

CASUALTY · LOSS · RESERVE · SEMINAR

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Discussion of Cyber Insurance

September 14, 2021

Panel

- Moderator: Norman Miami, Chairperson, AAA Cyber Risk task Force
- Panelists:
 - Eduard Alpin, Chief Actuary, Resilience Insurance
 - Samuel Tashima, Director and Actuary, Aon
 - Lewis Guignard, Director of Data Science Solutions, Guidewire
 - Wanchin Chou, Chief Insurance Actuary, CT DOI



TODAY'S U.S. MARKET SCENE



Standalone Policies

Top standalone cybersecurity underwriters in 2020

Insurer	Direct written premiums (\$M)		YOY change (%)	2020		
	2020	2019		Policies in force	Claims reported	Loss ratio*
AXA SA	293.0	229.7	27.6	3,199	269	98.2
AIG	226.5	226.2	0.1	4,873	1,506	101.3
Beazley plc	168.8	141.5	19.3	19,507	2,251	41.9
Travelers	168.0	144.0	16.6	27,046	774	81.9
Fairfax Financial	108.4	65.0	66.8	10,796	466	55.8
AXIS	89.8	49.6	81.1	11,531	846	50.8
Sompo	72.6	23.4	210.3	1,762	703	114.1
Zurich	57.5	43.7	31.6	478	501	46.7
BCS Insurance Co.	50.0	44.7	11.9	15,361	1,496	36.2
Aspen	39.2	19.4	102.3	280	164	29.7
Industry total	1,621.3	1,260.9	28.6	196,090	11,662	72.8

Date compiled May 24, 2021.

Insurers reflect consolidation of data from filers within SNL-defined corporate structures and unaffiliated companies for U.S.-based statutory insurance filers.

Data sourced from the Cybersecurity and Identity Theft Insurance Coverage Supplement Part 2 - Stand-Alone Policies of annual statements submitted to the NAIC. U.S. property and casualty filers only.

* Calculation of loss ratio includes incurred costs for direct defense and cost containment.

Source: S&P Global Market Intelligence

Package Policies

Top cybersecurity package underwriters in 2020

Insurer	Direct written premiums (\$M)^		YOY change (%)	2020	
	2020	2019		Policies in force	Claims reported
Chubb	404.1	355.3	13.7	47,734	2,578
CNA	101.4	78.7	28.9	120,416	731
The Hartford	91.8	49.7	84.6	553,041	674
AXIS	43.7	47.7	-8.4	9,426	240
Travelers	38.8	34.5	12.5	19,334	207
BCS Insurance Co.	36.6	31.4	16.5	12,475	1,163
Tokio Marine	34.1	17.4	95.7	70,428	76
Berkshire Hathaway Inc.	25.9	19.1	36.0	199,616	136
The Cincinnati Insurance Cos.	24.9	21.7	14.9	326,455	519
Liberty Mutual	24.4	38.7	-36.9	45,573	40
Industry total	1,123.9	987.8	13.8	3,732,248	10,306

Date compiled May 24, 2021.

Insurers reflect consolidation of data from filers within SNL-defined corporate structures and unaffiliated companies for U.S.-based statutory insurance filers.

