PROMIS

Professional Master in Information Security
Online Courses for Professionals in Security

BLEKINGE INSTITUTE OF TECHNOLOGY

"Using SIEM for Anomaly Detection" –
By Volodymyr Tkach

Upcoming Security Seminars and Events
Send an email to **Nina Wennberg** **niw@bth.se** to subscribe to our mailing list and stay up to date for PROMIS talks and events!

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Visit PROMIS promisedu.se

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Senior Lecturer here at DIDA, BTH
Associate Professor at Igor Sikorsky Kyiv Polytechnic Institute (Ukraine), Department of Cybersecurity
Senior Project Manager at EBRD & Advisor to the Cybersecurity Department of the National Bank of Ukraine
More than 15 years in education
Over 8 years in cybersecurity

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I teach in these courses :

Machine Learning and Security 6 credits

Data-Driven Security 3 credits

Introduction to Secure Software Development 7,5 credits

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agenda

- What is SIEM?
- How to choose the right one
- SPL and its magic
- Anomaly detection DEMO
- IDS/IPS vs ADS/SIEM
- Upcoming PROMIS courses

What is SIEM?

Security **I**nformation and **E**vents **M**anagement

SIEM = SIM + SEM

Security Information Management

Security Event Management

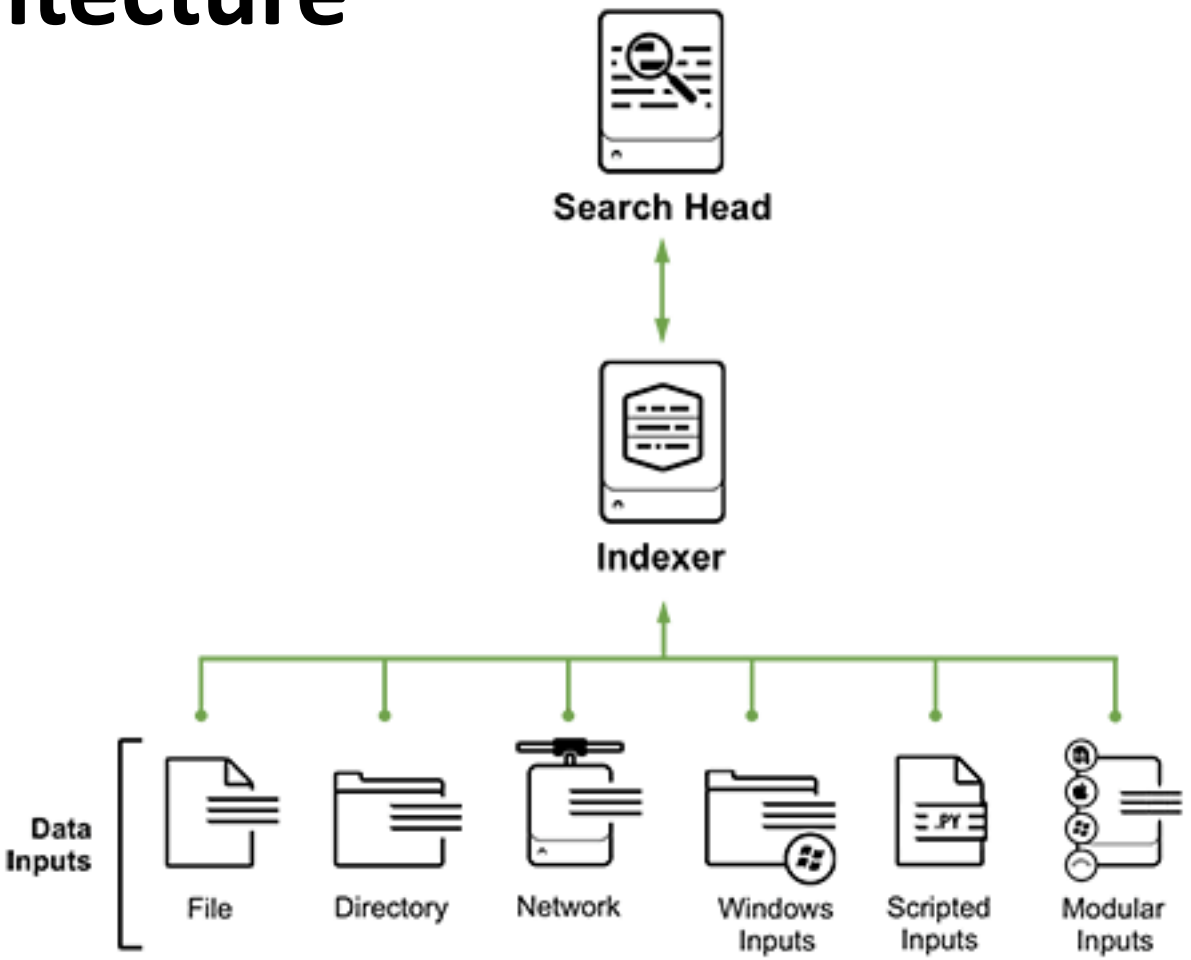
Security Information Management (SIM) - retrieves and analyses log data and generates a report

Security Event Management (SEM) - carries out analysis of event and log data in real-time to provide event correlation, threat monitoring an incident response

