

SharkFest '16

Detection & verification of IoCs

Wednesday, June 15, 2016

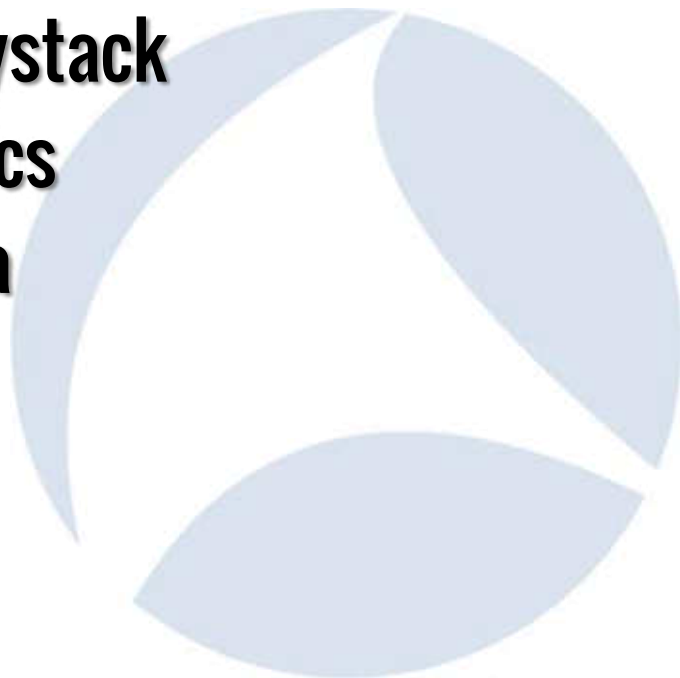


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Agenda

- **The Incident Haystack**
- **Network Forensics**
- **Snort & Suricata**
- **TraceWrangler**
- **Wireshark**



The Incident Haystack

- In an incident response situation at least one Indicator of Compromise has been found already
- The haystack is all of the IT infrastructure that needs to be checked:
 - Clients
 - Servers
 - Network
 - ISP uplinks

Looking for the Needle

- **The problem**

- Telling what systems have really been compromised

- **So how do we usually do that? Looking at**

- file systems
- log files
- firewall rule tables
- sensor hits (IDS/IPS/NSM/AV/Sandboxes)
- documentation

Looking at the Network

- **Network forensics can be an effective way to spot potential „Needles“**
- **No matter how good malware hides, it'll use the network sooner or later**
 - „No place to hide“ if sniffing packets at the right spot
- **Problems:**
 - Sniffing packets at the „right spot“
 - Scanning through gazillions of packets, looking for IoCs

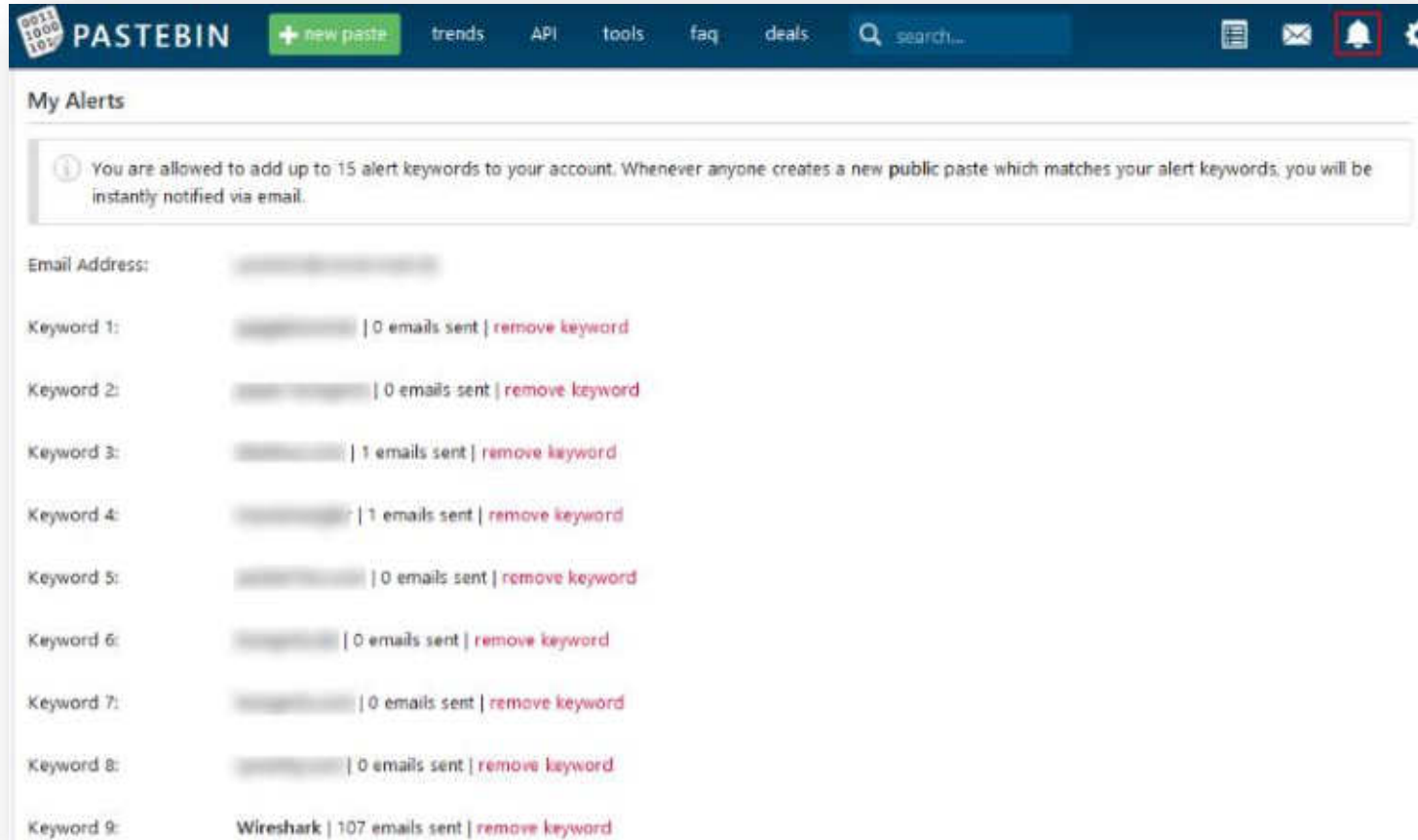
Food for thought...

```
Public Sub fAnti6()  
    Dim TimeNow As Long  
    Dim TimeAfterSleep As Long  
    TimeNow = GetTickCount  
    Sleep 500  
    TimeAfterSleep = GetTickCount  
    If TimeAfterSleep - TimeNow < 500 Then End  
End Sub
```

```
Public Sub fAnti7()  
    Call fVerProceso("Wireshark.exe")  
    Call fVerProceso("Xns5.exe")  
    Call fVerProceso("wireshark.exe")  
    Call fVerProceso("xns5.exe")  
    Call fVerProceso("WireShark.exe")  
    Call fVerProceso("smsniff.exe")  
    Call fVerProceso("PROCEXP.exe")  
End Sub
```

```
Private Sub fVerProceso(Proceso As String)  
    On Error Resume Next  
    Dim xProc, sInicio  
  
    sInicio = "winmgmts://" & ""  
  
    For Each xProc In GetObject(sInicio).InstancesOf("win32_process")  
        If UCase(xProc.Name) = UCase(Proceso) Then End  
    Next  
End Sub
```