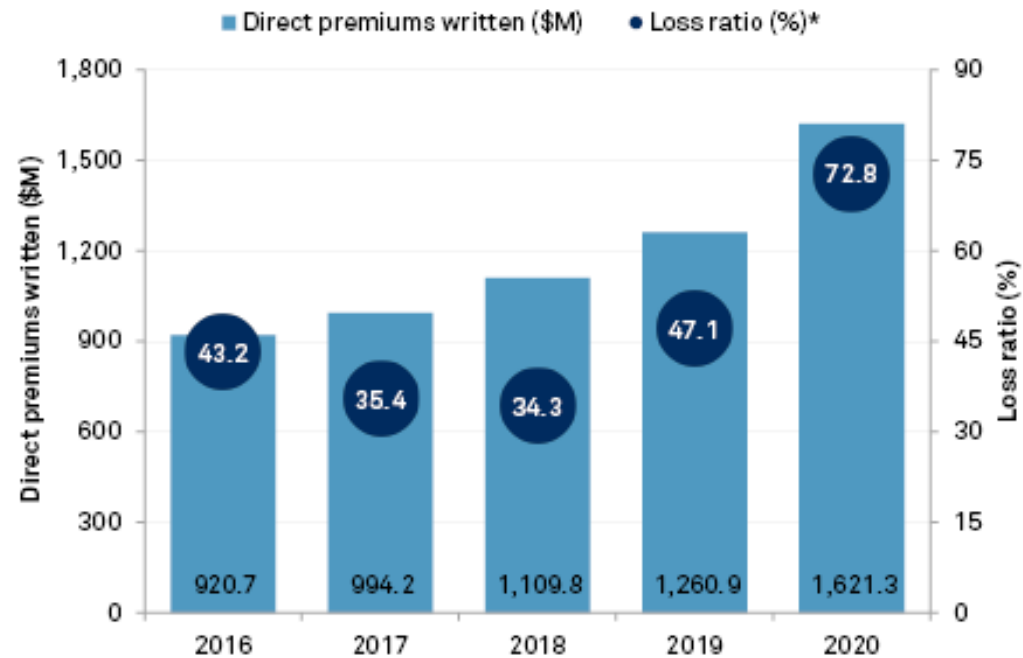
Data sourced from the Cybersecurity and Identity Theft Insurance Coverage Supplement Part 3 - Part of a Package Policy of annual statements submitted to the NAIC. U.S. property and casualty filers only.

^ Includes both quantified and estimated direct premiums written.

Source: S&P Global Market Intelligence

Significant Experience Deterioration

Industry's standalone cybersecurity loss ratio soared in 2020



Date compiled May 24, 2021.

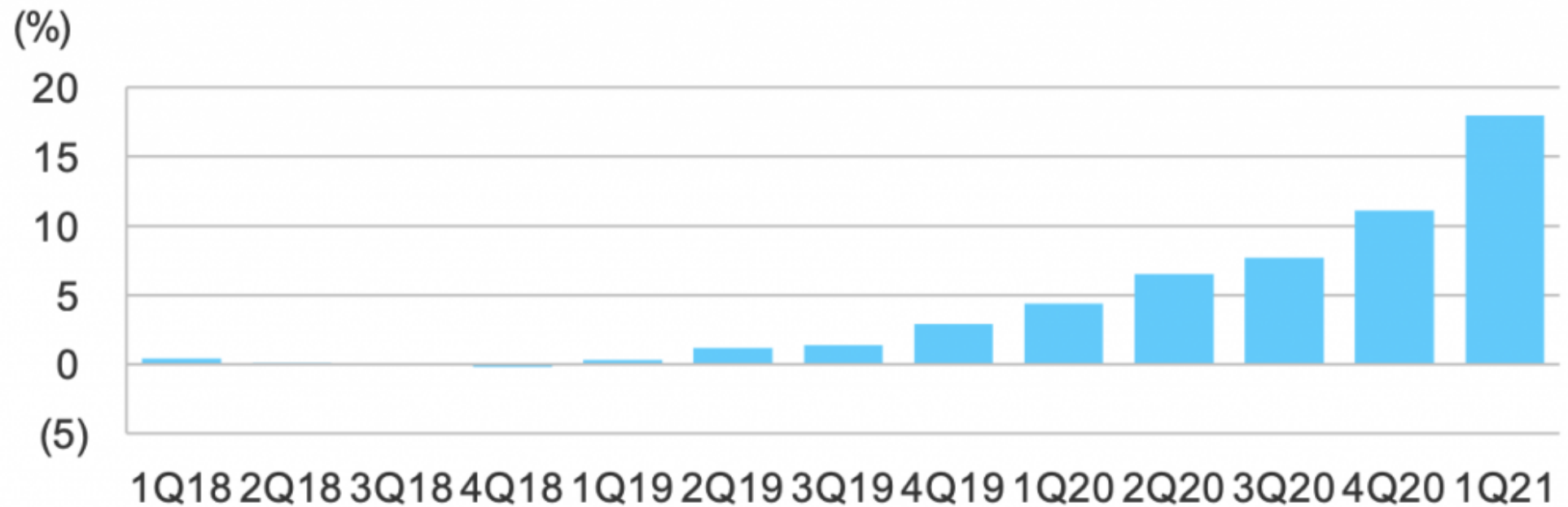
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*Calculation of loss ratio includes incurred costs for direct defense and cost containment.