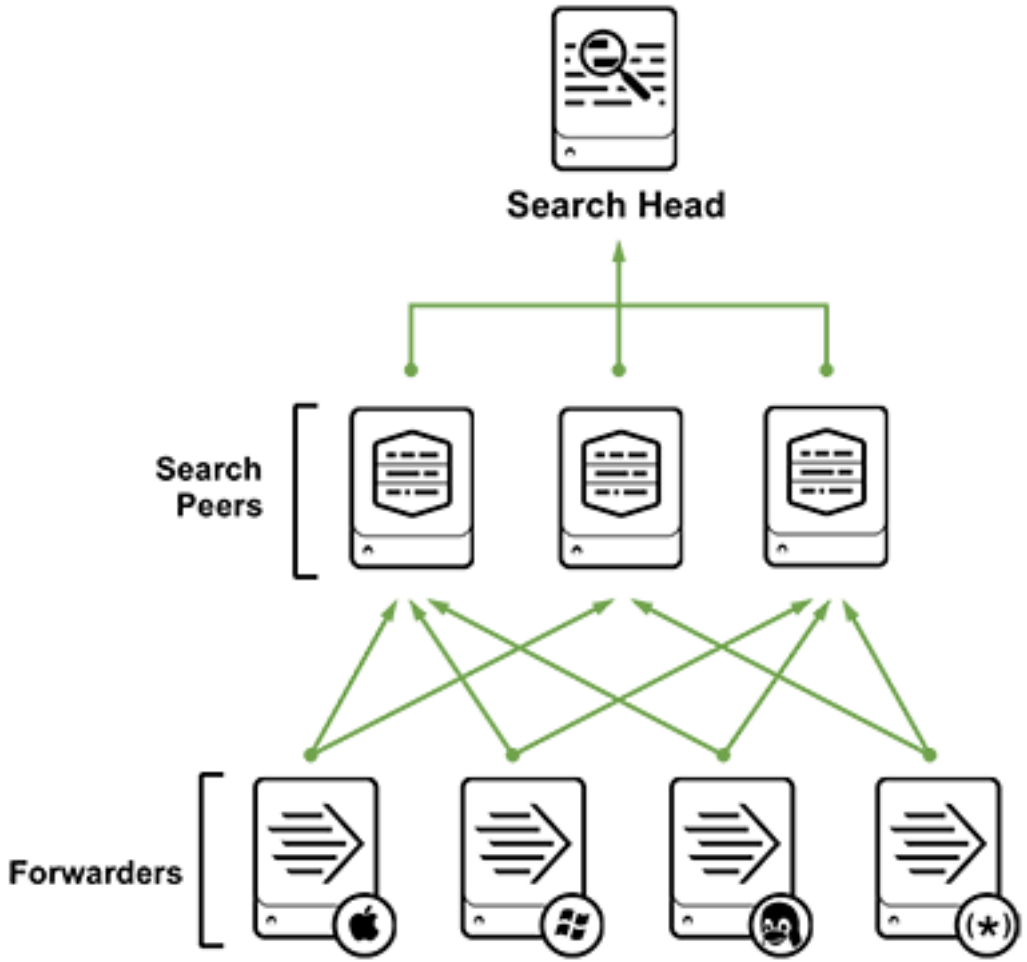
How to choose the right one

- Price (normally using any cybersecurity tool is a matter of investments)
- Functionality
- Flexibility
- Scalability
- Maintenance and Support
- Other

SPLUNK :: Sample Architecture



SPLUNK :: Real one



SPLUNK :: SPL Search Processing Language

- 140+ search commands
- Syntax similar to Unix pipeline and SQL (structured query language used in database management) and optimized for timestamped data
- SPL allows you to search, filter, modify, enrich, combine and remove
- SPL includes machine learning and anomaly detection functionality

SPLUNK :: SPL Search Processing Language

search and filter | munge | report | cleanup

```
suorcetype=access*
| eval KB=bytes/1024
| stats sum(KB) dc(clientip)
| rename sum(KB) AS «Total KB» dc(clientip) AS «Unique Clients»
```

pictures are taken from https://habr.com/ru/company/tssolution/blog/324136/

SPLUNK :: SPL Search Processing Language

```
index="INDEXNAME" sourcetype="access*"
| eval _time=strptime (StartTime,"%b %d, %Y, %H:%M:%S %p")
| timechart span=20s count(host) as "requests", dc (SourceIP) as "size"
| where requests > 0
| eval k = round(requests/size,3)
| head 1000
| streamstats window=100 current=true median(k) as median
| eval absDev = (abs(k-median))
| streamstats window=100 current=true median(absDev) as medianAbsDev
| eval lowerBound = (median-median), upperBound=(median + medianAbsDev*exact(5))
| eval isOutlier= if(k < lowerBound OR k > upperBound, 1, 0)
| table _time, k, lowerBound, upperBound
```

pictures are taken from https://habr.com/ru/company/tssolution/blog/324136/

Anomaly detection

- brief reminder on what anomaly is

deviation from the normal or usual order, type, etc.; irregularity (BRITISH DICTIONARY SAYS…)

deviation from the normal or **EXPECTED** order, type or **BEHAVIOR**; irregularity of any kind (WE SAY…)

ANOMALY of STATE vs **ANOMALY in BEHAVIOR**

Essential features for ADS

- Anomaly Detection
- Real-time Alerts
- Dashboards
- Integration

Anomaly detection

DEMO

Upcoming Courses

BLEKINGE INSTITUTE OF TECHNOLOGY

Application Open for Autumn 2022 Courses – visit promisedu.se

[Development Security Applications (DevSecOps) 7,5 credits]

[Security Inventory for Software Development 3 credits]

[Applied Cryptography 5 credits]

[Security for Critical Infrastructure (Operational Technology) 7,5 credits]

[Web System Security, 7,5 credits]

All courses are:
- Designed for professionals
- Given Online and flexible
- App 25% Study Pace
- Free of charge, University credits

Questions about Application?

Contact Nina Wennberg niw@bth.se or Anna Eriksson aes@bth.se

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Thank you!


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