Cyber – Threat and Opportunity
8th Conference on Global Insurance Supervision

Dr. Jürgen Reinhart
Chief Underwriter Cyber
Cyber Security in 2022

Some stats, facts and noteworthy developments

Global cyberattacks across all sectors increased by 38% in 2022, compared to 2021.

(The Checkpoint research)

The global cost of cybercrime is expected to surge in the next five years, rising from $8.44 trillion in 2022 to $11 trillion in 2023, reaching $23.84 trillion by 2027.

(www.statista.com)

Top 3 most attacked sectors in 2022 were
1. Education/Research
2. Government
3. Healthcare

(Check Point Research)

Top five affected industries in the SME sector in number of insurance claims:
1. Professional Services
2. Healthcare
3. Manufacturing
4. Financial Services
5. Retail

(Net Diligence “2022 Claims Study”)

339,000 new malware variants are created every day. 92% are delivered via email.

(Security Boulevard/Astra)

It is estimated that nearly 1.2% of all emails are malicious in nature. This would amount to ca. 3.4bn mails per day.

(Astra “Phishing attack statistics 2022”)

The number of disclosed zero-day vulnerabilities in 2022 was on par with those from the previous year – the highest on record.
Cyber insurance market with strong expected growth

Worldwide cyber premium to increase from ~$12bn (2022) to ~$33bn (2027)

Source: Estimates by Munich Re
Cyber insurance – What is it?

For weak law:
\[
l \lim_{n \to \infty} P\left( |Y_n - Y| < \epsilon \right) = 1
\]

For strong law:
\[
P\left( \lim_{n \to \infty} ||Y_n - Y|| < \epsilon \right) = 1
\]
Accumulation Risk

The core problem with respect to systemic accumulation risk is the potential for a cyber event to have severe effects on the entire cyber portfolio affecting more than one insured.

Objectives of Accumulation Control

- Identification of worst-case scenarios
- PML quantification and accumulation management
- Modeling of accumulation loss distributions for the Munich Re Capital Model (MRCM)

Virus/Malware
Global outbreak of widespread, untargeted self-reproducing malware

Data Breach
Multiple insureds are affected by a large-scale data breach attack

IT Service Provider Outage
Large-scale outage of services such as cloud causing widespread business impacts

To be excluded
Failure of (critical) infrastructure

War

6 September 2023
Data – the new gold?
A specific Cyber War exclusion must prevent **uncontrollable accumulation risk** and at the same time consider the interest of the insured being sufficiently protected against any Cyber-attack(s) and furthermore **not to jeopardize the cyber insurance value proposition** by taking a too strict or unclear approach.

**Conventional War**
Including cyber-attacks as a means of warfare

**Attribution**
Linking cyber-attacks to a sovereign state ("...by or on behalf of...")

**Intolerable impact**
Severe disruption of essential services resulting in serious threats to the functioning of the public sector (e.g., administration, financial services, healthcare)

**Collateral damage**
Threshold to be set to not exclude losses from "low level events" elsewhere
Ransomware in 2021 vs drug trafficking 20 years ago

<table>
<thead>
<tr>
<th></th>
<th>Ransomware</th>
<th>Cocaine Trafficking in 1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue/Unit</td>
<td>$140,000/attack</td>
<td>$60,000/kilo</td>
</tr>
<tr>
<td>Operating Costs/Unit</td>
<td>$2,500/attack*</td>
<td>$5,000/kilo</td>
</tr>
<tr>
<td>Profit Margin</td>
<td>98%</td>
<td>91%</td>
</tr>
<tr>
<td>Arrests/Unit</td>
<td>0.0008**</td>
<td>0.50</td>
</tr>
<tr>
<td>Deaths/Unit</td>
<td>0</td>
<td>0.25</td>
</tr>
<tr>
<td>Barriers to Entry</td>
<td>None</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Source: https://www.coveware.com/blog/2021/10/20/ransomware-attacks-continue-as-pressure-mounts

*Estimate based on reported costs of network access credentials, and amount of hours a threat actor expends on the average attack

**Estimated roughly 25,000 ransomware attacks of impact in 2020. Research found evidence of less than 20 total arrests globally
Thank you for your attention

Dr. Jürgen Reinhart