



Cloud exposure

An actuarial perspective

6 June 2013 Casualty Actuaries in Reinsurance Seminar

Christopher Diamantoukos, FCAS, MAAA

Agenda

- ▶ Risks arising from the Cloud
- ▶ Exposure elements for estimating risk
- ▶ Risks retained and transferred
- ▶ Some numbers
- ▶ Questions

Risks arising from the Cloud

Many companies offer Cloud storage. Maybe first Cloud service as we know it was Amazon Web Service in 2006. NASA and Rackspace launched open source cloud software known as Openstack in 2010

- ▶ Consumer

- ▶ Needs storage space and has to go to a vendor to get it
- ▶ Identity integrity important

- ▶ Provider

- ▶ Technology continues to evolve our storage, access, and use of information
- ▶ Provide security

Risks arising from the Cloud

- ▶ Consumer
 - ▶ Disruption of operations
 - ▶ Permanent Loss of data
 - ▶ Security breaches
- ▶ Provider
 - ▶ Cost to remediate
 - ▶ Hardware costs
 - ▶ Reputation

There is both initial pricing as well as reserving risk. And this very much depends on coverage and retained risk. Some risks just not quantified, understood, or imagined. They are retained and may be the subject of future litigation. These “inestimable” risks not discussed today.

Exposure elements for estimating risk

Look at the process and break it down into what contributes to an event or how severe it is.

- ▶ Internal Sources
 - ▶ Long term internal risk management
 - ▶ Different types of categorization
 - ▶ Severity a key
- ▶ External Sources from data protection research
 - ▶ Translate to company conditions
 - ▶ Looking for similar operations or risks

The simple formula of frequency per customer and amount of loss data and its cost subject to limits. Look at this one peril or cause of loss at a time, or type of incident affecting data reliability.

Risks retained and transferred

Contract contains coverage form, perhaps claims-made as we expect to know incidents quickly. Time will tell if some risks involve a latency period between “event” and “loss”.

- ▶ Limitation by contract of services
 - ▶ The informed and large consumer
 - ▶ Use of coinsurance and aggregate limit
- ▶ Capacity and operating costs
 - ▶ Stabilize earnings
 - ▶ Focus on fortuitous events
- ▶ Reinsurance
 - ▶ When you cross line of stability
 - ▶ Or of capacity?

Some numbers

Estimate, select, pick some key parameter values, and not just means, related to some exposure base

- ▶ Frequency
 - ▶ All events and subset that affect data reliability
- ▶ Severity
 - ▶ Need expected costs per event
 - ▶ Reflects costs to recover which depends on sizes of files affected
- ▶ Retentions
 - ▶ Need some idea of distribution
 - ▶ Self-insured retention reflects an operating cost for doing business
 - ▶ The “large” fortuitous event is what is the subject of insurance and risk transfer

Parameters and estimates that you need

- ▶ Frequency
 - ▶ Data reliability events per year
 - ▶ Need to relate to customer or site (CPU) base
- ▶ Severity
 - ▶ Internal and external statistics
 - ▶ Will get larger for Clients with greater usage
- ▶ Retentions
 - ▶ Event basis for self-insurance
 - ▶ Quota share for reinsurance of insured (captive or commercial)

Simulations and Normal distributions will help to estimate expected values, but more information needed to help quantify the fortuitous events.

Some estimates scaled for illustration

- ▶ Frequency
 - ▶ 20 data reliability events per year out of 50 total events
 - ▶ Site base of 25,000,000
- ▶ Severity
 - ▶ Average records (files) of 6,000 per data reliability event
 - ▶ Average recovery (remediation) cost of \$250 per record
- ▶ Expected annual cost of \$24 million for 25 million sites
- ▶ Retentions
 - ▶ Average cost of \$1,200,000 per event
 - ▶ Self-Insured Retention of \$1,000,000 per event
 - ▶ Simulation and size of loss assumptions results in \$300,000 average insured event
- ▶ Pure Premium of \$.24 per site

**It may be a new risk,
but the fundamental things
apply, as time goes by...**

Questions....