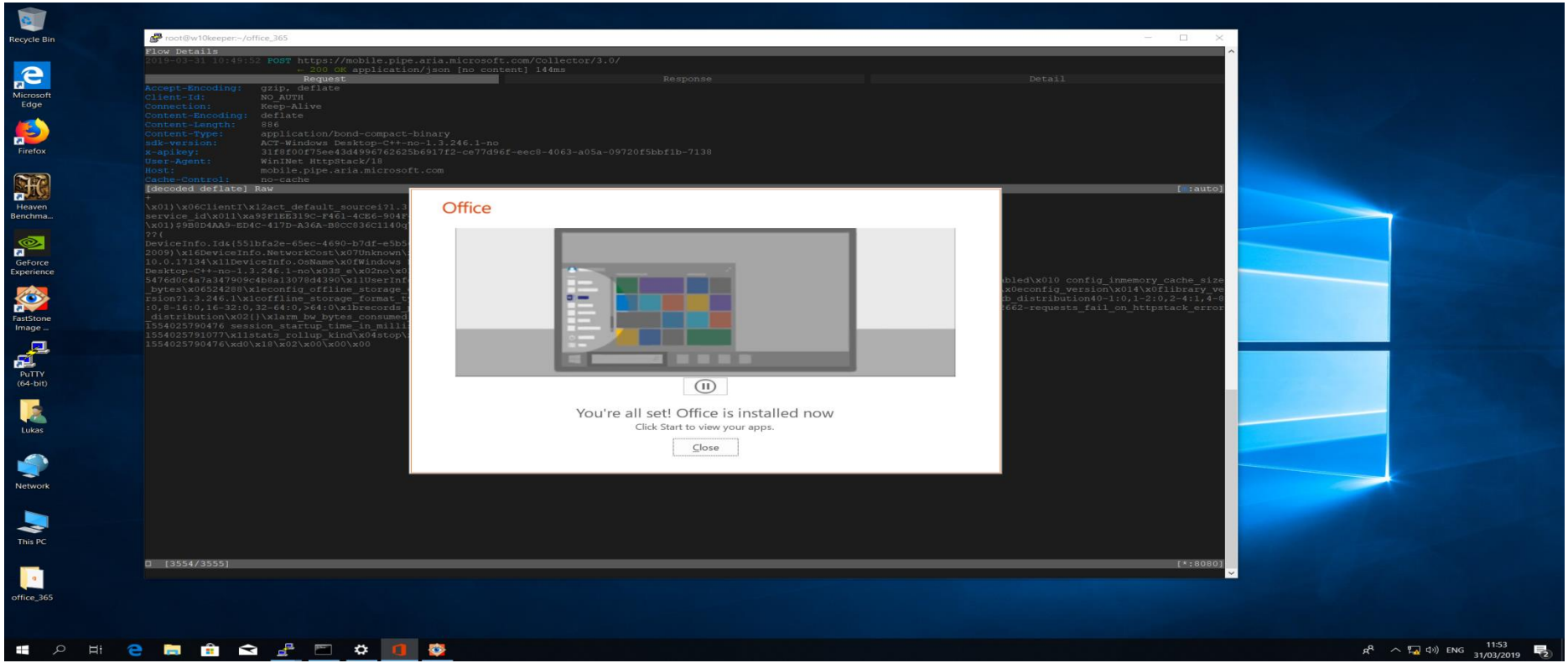
Time of use / time of display

dn Systems

- Without the user consent, the Office 365 installer is transferring telemetry data to the US without getting the user consent first before doing it
- Telemetry data is not complaint in ANY case with the DGSVO
- No „opt-out“ or better optional „opt-in“ is offered

