



Cyber Business Interruption

Cloud Computing Failure

Moneyfax, a credit reference agency which provides real time credit data and processing services for mortgage applications, had recently transferred their entire IT environment to a private cloud facility. Shortly after the migration was completed, the Insured experienced a complete failure of their IT systems due to an administrative error at the private cloud facility, meaning that it could not respond to any requests from banks for credit checks.

The outage started at 0900 on a Wednesday and lasted for four days. Moneyfax's initial estimate was that it had suffered approximately USD1.8m of lost revenue during the outage. Administrative error at an outsource IT service provider is a covered cause of loss under Tokio Marine Kiln's Cyber Ctrl policy.

Coverage

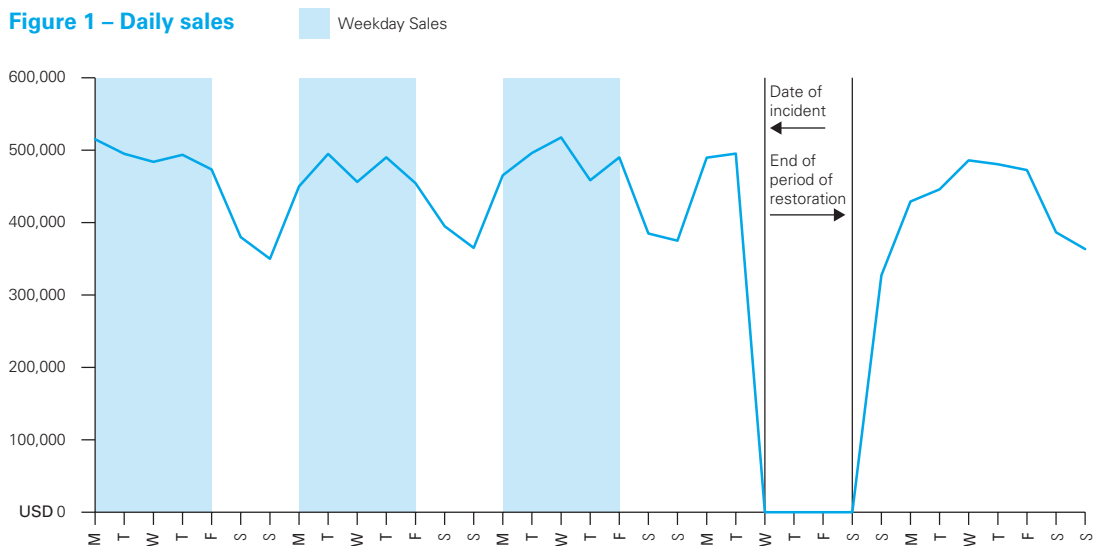
The Tokio Marine Kiln Cyber Ctrl policy provides cover for business interruption losses resulting from this type of incident, indemnifying a policyholder for:

- The loss of Gross Earnings, less all charges and expenses that do not necessarily continue during the suspension of business operations;
- Expenses necessarily incurred for the purpose of reducing the loss of Gross Earnings, and;
- Extra Expenses, defined as reasonable and necessary costs incurred by the Insured to temporarily continue as nearly normal as practicable in the conduct of the Insured's business during the Interruption Period.

For a business such as Moneyfax, the policy defines Gross Earnings as net sales less the cost of merchandise sold, materials and supplies consumed in the operations or services rendered by the Insured.

Establishing the loss of sales

Moneyfax has estimated that USD1.8m of sales have been lost as a consequence of the incident. The sales loss can be reviewed by analysing the daily sales in the period before and after the incident, as illustrated by the graph at Figure 1.



Prior to the outage, daily sales on weekdays are around USD500,000, reducing to around USD375,000 at the weekend. After the period of restoration, the sales do not return immediately to pre-incident levels but do fully recover by the following Wednesday.

Understanding the sales profile of the business and its key drivers is critical when establishing the extent of the loss of sales. Moneyfax has two customers, Daffodil Bank and Tulip Bank, representing 40% and 60% of its business respectively, although the trading relationship with each customer is different.

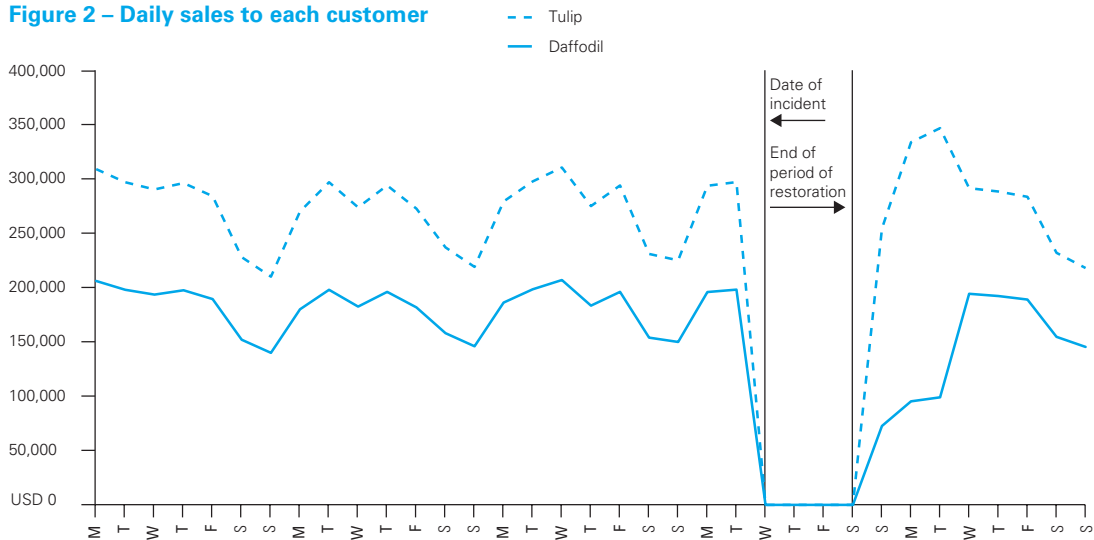
Daffodil Bank has two suppliers for credit check services – Moneyfax and a competitor. During the outage, Daffodil transferred all of its business to the competitor. Consequently, Moneyfax lost all sales to Daffodil for the whole of the period of the outage but sales returned to pre-incident levels 2 days after the end of the period of restoration.