Source: S&P Global Market Intelligence

Large Rate Increases

Quarterly Change in Cyber Insurance Renewal Premium Rates



CYBER INSURANCE UNDERWRITERS HAVE SHARPLY INCREASED PREMIUM RATES AS CLAIMS SOAR. SOURCE: COUNCIL OF INSURANCE AGENTS & BROKERS.

<https://therecord.media/cyber-insurance-market-faces-a-reckoning-as-losses-pile-up/>

Significant Experience Deterioration

- According to Marsh*: US Cyber prices increased 56% in the Q2 (including a 68% increase in June), driven by the frequency and severity of ransomware claims.
- Ransom payments frequently exceeded \$1 million and the resulting costs for business interruption or data exfiltration increased claim payouts.
- Many insurers narrowed coverage for ransomware losses, and tightly managed limit deployment on any one risk, often times capping at \$5 million.
- Some insurers significantly changed underwriting strategy while others stopped offering cyber coverage.

*: Marsh: Global Insurance Market: Pricing Increases Moderate in Second Quarter (July 2021)

PANEL DISCUSSION



Insurance

- Changing UW scene from insurers' perspective?
- Should insureds and insurers become more of risk partner (e.g., healthcare)?



Hardening Cyber Market Leads to More Focused Underwriting

- Higher losses -> market hardening in 2020, 2021
- Prior to 2020, quotes were often issued with minimal information on the account
- Now underwriters have the **ability to request and receive much more data** to inform risk selection
- Increasingly underwriters are relying on both security reports which display aggregated data on the account they are reviewing as well as responses to questionnaires



Underwriting Cyber Risk

There are a number of key security gaps and controls that underwriters assess when considering a risk:

- Open remote desktop protocol (RDP) ports
- Multifactor Authentication (MFA)
- Endpoint Detection and Response (EDR) tools
- Offline backups and testing
- Incident response plans
- Employee training
- Patching
- Network segmentation

Additionally underwriters review more traditional factors such as revenue, industry and claims experience

Automated Security Analysis

Underwriters use automated tools to gather key datapoints such as:

- Exposed credentials
- DMARC implementation
- Misconfigured ports
- Type & number of devices used
- Vulnerabilities

This information can be gathered pre-bind as well as monitored continuously during the term of the policy



The Future of Cyber Insurance



- Underwriting assesses the risk and decides whether to offer insurance
- Once policy is bound, underwriting, security and claims meet with the insured and their broker to discuss their cybersecurity posture and potential improvements
- The insurer not only offers insurance but can also help implement security improvements for the insured
- Insured's systems are continuously monitored and is notified of any issues that may arise

Brokerage

- Changing scene from the brokerage perspective?
- How are enterprise clients quantifying and analyzing their cyber risk?