Time of use / time of display

dn Systems



Office 365 installer

- Installer works trough the man in the middle proxy
- Why so many wildcard certificates ?
  - One lost certificate and the whole Office 365 installation base is doomed !

```
Flow Details
2019-03-31 10:25:38 GET https://fp.msedge.net/conf/v1/asgw/fpconfig.min.json HTTP/2.0
                    ← 200 application/json 2k 167ms
                      Request                    Response                   Detail
Server Connection:
    Address             fp.msedge.net:443
    Resolved Address    204.79.197.222:443
    HTTP Version        HTTP/2.0
    ALPN                h2
Server Certificate:
    Type            RSA, 2048 bits
    SHA1 digest     FA:81:E0:D1:E5:51:62:0C:6F:DC:CA:EF:7E:BF:06:44:0D:CD:0A:97
    Valid to        2020-12-13 22:54:06
    Valid from      2018-12-13 22:54:06
    Serial          490617672716690239293469482390990250196582841
    Subject         CN  *.msedge.net
    Issuer          C   US
                    ST  Washington
                    L   Redmond
                    O   Microsoft Corporation
                    OU  Microsoft IT
                    CN  Microsoft IT TLS CA 4
    Alt names       *.msedge.net, *.a-msedge.net, a-msedge.net, b-msedge.net, *.b-msedge.net, c-msedge.net, *.c-msedge.net, dc-msedge.net, *.dc-msedge.net, *.lbas.msedge.net,
                    *.test.msedge.net, *.azp.footprintdns.com, *.footprintdns.com, *.clo.footprintdns.com, *.any.footprintdns.com, *.nrb.footprintdns.com, *.perf.msedge.net,
                    *.fp.measure.office.com
Client Connection:
    Address                     ::ffff:192.168.0.33:50019
    HTTP Version                HTTP/2.0
    TLS Version                 TLSv1.2
    Server Name Indication      fp.msedge.net
    Cipher Name                 ECDHE-RSA-AES128-GCM-SHA256
    ALPN                        h2
Timing:
    Client conn. established    2019-03-31 10:25:37.942
    Server conn. initiated      2019-03-31 10:25:37.953
    Server conn. TCP handshake  2019-03-31 10:25:38.044
    Server conn. TLS handshake  2019-03-31 10:25:38.100
    Client conn. TLS handshake  2019-03-31 10:25:38.114
    First request byte          2019-03-31 10:25:38.119
    Request complete            2019-03-31 10:25:38.226
    First response byte         2019-03-31 10:25:38.282
    Response complete           2019-03-31 10:25:38.287
```

