



Azure Sentinel

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Microsoft Threat Intelligence Center

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Der Solorigate-Angriff im Überblick

Microsoft Azure Sentinel: unternehmensweite Suche nach Angreiferaktivitäten

1. Aufspüren von Solorigate-Angriffen
2. Windows-Ereignisprotokolle und Azure Sentinel
3. Suchen von Rohdaten in Azure Sentinel und Microsoft Defender für Endpunkt
4. Suchen nach Anzeichen für gestohlene SAML-Tokenzertifikate
5. Benachrichtigungen von Microsoft 365 Defender und Sentinel
6. Azure Sentinel Workbook und GitHub

Home > Azure Sentinel workspaces >

Azure Sentinel | Overview

Selected workspace: 'cybersecuritysoc'

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 - Threat intelligence (Preview)
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 - Watchlist (Preview)
 - Playbooks
 - Community
 - Settings

50M ↑ 13.1M
Events

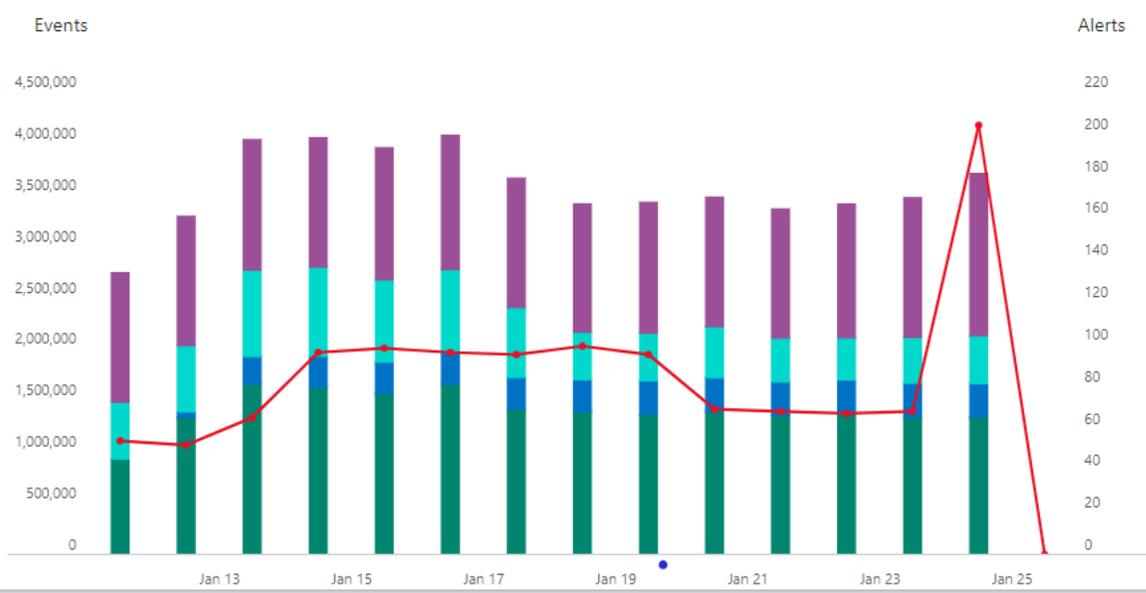
1.2K ↑ 520
Alerts

1.6K ↑ 936
Incidents

Incidents by status

■ New (1.6K)
 ■ Active (6)
 ■ Closed (True Positive) (1)
 ■ Closed (False Positive) (1)

Events and alerts over time



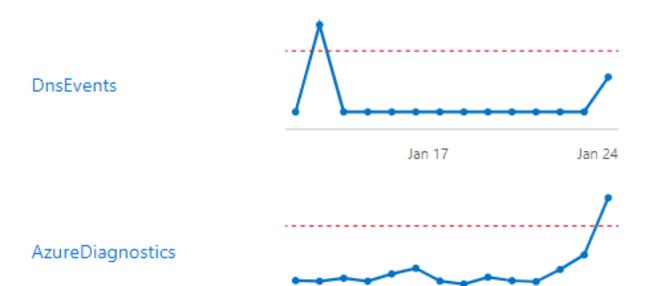
Potential malicious events



Recent incidents

Severity	Incident Description	Count
Low	DDoS Attack mitigated for Public IP	1 Aler
High	DDoS Attack detected for Public IP	1 Aler
Medium	TI map IP entity to AzureActivity (enriched)	1 Aler
Medium	Time series anomaly detection for total v...	5 Aler
Low	DDoS Attack mitigated for Public IP	1 Aler