How did I find this script? Pastebin.



PASTEBIN + new paste trends API tools faq deals search...

My Alerts

You are allowed to add up to 15 alert keywords to your account. Whenever anyone creates a new public paste which matches your alert keywords, you will be instantly notified via email.

Email Address:	[redacted]
Keyword 1:	[redacted] 0 emails sent remove keyword
Keyword 2:	[redacted] 0 emails sent remove keyword
Keyword 3:	[redacted] 1 emails sent remove keyword
Keyword 4:	[redacted] 1 emails sent remove keyword
Keyword 5:	[redacted] 0 emails sent remove keyword
Keyword 6:	[redacted] 0 emails sent remove keyword
Keyword 7:	[redacted] 0 emails sent remove keyword
Keyword 8:	[redacted] 0 emails sent remove keyword
Keyword 9:	Wireshark 107 emails sent remove keyword

Sniffing at the right spot

- **Wireshark on a system may not be a good idea**
 - in addition to the usual reasons it may be detected by malware
- **SPAN ports are okay-ish**
- **Using TAPs is recommended**
 - Packets have no place to hide when recorded correctly this way

Internet Uplinks

- **Looking at Internet uplinks**
 - Usually there are only a couple of them
- **Problems:**
 - "special purpose" DSL networks
 - undocumented uplinks
 - "rogue" uplinks

Inspecting DNS traffic

- **Can be stored a long time, e.g. using PassiveDNS**
- **Finding CnC patterns:**
 - Answers containing Loopback addresses
 - High amount of errors like „no such name“
 - Domain Generation Algorithms
- **Still need to sort out false positives**
 - e.g. Loopback addresses as SPAM check results against Blacklists

DGA Example

- This is how Domain Generation Algorithm FQDNs may look like:

No.	IF ID	Source	Destination	Protocol	Info
6	0	192.168.100.227	192.168.100.1	DNS	Standard query 0x0566 A lubingindia.com
8	0	192.168.100.1	192.168.100.227	DNS	Standard query response 0x0566 A lubingindia.com A 50.23.73.100
570	0	192.168.100.227	192.168.100.1	DNS	Standard query 0xd667 A www.google.com
571	0	192.168.100.1	192.168.100.227	DNS	Standard query response 0xd667 A www.google.com A 173.194.112.17 A 173.194.112.17
581	0	192.168.100.227	192.168.100.1	DNS	Standard query 0x6260 A www.google.de
583	0	192.168.100.1	192.168.100.227	DNS	Standard query response 0x6260 A www.google.de A 173.194.112.24 A 173.194.112.24
632	0	192.168.100.227	192.168.100.1	DNS	Standard query 0x7061 A qshyvcjbpsgrsvkjffuufpr.biz
633	0	192.168.100.1	192.168.100.227	DNS	Standard query response 0x7061 A qshyvcjbpsgrsvkjffuufpr.biz A 67.215.65.132
642	0	192.168.100.227	192.168.100.1	DNS	Standard query 0x5363 A guidetest.a.id.opendns.com

Additional Measures

- **Leveraging NetFlow**

- Long term storage of metadata of communication flows
- Helps tracking lateral movement of attackers and building timelines
- Can also be used for event correlation

- **Baselining suspicious systems**

- Record everything it does
- Using SPAN ports/TAPs
- Pinpoint assets that require file system forensics

Verifying loC Hits



Procedures

- **First, you need to generate hits**
 - for that, you need IoCs, e.g. in the form of Snort filters
- **Steps involved:**
 1. capture traffic
 2. run Snort against the pcaps
 3. grab resulting alert file / extracted frame pcaps
 4. verify in captured original pcaps
- **The last step may take a loooong time when performed manually**

Demo





Q&A

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