Office 365 installer

- Only Activation is highly protected
- Not username or password

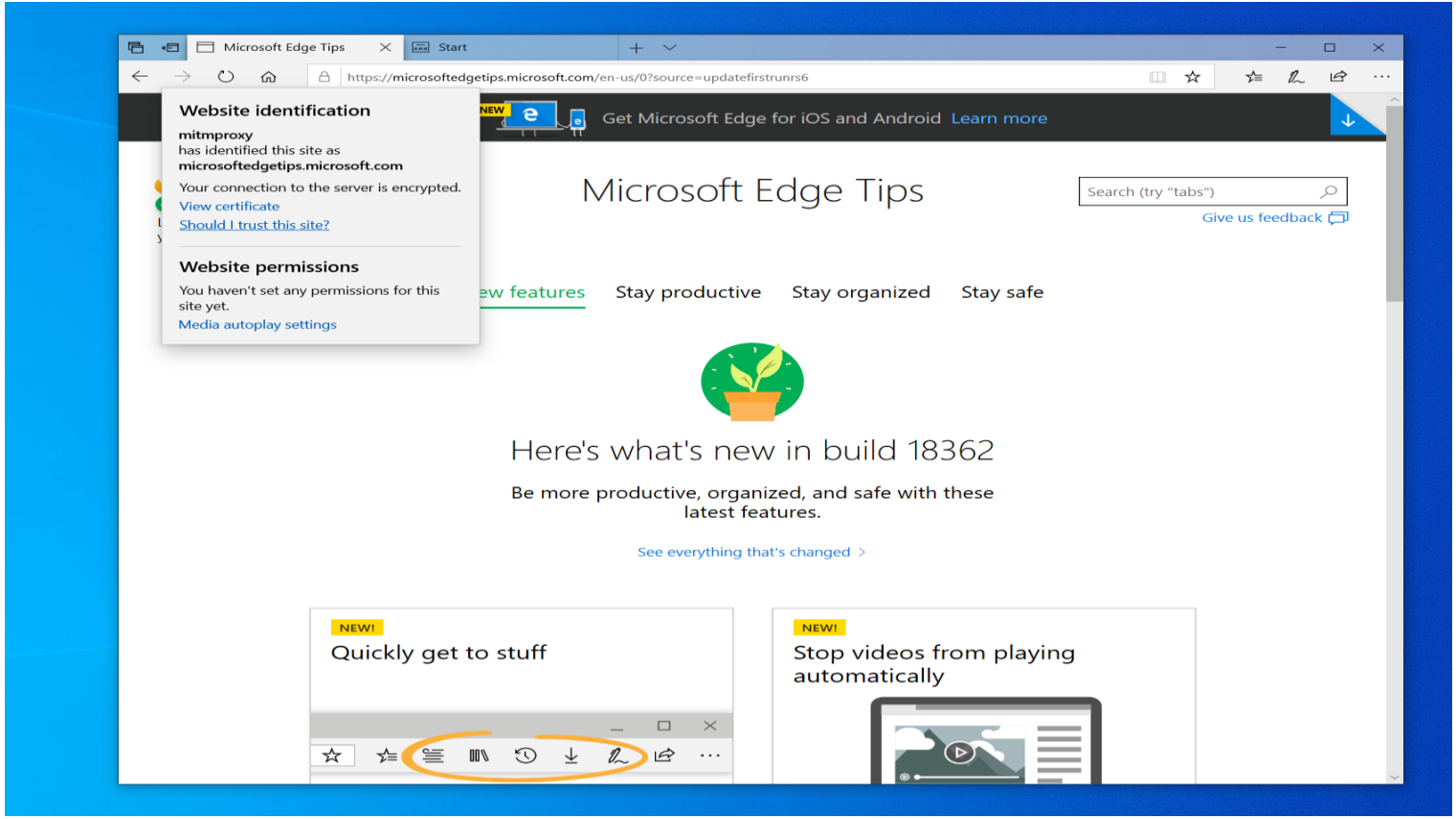
Agenda

dn Systems

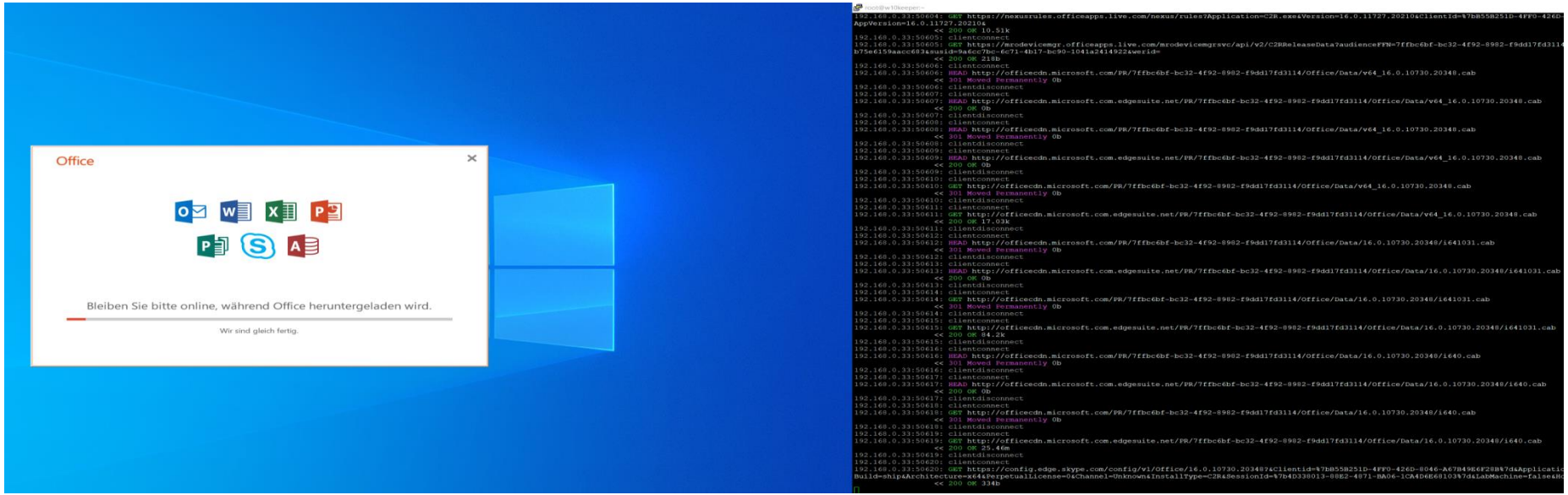
- Back at the Blackhat 2008
- Lab setup and components
- Direction User to Microsoft
- Direction Microsoft to User
- Office 365 & Bonus W10 1903
- Possible improvements