Data source anomalies



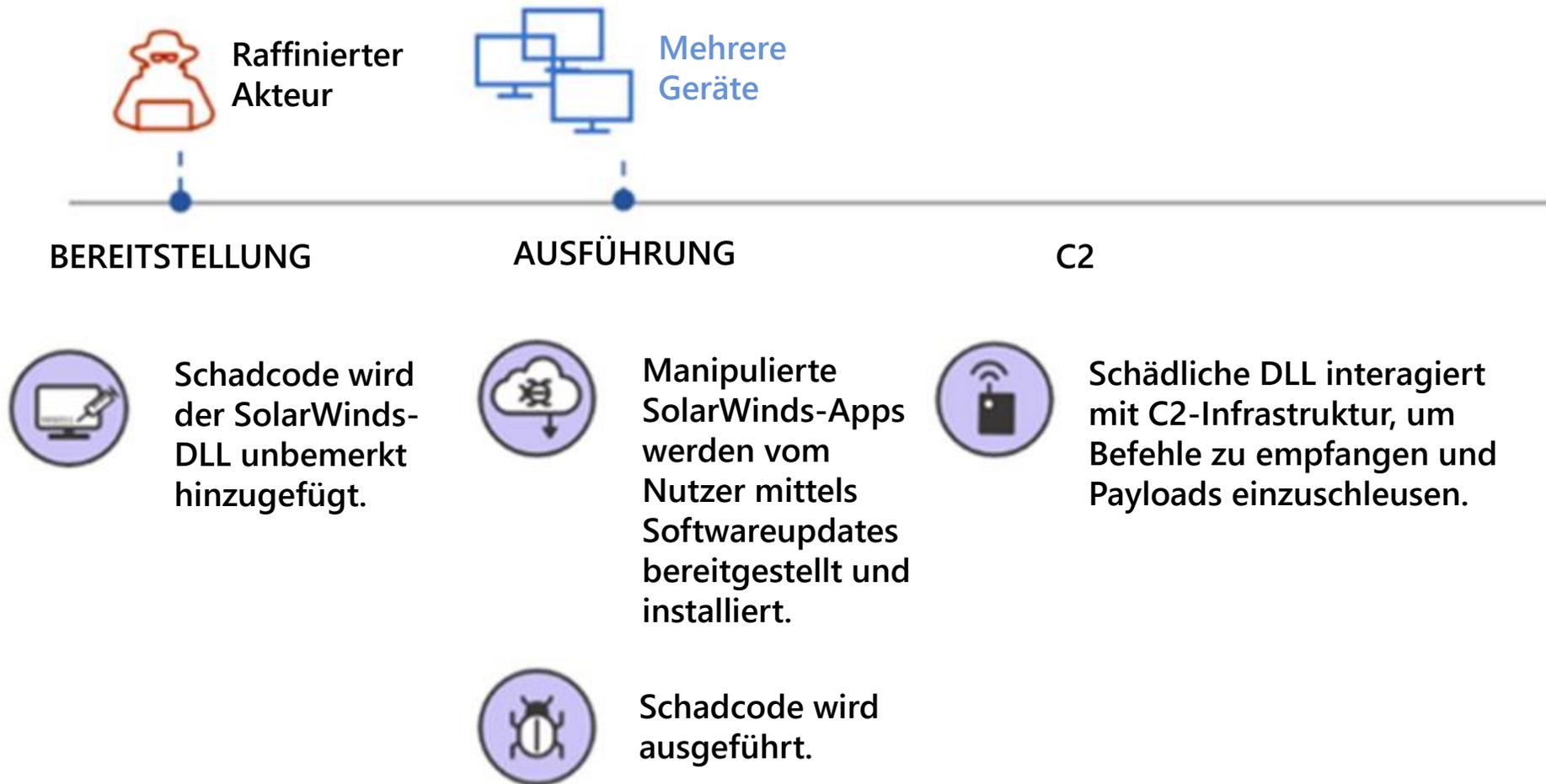


Diagramm zum Solorigate-Angriff auf die Supply-Chain

Azure Sentinel | Logs

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New Query 1*

CyberSecuritySOC

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Filter Group by: Solution

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- WindowsEventForwarding
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Run Time range: Last 24 hours Save Copy link New alert rule Export Pin to dashboard Format query

```

13 (union isfuzzy=true
14 (
15 SecurityEvent
16 | where EventID == '4688'
17 | where NewProcessName has 'SolarWinds'
18 | extend MachineName = Computer , Process = NewProcessName
19 ),
20 (
21 DeviceProcessEvents
22 | where InitiatingProcessFolderPath has 'SolarWinds'
23 | extend MachineName = DeviceName , Process = InitiatingProcessFolderPath
24 )
25 )
26 | summarize StartTime = min(TimeGenerated), EndTime = max(TimeGenerated), make_set(Process) by MachineName
27
    
```

Results Chart Columns Add bookmark Display time (UTC+00:00) Group columns

Completed. Showing results from the last 24 hours. 00:00.5 4 records

	MachineName	StartTime [UTC]	EndTime [UTC]	set_Process
>	SolWinds1	12/14/2020, 11:14:21.000 AM	12/14/2020, 11:21:41.000 AM	["c:\\program files (x86)\\solarwinds\\orion\\erlang\\erts-10.1\\bin\\erl.exe","c:\\program files (x86)\\sc...
>	SolWinds2	12/15/2020, 2:05:32.000 AM	12/15/2020, 2:05:32.000 AM	["c:\\program files (x86)\\solarwinds\\orion\\sqlexpress\\mssql14.solarwinds_orion\\mssql\\binn\\fdlau...
>	SolWinds3	12/7/2020, 4:48:29.000 PM	12/7/2020, 4:48:29.000 PM	["c:\\program files (x86)\\solarwinds\\orion\\sqlexpress\\mssql14.solarwinds_orion\\mssql\\binn\\fdlau...
>	SolWinds4	12/9/2020, 10:08:42.000 PM	12/9/2020, 10:08:42.000 PM	["c:\\program files (x86)\\solarwinds\\orion\\sqlexpress\\mssql14.solarwinds_orion\\mssql\\binn\\fdlau...