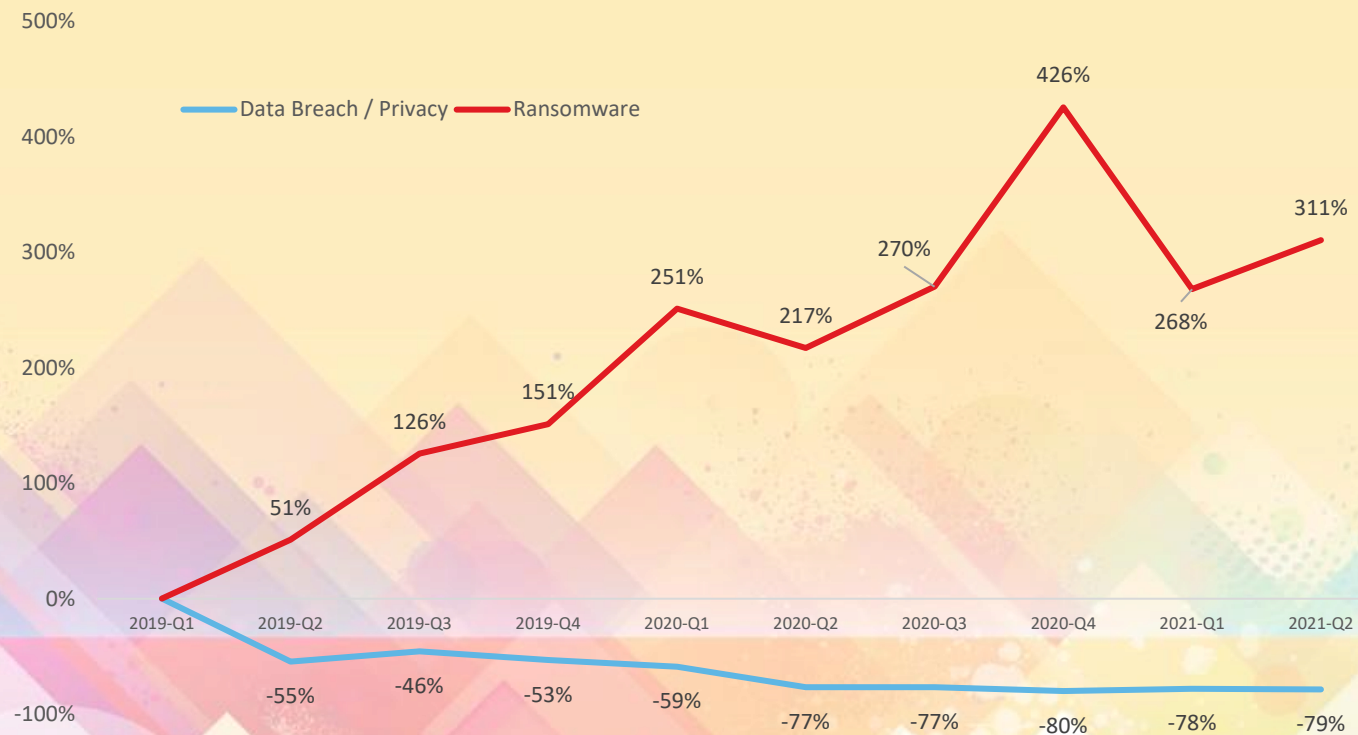
Cyber Broking Challenges

- Increased premium rates
- +
- Decreased limit capacity
- +
- Higher retentions
- +
- More restrictive terms & conditions

Ransomware Continues to Impact

Cyber Incident Rates Over the Past 9 Quarters

(Percent change relative to 2019-Q1)



Source: Risk Based Security, analysis by Aon. Data as of 7/12/2021

Key Observations:

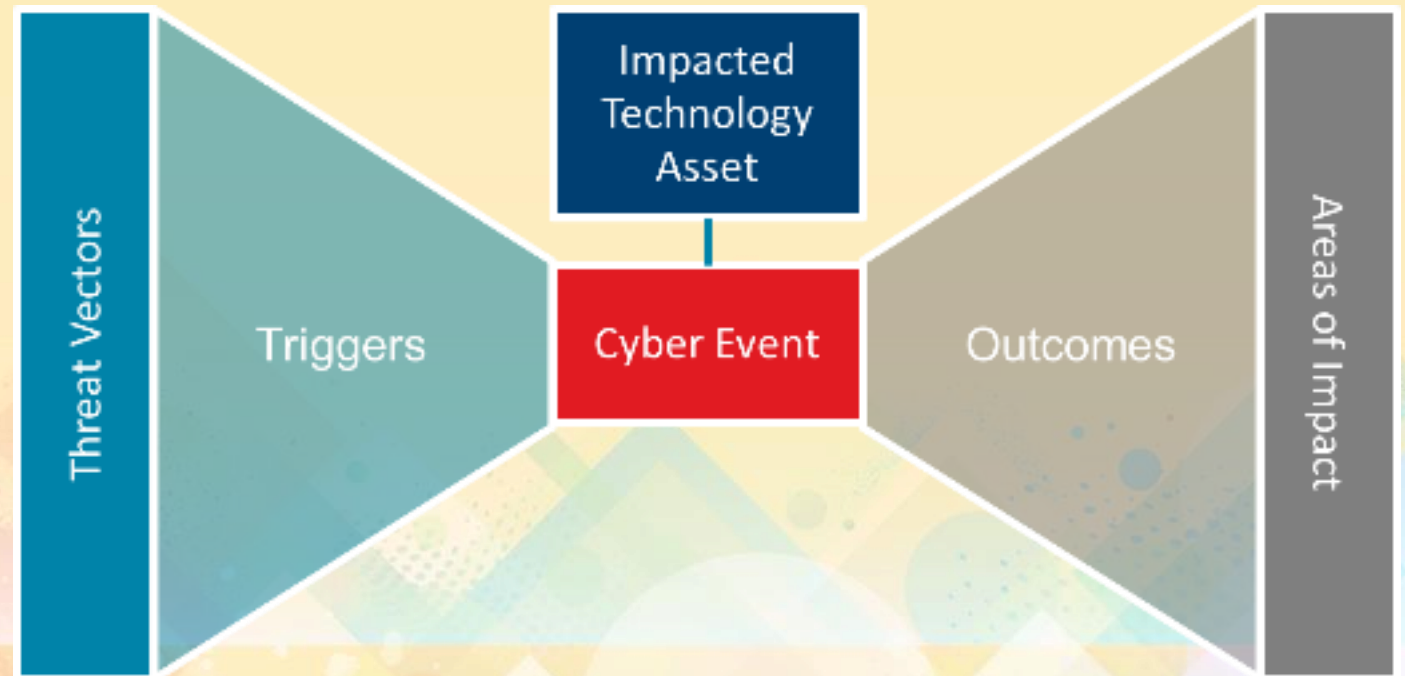
- Ransomware activity has dramatically **outpaced Data Breach/Privacy Event activity**.
- **Ransomware up 311%** from Q1 2019 to Q2 2021.
- Eight figure losses are commonplace – **business interruption represents the largest component of loss, litigation still to come.**

Cyber Scenario Analysis to Quantify Risk

Combining insights and thought leadership from:

- Information Security
- Enterprise Risk Management
- Business Continuity
- Disaster Recovery
- Financial / Actuarial Modeling
- Legal / Regulatory Changes

Cyber Bow-Tie Method Diagram



Evolving Regulatory Landscape

- EU GDPR
- Increase in State Privacy/Breach Regulation
 - California – CCPA / CPRA
 - Virginia
 - Colorado
 - Florida
- Office of the Comptroller of the Currency (OCC)
 - Capital One fined \$80M civil penalty
- NY DFS Cybersecurity Regulation
 - National Securities Corporation
 - Residential Mortgage Services, Inc.
- SEC
 - Kaseya
 - First American Financial Corp.
 - Yahoo
- Established Regulatory / Industry Concerns such as PCI and HHS OCR

ICO fines Marriott International Inc
£18.4million for failing to keep customers'
personal data secure

Date 30 October 2020

Type News

The ICO has [fined Marriott International Inc £18.4million for failing to keep millions of customers' personal data secure.](#)



