# the *Availability Digest*

## Humanizing Three 9s
September 2007

Is three 9s of availability sufficient for today's data processing systems? The answer is "maybe." It all depends upon the application,

In data processing terms, an availability of three 9s means that a system will be down about 45 minutes per month, or almost nine hours per year. For PCs and many noncritical applications, this may be sufficient. However, there are critical applications that require four, five, or six 9s of availability because of the cost of downtime in terms of dollars, publicity, and/or loss of life or property.

But what if our lives were governed by three 9s? Below, we list some of the consequences of such an environment.[1] These statistics apply to life in the United States. Multiply by ten to get the worldwide statistics.

## If Our Life Were Governed by Three 9s

- There would be at least 20,000 prescription errors made each year.

- 10,000 new cars each year would be returned to dealers as unacceptable under the "lemon" laws.

- More than 15,000 newborn babies would be accidentally dropped by doctors or nurses each year.

- If you went to an ATM once per week, you would find one that didn't work once every twenty years (wouldn't that be nice).

- We would each be without electricity for more than eight hours per year.

- We would each be without water for more than eight hours per year.

- We would each be without telephone service for more than 45 minutes each month.

- 99.9% of registered voters would turn out for every election.

- We would each be without television for ten minutes per week.

- If we used our PC 40 hours per week, we would have to reboot it once every two weeks (that would be an improvement).

---

[1] Many of these statistics came from an unknown author and were passed on to the Availability Digest by Paul Green of Stratus Technologies.

- There would be two short or long landings each day at every major airport, such as O'Hare, Kennedy, Atlanta, and Los Angeles.

- There would be about 500 incorrect surgical operations per week.

- One out of every 1,000 people would have multiple sclerosis (this is, in fact, the case).

- The postal service would lose 2,000 articles of mail each hour.

- We would have one rainy day every three years.

- Only one out of 1,000 workers each year would not get a raise.

- If we made ten cell phone calls a day, we would have three dropped calls per year.

- If we ate out twice per week, we would get food poisoning once every ten years.

- 0.1% of the population would be smokers.

## Would We Want to Live in a World of Three 9s?

I suspect that each of you could add more items to this list.

Just as with data processing applications, three 9s in our lifestyle is wonderful in some cases (voters, smokers), is satisfactory in others (dropped cell phone calls, PC reboots), and is unacceptable in still others (dropping newborn babies, telephone service).

In data processing, we experience three 9s from industry standard servers, four 9s from fault-tolerant systems, five 9s from clusters, and six 9s from active/active systems. Three 9s availability is satisfactory for a large number of applications, would be wonderful for some that don't achieve that now, and would be unacceptable for critical applications.

But I don't think that we would like to live in a world of only three 9s. We sometimes can live with two 9s; we sometimes need six 9s. Like applications, our needs range from the casual to the critical; and the critical have to be highly available.