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New Query 1* x +

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22 | where InitiatingProcessFolderPath has 'SolarWinds'
23 | extend MachineName = DeviceName , Process = InitiatingProcessFolderPath
24 )
25 )
26 | summarize StartTime = min(TimeGenerated), EndTime = max(TimeGenerated), make_set(Process) by MachineName
27
28

```

Results Chart

Completed 00:03.4 0 records

i No query was selected
Type a query and place the cursor anywhere in the query.
A query can contain line breaks, but no blank lines.

Azure Sentinel | Logs

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New Query 1*

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- Tables Queries Filter
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```

8 (union isfuzzy=true
9   (Event
10    | where Source == "Microsoft-Windows-Sysmon"
11    | where EventID in (17,18)
12    | extend EvData = parse_xml(EventData)
13    | extend EventDetail = EvData.DataItem.EventData.Data
14    | extend NamedPipe = EventDetail.[5].["#text"]
15    | extend ProcessDetail = EventDetail.[6].["#text"]
16    | where NamedPipe contains '583da945-62af-10e8-4902-a8f205c72b2e'
17    | extend Account = UserName
18    | project-away EventDetail, EvData
19   ),
20   (
21    SecurityEvent
22    | where (EventID == '5145' and AccessList has '%4418' and RelativeTargetName contains '583da945-62af-10e8-4902-a8f205c72b2e')
23    or (EventID == "4688" and FilePath =~ "c:\\windows\\syswow64\\netsetupsvc.dll" or NewProcessName =~ "c:\\windows\\syswow64\\netsetupsvc.
24    (DeviceProcessEvents
25    | where FolderPath =~ "c:\\windows\\syswow64\\netsetupsvc.dll")
26    | summarize FirstSeen = min(TimeGenerated), Processes=make_set(NewProcessName) by Computer, IPAddress

