

# Cyber Security Data:

How to embed analytics into underwriting workflows

Wednesday, September 23<sup>rd</sup> at 11 AM EST



# CyberCube

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## How to embed analytics into underwriting workflows

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# Today's Moderator



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# Today's Panelists



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Head of Cyber Risk  
**The Hartford**



**Harry Metzger**

Lead Cyber Risk Modeler  
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# CyberCube

## Security Signals: What are they and how can they assist the Underwriting Process?

Presented By

Harry Metzger – Lead Cyber Risk Modeler

Advisen Panel

Sept 23, 2020

Confidential and subject to NDA.



# What is a Security Signal?

Turning Raw Data into A Signal

A security signal turns data pertaining to a specific cyber security area into an easily understandable metric, which can help an underwriter quickly assess a company's performance in that cyber security area relative to its peers as well as the general market.



# What is a Security Signal?

Signals can be Presented in Many Forms

## Vulnerable Hosts

RANK IN RECENT MONTH

**14<sup>th</sup>**  
percentile

## Is this company better or worse than the market?

- This company's signal is better than 14% of all companies, and worse than 86%
- Quickly contextualize how the company performs against the market
- In this case, the company has a higher than average amount of vulnerable hosts

## Vulnerable Hosts

ABSOLUTE % DIFFERENCE

**84%** worse than microsegment

## Is this company better or worse than its peers?

- This company's signal is 84% worse than other companies of the same size and industry
- Quickly contextualize how the company performs against its peers
- In this case, the company has a higher than average amount of vulnerable hosts

Vulnerability ID	Software Name	Vulnerability Type	Vulnerability Score
> CVE-2019-0220	Wordpress <a href="#">3 more...</a>	Missing data encryption	Low
> CVE-2017-3169	Drupal	OS command injection	Medium

## Detailed View

- What specifically caused the score to be better or worse?
- Jumping off point for further investigation

# How is a Security Signal Made?



## 1 – Data Sourcing

Where can one acquire high quality security data?

## 2 – Data Parsing

Learn the structure of the data and evaluate its quality.

## 3 – Understand the

**Data** is this data actually measuring?

## 4 – Build the Signal

Turn the data into a Security Signal



# 1. Data Sourcing

- Need to find the overlap of what's possible to measure and what's possible to obtain
- Requires deep understanding of the cyber security landscape
- Useful cyber security data exists in surprising and unexpected places



## 2. Data Parsing

Accept Delivery	How and where will data be delivered? Is it a stream, or a periodic dump? Is it compressed?
Extract Content	What format is the data in? What fields should be saved?.
Enrich Data	Combine with the other data. Layer to facilitate company specific signaling
Load Into Data Lake	Move data into environment where analysts can begin exploration.
Repeat	Often questions arise at any of the above steps, which requires help from the data partner.



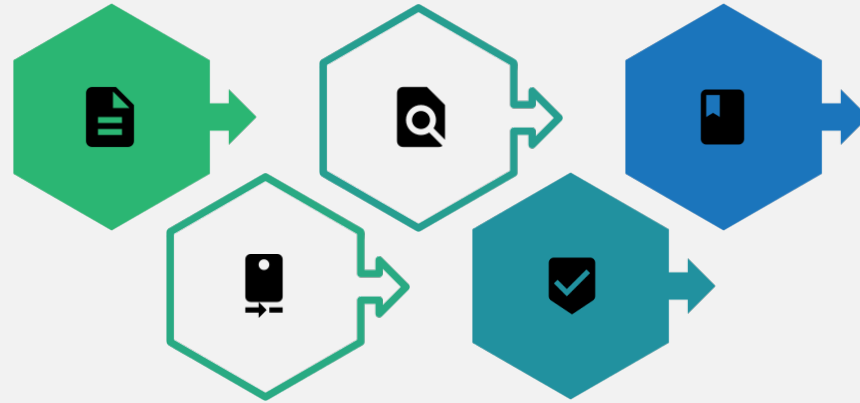
# 3. Understand Data

**What is actually being measured?**

The most important step in the process. Often data partners will make this difficult to know.

**What is “good” or “bad”?**

Sort fields by whether they are indicative of good cyber security hygiene.



## Coverage and Accuracy

Does the data cover a sufficiently large portion of the companies in your market? Are the companies included biased across sizes and industries?

When possible, verify the accuracy through another means.

**What is the unit of measurement?**  
Company, Address, or something else..

**What is zero?**  
If there is no data on a company, does that mean there were no issues? Or that the company wasn't measured at all?



## 4. Build the Signal

### Aggregation

Ratio – Compare amount of “good” vs “bad” measurements

Accumulation – Count up the “bad” measurements

Standards – Binary yes/no

### Comparisons

Percentile Rank – Useful for heavily skewed and boundless data sets

Re-Scale – Useful for known ranges and for standards compliance

### Integrate

Need to group the new signal in with the existing signals, take into account accuracy and confidence.



# Two Types of Security Signals

## Actionable

- Measures a cyber security practice that can stop cyber attacks when managed well
- A poor signal indicates a company that could more easily succumb to a cyber attack; a favorable signal indicates the company is less exposed by this threat vector

## Proxy

- Measures a cyber security practice that will not stop a cyber attack on its own
- Poor performance in this area will not be the cause of a cyber attack
- A company that doesn't succeed here is likely to not be succeeding in other, less observable areas
- The “clean fingernails” of cyber security

## Actionable Example: Vulnerable Hosts

- Count of known common vulnerabilities and exposures (CVE) identified on the company's hosts
- Unpatched vulnerabilities can be compromised, which is a common first step in a cyber attack
- Key mitigation measures:
- Scheduled periodic company patching cadence

## Proxy Example: SSL Certificates

- Quality/validity of the SSL Certificates on a company's web domains
- Poor certificates can lead to web traffic to and from a domain to be intercepted
- Rarely (maybe never) a threat vector that leads to a major cyber incident
- Canary in the coal mine: If a company can't get this right then it is safe to assume there are more security problems on the inside
- Key mitigation measures: Similar process to Vulnerable Hosts







How can carriers incorporate these  
into Underwriting workflows?





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Advisen  
[Moderator]



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# Thank You Panelists!



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