News Release 2020-101 | August 6, 2020

OCC Assesses \$80 Million Civil Money
Penalty Against Capital One

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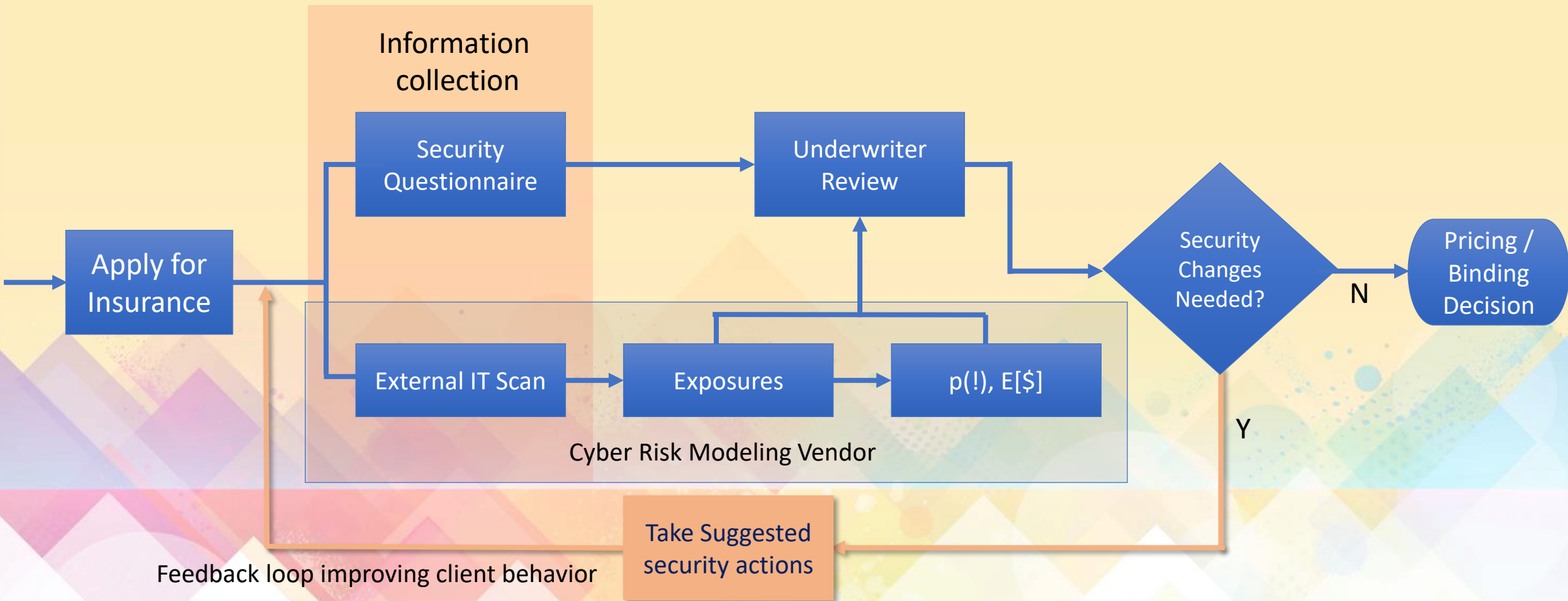


WASHINGTON—The Office of the Comptroller of the Currency (OCC) today assessed an \$80 million civil money penalty against Capital One, N.A., and Capital One Bank (USA), N.A.

Services & Modelling

- Risk & Accumulation models, and pre-breach services today?
- Next issues that may be tackled?