```

Results Chart Columns Add bookmark Display time (UTC+00:00) Group columns

Completed. Showing results from the last 24 hours. 00:00.5 2 records

Computer	IpAddress	FirstSeen [UTC]	Processes
Computer	SolWinds1		
IpAddress	10.7.1.15		
FirstSeen [UTC]	2020-12-16T07:54:01Z		
Processes	["c:\\windows\\syswow64\\netsetupsvc.dll"]		

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24 dll")),
25 (DeviceProcessEvents
26 | where FolderPath =~ "c:\\windows\\syswow64\\netsetupsvc.dll"))
27 | summarize FirstSeen = min(TimeGenerated), Processes=make_set(NewProcessName) by Computer, IPAddress

```

Results Chart

Completed 05:54.7 0 records

i No query was selected
Type a query and place the cursor anywhere in the query.
A query can contain line breaks, but no blank lines.

Alerts > **ADFS private key extraction attempt** The new Alert page

ADFS private key extraction attempt

windows10-atp-x1.atp.local Risk level ■ High ... atp\mind0xp ...

ALERT STORY Collapse all

- [4280] SecurityHealthSystray.exe ...
- [7448] OneDrive.exe /background ...
- File create
 - dump_em_all.exe ...
 - 🚩 Suspicious file dropped ■ Medium ● New ● Detected ...
- [7956] dump_em_all.exe ...
- Image load
 - dump_em_all.exe ...
 - 🚩 Suspicious file dropped ■ Medium ● New ● Detected ...
 - dump_em_all.exe ran an LDAP query
 - LDAP Search query `(&(thumbnailphoto=*)(objectClass=contact)(cn=CryptoPolicy))` 📄
 - Distinguished name `CN=ADFS,CN=Microsoft,CN=Program Data,DC=ATP,DC=local` 📄
 - Action time Jan 10, 2021, 7:09:02 PM
 - 🚩 ADFS private key extraction attempt ■ High ● New ● Detected ...
- [7936] WerFault.exe -u -p 7956 -s 1428 ...

Details

ADFS private key extraction attempt

■ High New

[See in timeline](#) [Link to another incident](#) [Assign to me](#) ...

Manage alert

Classify this alert

Status

Classification

Alert details

Incident Multi-stage incident involving Execution & Credential access on one endpoint ([open in Microsoft 365 Defender](#))

Detection source EDR

Detection technology Behavioral

Detection status Detected

Category CredentialAccess

Techniques T1003: OS Credential Dumping
T1528: Steal Application Access Token

First activity Jan 10, 2021, 7:09:02 PM

Last activity Jan 10, 2021, 7:09:02 PM

