

The Cost of Datacenter Outages

December 2015

The Ponemon Institute has released its *2013 Cost of Data Center Outages* report.¹ This report summarizes a survey conducted by the Institute of 67 data centers that experienced an outage in the past year. It follows a similar report published in 2010. The survey finds that the average cost of a datacenter outage is about USD \$690,000, and its average duration is 86 minutes. The outage costs are linearly related to the length of the outage and to the size of the data center. All amounts below are in U.S. dollars.



Cost Framework

The study's costing framework included the following ten categories of costs:

- Detection costs: Activities associated with the initial discovery and subsequent investigation of the outage.
- Containment costs: Activities that enabled the company to prevent an outage from spreading.
- Recovery costs: Activities related to bringing the organization's core systems back to a state of readiness.
- Ex-post response costs: After-the-fact incidental costs associated with business disruption and recovery.
- Equipment costs: The cost of new equipment purchases and repairs.
- IT productivity costs: The lost time and related expenses associated with IT personnel downtime.
- User productivity costs: The lost time and related expenses associated with end-user downtime.
- Third-party costs: The cost of contractors, consultants, auditors, and other specialists engaged to help resolve unplanned outages.
- Lost revenues: The revenue loss from customers and potential customers because of their inability to access core systems during the outage.
- Business disruption: The economic loss of the outage, including reputational damages, customer churn, and lost business opportunities.

¹ *2013 Cost of Data Center Outages*, Ponemon Institute; December 2013.
<http://bit.ly/1vK74jv>

Taken together, these costs represented the total cost of an unplanned datacenter outage.

Participating Industries

The survey included results from sixteen different industries. The largest participations were as follows:

Industry	Participants
Financial services	10
Colocation services	7
Services	7
eCommerce	6
Healthcare	6

The sizes of the data centers ranged from 1,300 square feet to 46,000 square feet, with an average size of 12,500 square feet. The outage durations ranged from 15 minutes to 400 minutes, with an average duration of 86 minutes. The cost per outage ranged from \$74,000 to \$1,700,000, with an average cost of \$690,000.

Activity Costs

The average costs of outages by cost category (except for containment costs) were as follows. All amounts are in U.S. dollars:

Cost Category	Average Cost
Business disruption	\$238,717
Lost revenue	\$183,724
End-user productivity	\$140,543
IT productivity	\$53,608
Detection	\$23,752
Recovery	\$22,004
Equipment repair and replacement	\$9,737
Ex-post activities	\$9,569
Third parties	\$8,551
Total average cost	\$690,205

The cost of business disruption and lost revenue account for more than 60% of all costs associated with an outage.

Partial Versus Total Outages

The average cost for a partial outage was \$350,000 with an average duration of 56 minutes.

The average cost for a total outage was \$902,000 with an average duration of 119 minutes.

The minimum cost across all outages was \$74,223.

The average cost across all outages was \$690,205 with an average duration of 86 minutes.

The maximum cost across all outages was \$1,734,433.

Cost Relationships

Duration

The relation of cost to the duration of the outage is nearly linear. On the average, the cost of an outage was \$7,908 per minute. Over the sample of the survey, the lowest cost per minute was \$939. The highest cost per minute was \$16,246.

Datacenter Size

As with duration, the cost of an outage was linearly related to datacenter size. However, the larger the data center, the less cost per square foot was incurred. For small data centers, the cost of the outage averaged \$95 per square foot. For the largest data centers in the survey, the cost of an outage averaged \$45 per square foot.

Cost by Root Cause of Outage

The probability of an outage by root cause and the average cost for that root cause are as follows:

Root Cause	Probability of Outage	Cost of Outage
UPS system failure	24%	\$678,000
Accidental/human failure	22%	\$380,000
Cybercrime (DDoS attack)	18%	\$822,000
Weather-related	12%	\$436,000
Water, heat, or CRAC* failure	12%	\$517,000
Generator failure	7%	\$501,000
IT equipment failure	4%	\$959,000

*computer-room air conditioning

It is interesting to note that almost one-third of all outages were caused by UPS or generator failures.

Caveats

The Ponemon Institute lists several caveats for its survey:

- The study draws upon a non-statistical sample of data centers; and statistical inferences, margins of error, and confidence intervals cannot be applied to the survey results.
- The findings are based on a small representative sample of completed case studies. It is limited to data centers that were known to have had one or more outages over the past year. Of 560 organizations that were contacted, only 67 ended up in the survey. Non-response bias was not tested.
- It is the Institute's belief that the survey is biased toward companies with more mature datacenter operations.
- The quality of the survey is based on the integrity of confidential responses. There is always the possibility that respondents did not provide truthful responses.

Summary

There was a 41% increase in downtime costs in the 2013 study relative to those found in Ponemon's 2010 study. This underscores the importance of minimizing the risk of downtime that potentially can cost thousands of dollars per minute.

Industries with revenue models dependent upon datacenter availability to deliver services to customers – such as telecommunication service providers and e-commerce companies – and industries that deal with a large amount of secure data continue to incur the most significant costs associated with downtime. While such organizations saw a slight decrease in their downtime costs from 2010, those organizations that traditionally have been less dependent on their datacenters saw a significant increase. The largest increase was in the hospitality sector (129%), followed by the public sector (116%), transportation (108%), and media (104%).

As there is an increasing need for companies to adapt to a more social, mobile, and cloud-based model, the criticality of minimizing the risk of downtime is greater than ever before.