Services & Modelling - Underwriting



Services & Modelling - Scanning

Port 3306

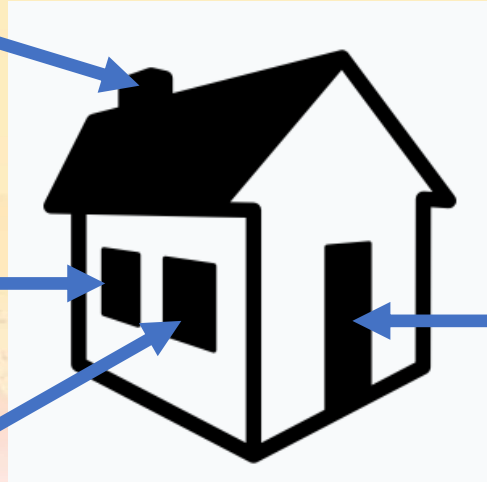
MySQL Database

Port 143

IMAP Email

Port 3389

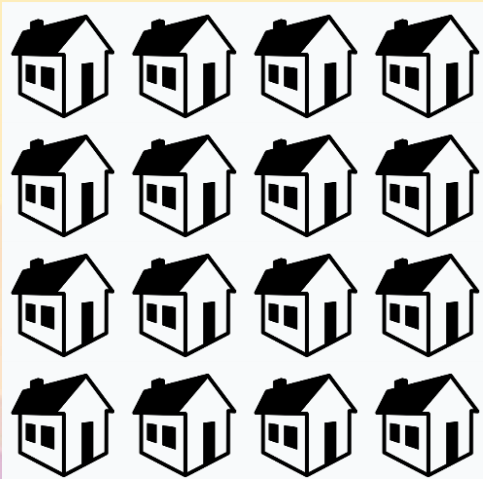
Remote Desktop Protocol



Reverse Hostname XYZ
Cloud Provider A

Services & Modelling - Accumulation

Portfolio



Attribute	Count	Risk Level
Remote Desktop Protocol	26	HIGH
Exposed Database	6	LOW
Cloud Service X	64	LOW
Vulnerability Y	16	MEDIUM

How do we define 'similarity' in Cyber? ~~Lat / Long~~

Services & Modelling – Looking Forward

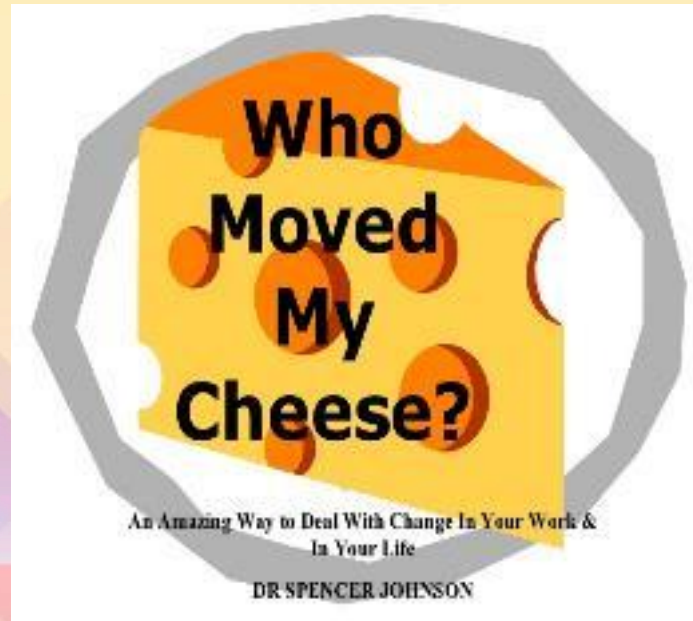
- Continuous Underwriting
- On Demand Insurance
- Pay Per Service

Regulation

- Regulators' perspective and concerns?
- Stress testing and capital requirements?

Ready for the Cyber Risk?

“It is natural for change to continually occur, whether you expect it or not.”



“Maybe we should stop analyzing the situation so much and just get going & find some New Cheese.”

“Smell the cheese often so you know when it is getting old. The quicker you let go of the old cheese, the sooner you find new cheese.”

“Movement in a new direction helps you find new cheese. When you move beyond your fear you feel free.”

Regulatory Policy – DOI Perspective

- As the NAIC puts it, “The public wants two things from insurance regulators:
 - They want solvent insurers who are financially able to make good on the promises they have made, and they want insurers to treat policyholders and claimants fairly.
- All regulatory functions will fall under either solvency regulation or market regulation to meet these two objectives.”

Cyber Security: The New Big Threat

- Cyber intrusions are becoming more commonplace, more dangerous, and more sophisticated.
- Hackers target personal information, financial information, trade secrets
- Insurance companies: a one-stop shop.
 - Sensitive personal information
 - Sensitive financial information
 - Sensitive trade secrets

Stress Testing and Capital Requirements

- Something Old, Something New
- Cyber Risk Insurance Companies
- Stochastic Modeling / Realistic Disaster Scenarios
- Loss Prevention

Q&A