"Versuchter Zugriff auf ADFS-Schlüsselinformationen" – Erkennt verdächtige LDAP-Abfragen, über die vertrauliche Schlüssel in AD ausgespäht werden sollen.

"Extraktion privater ADFS-Schlüssel" – Erkennt Muster von Tools wie ADFSDump.

Azure Sentinel | Overview

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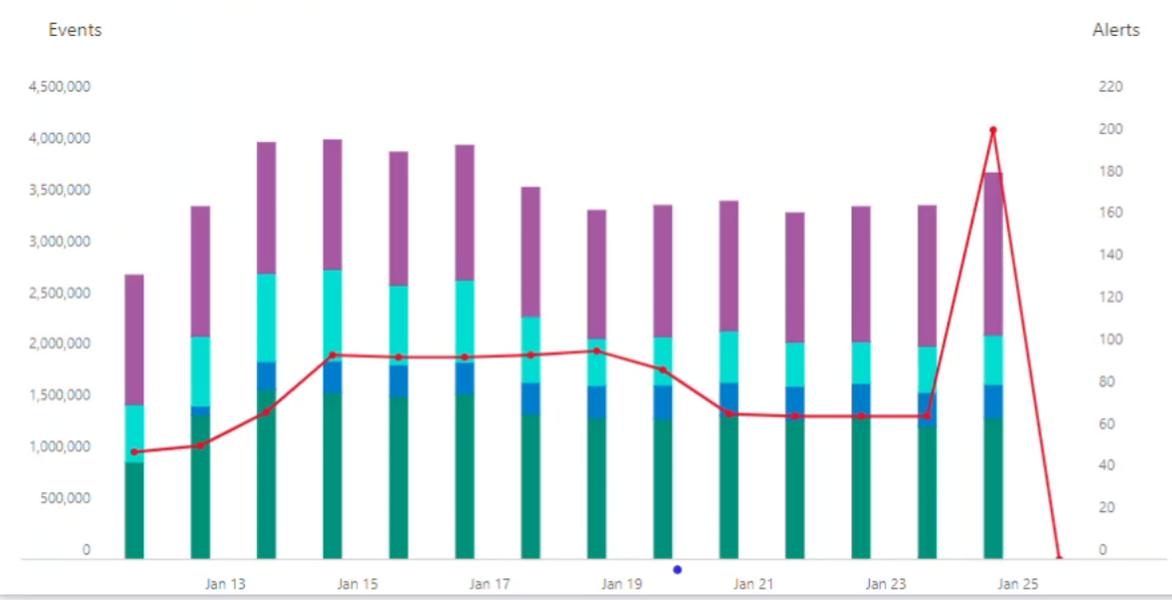
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50.2M ↑ 13.3M Events
1.2K ↑ 517 Alerts
1.6K ↑ 938 Incidents

Incidents by status

- New (1.6K)
- Active (6)
- Closed (True Positive) (1)
- Closed (False Positive) (1)

Events and alerts over time



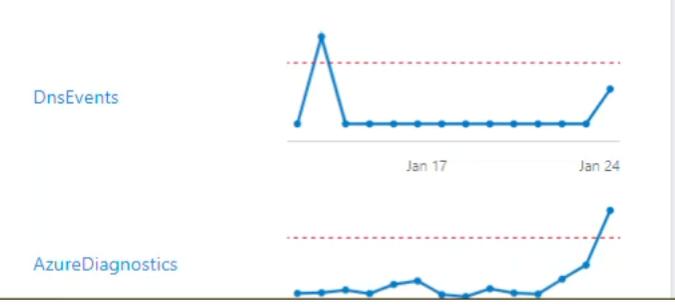
Potential malicious events



Recent incidents

Severity	Incident Name	Count
High	ADFS DKM Master Key Export	1 Aler
Medium	Azure activity matching known threats	1 Aler
Medium	TI map IP entity to AzureActivity (enriched)	2 Aler
Medium	Potential Password Spray	1 Aler
Medium	Time series anomaly detection for total v...	3 Aler

Data source anomalies



Azure Sentinel | Logs

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Azure Sentinel | Logs

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```

16 AuditLogs
17 | where OperationName has_any ("Add service principal", "Certificates and secrets management") // captures "Add service principal",
"Add service principal credentials", and "Update application - Certificates and secrets management" events
18 | where Result == "success"
19 | mv-expand target = TargetResources
20 | where tostring(InitiatedBy.user.userPrincipalName) has "@" or tostring(InitiatedBy.app.displayName) has "@"
21 | extend targetDisplayName = tostring(TargetResources[0].displayName)
22 | extend targetId = tostring(TargetResources[0].id)
23 | extend targetType = tostring(TargetResources[0].type)
24 | extend keyEvents = TargetResources[0].modifiedProperties
25 | mv-expand keyEvents
26 | where keyEvents.displayName == "KeyDescription"
27 | extend new_value_set = parse_json(tostring(keyEvents.newValue))
28 | extend old_value_set = parse_json(tostring(keyEvents.oldValue))
29 | where old_value_set == "[]"
30 | parse new_value_set with * "KeyIdentifier=" keyIdentifier:string ",KeyType=" keyType:string ",KeyUsage=" keyUsage:string ",

