

## HRG Insight: The Total Cost of Downtime

Harvard Research Group provides custom research to its clients in select areas including High Availability and Fault Tolerant systems. One of the on-going activities in this practice to survey users of higher availability systems and determine their needs, preferences, and the manner in which these systems are being utilized to support their business.

Harvard Research Group is pleased to share with you some of the results of these surveys:

The respondents represented a statistical sampling categorized as:

- ✓ Corporate demographics: in 1998-1999 the mid two-thirds of the sample had approx. 300 to 20,000 employees and a total annual corporate revenue of \$60 to \$10 billion. In 2000, the mid two-thirds of the sample had approx. 250 to 15,000 employees and a total annual corporate revenue of \$50 million to \$10 billion.
- ✓ Moderate to larger IT installations, i.e. at least 50% have ten or more servers. (Some of these may be divisional/subsidiary operations)
- ✓ All running production systems, minimal development efforts included
- ✓ Predominant server manufacturers were IBM, HP, Compaq, Sun, and Dell (not necessarily ordered by representation)
- ✓ In 1998 and 1999, operating system representation was approximately UNIX 30%, NT 30%, and proprietary O/S 35%. In the 2000 results, UNIX was approaching 40%, NT remained relatively constant, and proprietary systems dropped to approximately 28%.
- ✓ Diverse usage across industries and applications
- ✓ Geographically dispersed across the U.S.

### The Cost of Downtime

Costs in \$ per Hour	1998	1999	2000
Average Cost of Downtime, Mode	\$1,500	\$10,000	\$10,000
Cost of Downtime at 25 <sup>th</sup> Percentile	\$750	\$1,500	\$500
Cost of Downtime at 75 <sup>th</sup> Percentile	\$35,000	\$50,000	\$75,000
Ave. no. of on-site employees		500	500

Note: Average Cost of Downtime expressed as the mode, i.e. the most common response.

## Key Observations and Conclusions

There are some significant variations in the above reported data over time. Much of this difference is attributed to differences in the sampling and shifts toward more intensive internet applications over time.

With the interdependence of systems and business operations, the true cost of downtime takes on a more global perspective, extending well beyond the traditional/immediate user community. Affected users include customers and potentials, remote sales and support, suppliers, and resellers.

The interconnected aspect of all segments of the demand and supply chains puts further emphasis on the time criticality of availability and responsiveness. In today's web based economy, the motto is becoming "three clicks and you're out".

Harvard Research Group firmly believes that within the next 18 months, respondents will strive to reduce the duration of the average outage by at least a factor of four, i.e. from sixty minutes to fifteen or less.

## Discussion

Harvard Research Group (HRG) conducts surveys with users of high availability systems on a regular basis. The surveys cover a wide range of applications and industries across the U.S. While there are some significant differences in the results provided above, a trend is present.

The respondents indicate that the cost of each hour of downtime for the critical servers and/or applications will be roughly \$10,000 with the central fifty percent indicating a range of \$1,000 to \$50,000. In a previous paper entitled "Duration and Frequency of Unplanned Outages", it was established that the average site is experiencing 2 to 3 outages per year, each of which was roughly 60 minutes in duration. Consequently, the financial impact of on the corporation is in the range of \$20,000 to perhaps as much as \$100,000 per year. Clearly, this component alone is sufficient to warrant some discussions on selected enhancements to the computing infrastructure.

For many of the respondents, an outage of two hours was not uncommon, i.e. well within the central 80% for surveys during 1999 and 2000. Outages of this duration further strength then case for system enhancements.

HRG has not probed the respondents for a detailed analysis on how the figures were derived. However, it is believed that the respondents are providing estimates based only upon the 'immediate' consequences, i.e. transaction based results or lost business. As such the figures represent an elementary accounting of the true costs. In a transaction/business based environment, one may properly argue that all business is not completely lost; some percentage will be executed later when the systems are restored to service. Nevertheless, losses and various levels of inconvenience will be incurred.

The following is provided as a worksheet with HRG starting points for estimating the true costs. The reader is encouraged to enter specifics in the rightmost column. HRG would welcome any comments and analyses which will be treated with the highest levels of confidentiality.

**Worksheet for Estimating the Cost of Downtime**

Category	Impact per Unit Basis	Quantity	Estimated Cost/Category	Your Estimated Cost/Category
Immediate business not transacted to be lost to competition or forgotten	@10% of \$10,000 per hour		1,000	
Productivity of immediate employees, engineers, support, telesales/marketing	@50% of \$25 per hour	@50% of 500 employees	2,500	
Disruption to remote employees, i.e. field sales, technicians/installation	@20% of \$25 per hour	@10% of 2,000 employees	1,000	
Ineffective use of remote equipment and facilities	\$1,000,000 of capital equip.	1 hour/2,000 per year	500	
Permanently lost customers or loss of a potential client	\$10,000 per customer/year	3% attrition rate	300	
Disruption to partners, resellers, suppliers, etc., consequences such as induced delays in procurement			1,500	
Employee morale, i.e. loss of key employee, commissions, etc.			500	
Rework, after hours catch-up, overtime	10 person hours	\$50/hour	500	
Penalties from regulatory agencies, i.e. financial, SEC, public utility agencies, EPA			N/A	
Waste of raw materials and disposal			N/A	
Disruption to cash flows, transfers, A/R, A/P			N/A	
<b>Estimated Total</b>			<b>\$7,800+</b>	