Windows 1903 in details

dn Systems



Windows 1903 and Office 365



- Click-to-Run via Interception Proxy

Windows 1903 Telemetry

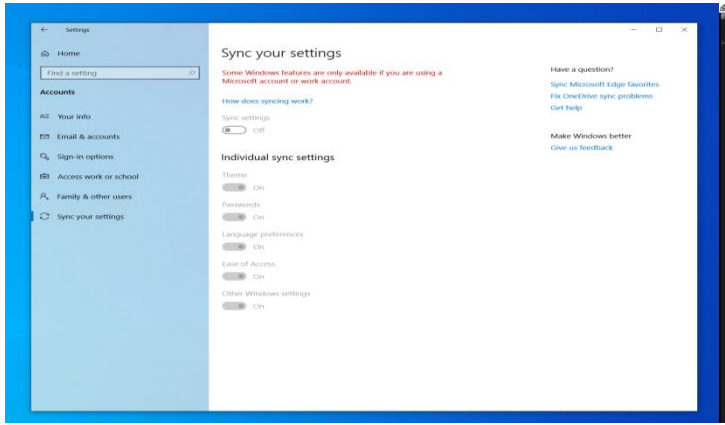
dn Systems

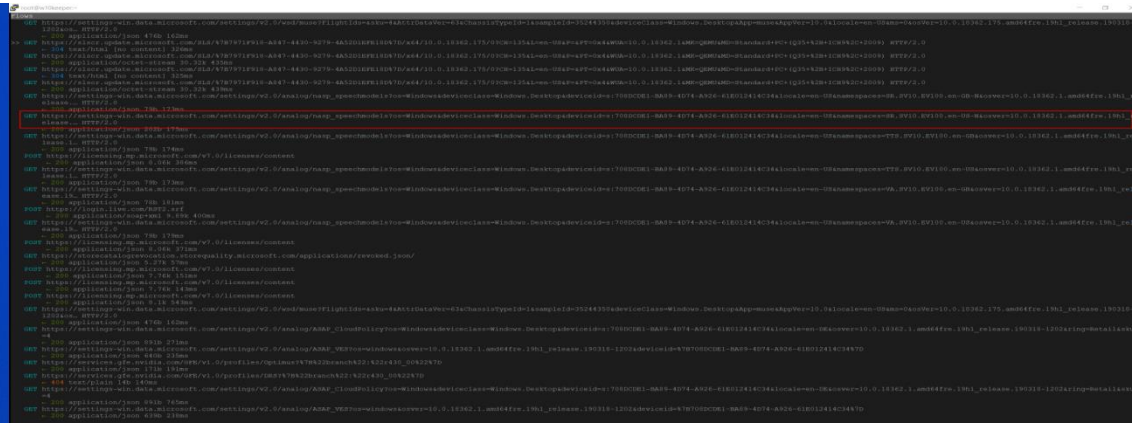
- Telemetry seems to be certificate pinned

```
:ffff:192.168.0.33:50680: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50680: Ignoring server verification error, continuing with connection
:ffff:192.168.0.33:50680: TcpDisconnect("(32, 'EPIPE')",)
192.168.0.33:50680: clientdisconnect
192.168.0.33:50681: clientconnect
:ffff:192.168.0.33:50681: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50681: Ignoring server verification error, continuing with connection
:ffff:192.168.0.33:50681: TcpDisconnect("(32, 'EPIPE')",)
192.168.0.33:50681: clientdisconnect
192.168.0.33:50682: clientconnect
:ffff:192.168.0.33:50682: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50682: Ignoring server verification error, continuing with connection
:ffff:192.168.0.33:50682: TcpDisconnect("(104, 'ECONNRESET')",)
192.168.0.33:50682: clientdisconnect
192.168.0.33:50683: clientconnect
:ffff:192.168.0.33:50683: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50683: Ignoring server verification error, continuing with connection
192.168.0.33:50683: clientdisconnect
192.168.0.33:50684: clientconnect
:ffff:192.168.0.33:50684: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50684: Ignoring server verification error, continuing with connection
192.168.0.33:50684: clientdisconnect
192.168.0.33:50685: clientconnect
:ffff:192.168.0.33:50685: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50685: Ignoring server verification error, continuing with connection
:ffff:192.168.0.33:50685: TcpDisconnect("(32, 'EPIPE')",)
192.168.0.33:50685: clientdisconnect
192.168.0.33:50686: clientconnect
:ffff:192.168.0.33:50686: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50686: Ignoring server verification error, continuing with connection
:ffff:192.168.0.33:50686: TcpDisconnect("(32, 'EPIPE')",)
192.168.0.33:50686: clientdisconnect
192.168.0.33:50687: clientconnect
:ffff:192.168.0.33:50687: Certificate verification error for watson.telemetry.microsoft.com: unable to get local issuer certificate (errno: 20, depth: 1)
:ffff:192.168.0.33:50687: Ignoring server verification error, continuing with connection
:ffff:192.168.0.33:50687: TcpDisconnect("(32, 'EPIPE')",)
192.168.0.33:50687: clientdisconnect
```

Windows 1903 Setting sync

- Why is W10-1903 connecting to setting sync ?





Agenda

dn Systems

- Back at the Blackhat 2008
- Lab setup and components
- Direction User to Microsoft
- Direction Microsoft to User
- Office 2013/2016/365
- Possible improvements

Suggested improvements

dn Systems

- Offer MSI and make „Click-to-Run“ optional, it´s a high risk in environment and unsecure
- Cloud offering optional (Store, OneDrive, Cortana, ..)
- Comply with EU-GDPR

Questions ?

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Thank You

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