```

Results Chart

Completed 00:05.6 0 records

i No query was selected
Type a query and place the cursor anywhere in the query.
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Microsoft Azure (Preview) Search resources, services, and docs (G+)

Home > Azure Sentinel workspaces > Azure Sentinel

Azure Sentinel | Logs

Selected workspace: 'cybersecuritysoc'

Search (Ctrl+/) New Query 1* CyberSecuritySOC

```

27 | join (
28 | OfficeActivity
29 | where TimeGenerated > ago(7d)
30 | where OfficeWorkload ~ "Exchange" and Operation ~ "MailItemsAccessed" and ResultStatus ~ "Succeeded"
31 | extend timekey = bin(TimeGenerated, 1h)
32 | on $left:TimeGenerated == $right:timekey
33 | project-away Total, baseline, RecordType, timekey, TimeGenerated
34 | project-reorder TimeGenerated1, anomalies, Operation, UserId, Client_IPAddress, UserAgent

```

Results Chart Columns Add bookmark Display time (UTC+00:00) Group columns

Completed 00:00.8 8 records

	TimeGenerated1 [UTC]	anomalies	Operation	UserId	Client_IPAddress	score	Organizationid	Orga
>	1/20/2021, 4:57:35.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja	34.207.252.21	1.667	4b2462a4-bbee-495a-a0e1-f23ae524cc9c	4b24
>	1/20/2021, 4:57:35.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja	34.207.252.21	1.667	4b2462a4-bbee-495a-a0e1-f23ae524cc9c	4b24
>	1/20/2021, 4:40:23.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja	174.129.96.41	1.667	4b2462a4-bbee-495a-a0e1-f23ae524cc9c	4b24
>	1/20/2021, 4:40:23.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja	174.129.96.41	1.667	4b2462a4-bbee-495a-a0e1-f23ae524cc9c	4b24
>	1/21/2021, 8:07:28.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja	3.9457.166	1.452	4b2462a4-bbee-495a-a0e1-f23ae524cc9c	4b24
>	1/21/2021, 8:07:28.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja				
>	1/21/2021, 8:37:48.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja				
>	1/21/2021, 8:37:48.000 AM	1	MailItemsAccessed	MeganB@seccxp.ninja				

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Home > Azure Sentinel workspaces > Azure Sentinel

Azure Sentinel | Logs

Selected workspace: 'cybersecuritysoc'

Search (Ctrl+/) New Query 1* CyberSecuritySOC

```

14 | mv-expand total to typeof(double), TimeGenerated to typeof(datetime), anomalies to typeof(double), score to typeof(double),
15 | baseline to typeof(long)
16 | //| where anomalies > 0
17 |
18 | let TimeSeriesAlerts = TimeSeriesData
19 | extend (anomalies, score, baseline) = series_decompose_anomalies(Total, scorethreshold, -1, 'linefit')
20 | mv-expand Total to typeof(double), TimeGenerated to typeof(datetime), anomalies to typeof(double), score to typeof(double),
21 | TimeSeriesAlerts
22 | render timechart

```

Results Chart Display time (UTC+00:00)

Completed 00:00.7 264 records

Chart formatting

Azure Sentinel | Workbooks

Selected workspace: 'cybersecuritysoc'

Search (Ctrl+/) Refresh Add workbook

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82 Saved workbooks 86 Templates 0 Updates

My workbooks Templates

Search

- SolarWinds Post Compromise Hunting MICROSOFT
- Syslog Workbook
- Sysmon Threat Hunting AZURE SENTINEL COMMUNITY
- Teams Collaboration Graph
- Threat Intelligence MICROSOFT
- TSGGuide1
- User And Entity Behavior Analytics MICROSOFT
- Users Travel Map
- Visualizations Demo