Tulip Bank has a sole supplier agreement with Moneyfax and consequently, the credit checks that it required to be performed during the outage period still needed to be completed once the outage had been resolved. This caused a 'spike' in post incident sales for Moneyfax. However, due to the delay in Tulip responding to its customer loan applications, some applications were withdrawn, such that not all of the backlog needed to be completed.

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The daily sales to each customer are shown in the graph at Figure 2. Following the outage, a review of these sales shows them returning to pre-incident levels, albeit on a delayed basis for Daffodil and with the post-outage 'spike' for Tulip. Sales to both customers have also returned to pre-incident levels by the Wednesday after the outage.

Figure 2 – Daily sales to each customer



To calculate the expected sales that would have been achieved but for the outage, consideration would be given to the actual daily sales figures before and after the outage period and also any specific market conditions or customer circumstances. As the daily sales are relatively consistent in the three weeks before the outage, the average sales for this period could be used to calculate the expected daily sales, but this would need to be separated between weekdays and weekends, as shown in the table at Figure 3.

Figure 3 – Calculating loss of sales

Description	Expected Sales USD			Actual Sales USD			Loss of Sales USD
	(Based on weekday/weekend average in 3 weeks pre incident)						
Period of restoration	Daffodil	Tulip	Total	Daffodil	Tulip	Total	
Wednesday	192,901	289,352	482,253	0	0	0	482,253
Thursday	192,901	289,352	482,253	0	0	0	482,253
Friday	192,901	289,352	482,253	0	0	0	482,253
Saturday	150,000	225,000	375,000	0	0	0	375,000
Total	728,704	1,093,056	1,821,760	0	0	0	1,821,760
Extended period for restoration of business							
Sunday	150,000	225,000	375,000	72,667	254,333	327,000	48,000
Monday	192,901	289,352	482,253	95,360	333,760	429,120	53,133
Tuesday	192,901	289,352	482,253	99,063	346,722	445,785	36,468
Total	535,803	803,704	1,339,507	267,090	934,815	1,201,905	137,602
Total loss of sales before applying waiting period	1,264,507	1,896,760	3,161,267	267,090	934,815	1,201,905	1,959,362

The loss of sales in the period of restoration is USD1.8m, which is consistent with Moneyfax's own estimate. However, Moneyfax had not considered any losses in total sales during the extended period for restoration of the business, which is covered under the Tokio Marine Kiln policy for a period up to a maximum of 30 days. The approach at Figure 3 therefore includes a further USD137,602 of sales losses.

Waiting Period

In this instance, the policy has a 12 hour waiting period. The outage occurred at 9.00 am and the waiting period would therefore have ended at 9.00 pm, i.e. after the end of the working day. On that basis, all sales losses on the Wednesday, the first day of the period of interruption, i.e. USD482,253, will therefore be deducted to account for the waiting period.

Identifying the cost savings

After establishing the loss of sales, consideration will then need to be given to those costs that Moneyfax has not incurred as a consequence of the incident. Separate consideration will be given to those costs that fall within the definition of Gross Earnings and those that are outside this definition.

Gross Earnings

In the case of a retailer, the saved costs are typically those associated with the purchase of stock that it has been unable to sell. However, given the nature of Moneyfax's business, there is unlikely to be this type of variable cost saving.

Other Costs

With regard to the fixed operating expenses, such as payroll and property costs, it is also unlikely that these will have altered as a consequence of the incident being short in duration. However, if the incident had resulted in a reduction in overheads, then any such savings would also be deducted from the business interruption calculation.

Any potential reductions in costs would be analysed by reviewing the management accounts of the business. In this case, there are no cost savings to be deducted and the full loss of sales would be paid.

Interruption expenses

The Tokio Marine Kiln policy also provides cover for additional expenses incurred to minimise the impact of an incident.

During the period of restoration, Daffodil engaged in a series of conversations with Moneyfax, where Daffodil indicated that it may transfer some or all of its business to Moneyfax's competitor as a direct consequence of the incident. To minimise this risk, Moneyfax offered to provide Daffodil with free credit checks for a 5 day period.

These free checks were provided several weeks after the incident and therefore need to be considered separately to the loss of sales that occurred immediately after the incident. The average weekday sales to Daffodil are USD192,901. Therefore, the lost sales value of these free checks to Moneyfax would be USD964,505.

However, if sales to Daffodil did not resume at all after the outage had been resolved, then the actual loss of sales, up to the end of the 30 day additional period provided by the policy for restoration of the business, could be in the region of USD5.5million. On this basis, the cost of providing these free checks would be covered under the Policy.

Administrative error at an outsource IT service provider is a covered cause of loss under Tokio Marine Kiln's **Cyber Ctrl** policy

Business Interruption Calculation

The amount payable to Moneyfax for business interruption under the Tokio Marine Kiln policy would be USD2,441,613, as illustrated in the table at Figure 4.

Figure 4 – The Business Interruption Loss

Description	Total USD
Loss of sales before waiting period	1,959,362
Rate of gross earnings	100%
Loss of gross earnings	1,959,362
Savings in costs and overheads	0
Interruption expenses	964,505
Waiting period	(482,253)
Total	2,441,613



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