SolarWinds Post Compromise Hunting MICROSOFT

This hunting workbook is intended to help identify activity related to the Solorigate compromise and subsequent attacks discovered in December 2020

- Required data types: ⓘ
- ✓ CommonSecurityLog
 - ✓ SigninLogs
 - ✓ AuditLogs
 - ✓ AADServicePrincipalSignInLogs
 - ✓ OfficeActivity
 - ✓ BehaviorAnalytics
 - ✓ SecurityEvent
 - ✓ DeviceProcessEvents
 - ✓ SecurityAlert
 - ✓ DnsEvents

- Relevant data connectors: ⓘ
- AzureActiveDirectory
 - SecurityEvents
 - Office365
 - MicrosoftThreatProtection
 - DNS

SolarWinds Post Compromise Hunting

The hunting workbook is intended to help identify activity related to the Solorigate compromise and subsequent attacks discovered in December 2020.

SolarWinds Post Compromise Hunting

cybersecuritysoc
Edit Save Refresh Share Settings

Solorigate Post Compromise Hunting

This hunting workbook is intended to help identify activity related to the SolarWinds compromise and subsequent attacks discovered in December 2020. This activity is referred to as Solorigate and UNC2452. More details can be found in the following reports:

- <https://aka.ms/solorigate>
- <https://aka.ms/sentinel-solorigate-hunt>
- <https://techcommunity.microsoft.com/t5/azure-active-directory-identity/understanding-quot-solorigate-quot-s-identity-iocs-for-identity/ba-p/2007610>
- <https://www.microsoft.com/security/blog/2020/12/21/advice-for-incident-responders-on-recovery-from-systemic-identity-compromises/>
- <https://www.fireeye.com/blog/threat-research/2020/12/evasive-attacker-leverages-solarwinds-supply-chain-compromises-with-sunburst-backdoor.html>
- <https://www.fireeye.com/blog/products-and-services/2020/12/global-intrusion-campaign-leverages-software-supply-chain-compromise.html>
- <https://www.solarwinds.com/securityadvisory>
- <https://www.microsoft.com/security/blog/2021/01/20/deep-dive-into-the-solorigate-second-stage-activation-from-sunburst-to-teardrop-and-raindrop/>
- <https://www.fireeye.com/content/dam/collateral/en/wp-m-unc2452.pdf>

- Suspicious Signins
- Suspicious App Modifications
- Suspicious Lateral Movement
- Suspicious Host Activity
- Suspicious Network Activity

Suspicious Signin Activity

Suspicious Signins

This section hunts for suspicious sign-in events within your Azure AD tenant. It takes TTPs reported by Microsoft, FireEye and the NSA to identify logon events from known VPS provider IP ranges where the only logons using SAML tokens provided by external identity providers, or refresh tokens have been used. This helps identify instances where an attacker is using SAML tokens minted by stolen ADFS key material to access your environment and bypass MFA. This hunting query may produce false positive if users are accessing services via VPN services.

Select a user session in the initial query to populate the further queries that provide context on the users other logon activity, this is to help distinguish legitimate logons from malicious ones.

Hunting Timeframe ⓘ : Last 30 days ▾

i Set the timeframe you wish to hunt in using the dropdown to the right. Note that using a large timeframe may cause queries to timeout depending on the size of your environment. If you have difficulties try reducing your timeframe.

Successful User Signins from VPS providers where only Tokens were used to authenticate.

IPAddress	UserPrincipalName	StartTime	EndTime
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**Azure Sentinel
GitHub**



Solorigate-Videoreihe

Die nächsten Schritte

1. Sehen Sie sich hier die Solorigate-Videoreihe an.
2. Bleiben Sie über Microsoft Security auf dem Laufenden: www.microsoft.com/de-de/security/business.
3. Lesen Sie die Blogbeiträge unter www.microsoft.com/security/blog.

<https://aka.ms/solorigate>

