

the Availability Digest™

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- - - achieving 100% uptime

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The digest of current topics on Continuous Availability. More than Business Continuity Planning.

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CA tells you how to **avoid** the effects of downtime.

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How Important is Time to Your Applications?

Many applications that need to cooperate with each other depend upon their systems maintaining an accurate time clock. Only in this way can the sequence of events processed by the different systems be accurately determined. Fortunately, the popular utility NTP (Network Time Protocol) is available to maintain system synchronism to within milliseconds if not microseconds.

NTP takes care of many oddities in timekeeping, including leap years and Daylight Savings Time versus Standard Time. However, these are all predictable discontinuities in time. There is, unfortunately, a non-predictable discontinuity. That is the leap second. Periodically, a second must be added or subtracted from our time to account for the changing speed of Earth's rotation.

A leap second is scheduled to be added at midnight UTC on June 30th of this year. Different versions of NTP may handle this differently. Different operating systems may also differ in their handling of leap seconds.

An extensive discussion of this issue has been held on our LinkedIn Continuous Availability Forum. The comments of several knowledgeable technicians can be found on our forum at <http://linkd.in/1zvXgIO> in the thread entitled "Will the 2015 Leap Second Bite You?"

- Bill Highleyman, Managing Editor

Never Again

Verizon Cloud Down for Forty Hours

Verizon recently announced a planned downtime of up to 48 hours for its cloud services. This is hardly the action to take to elicit confidence in its cloud availability. But the story isn't so black and white. This may have been a judicious move on Verizon's part to give it a competitive edge in the future.

Verizon explained that the update's purpose was to enable "seamless upgrades." The ability to apply firmware changes non-disruptively had not been included in the first release of its cloud.

In implementing its seamless upgrade capability to include firmware updates, Verizon risked incurring the wrath of its enterprise customers by taking down all cloud services for almost two days. However, Verizon seems to have weathered the storm. It is now in a strong position relative to other cloud offerings in that it claims it can perform any type of upgrade to its cloud infrastructure with no planned downtime. Had Verizon possessed this capability when the Xen Hypervisor security vulnerability was exposed last fall, it would have been unique among cloud providers using Xen (including Amazon). Verizon could have patched Xen with no planned downtime and no requirement to reboot active virtual machines.

[--more--](#)

Best Practices

2015 – The Year of the Leap Second

There is a reason that there will be no space launches on June 30 or July 1, 2015. Scientists do not want to risk a computer malfunction due to a leap second being added at midnight UTC.

Our day equals one rotation of the Earth about its axis. We call this a *solar day*. Our *second* is timed very accurately with an atomic clock. This timing is used to determine Coordinated Universal Time (UTC). However, the rate of the Earth's rotation is slowing down. The solar day is getting longer. To account for this, one second is added on occasion to the UTC time to synchronize it with the solar day. This is the leap second. The next leap second is scheduled for midnight UTC, June 30, 2015.

Many facilities were implemented by software programmers who didn't even know that leap seconds existed. Thus, they did not compensate for the fact that the addition of a leap second makes the time appear to go backward.

The leap second is such an erratic and infrequent occurrence that it is likely that many systems have not been built to account for it. Consequently, everyone should monitor their systems carefully as the next leap second approaches, just in case.

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Availability Topics

Windows 7 Mainstream Support Ends

Shades of Windows XP. Extended support for Windows XP ended on April 8, 2014. XP users had to upgrade to Windows 7 or to Windows 8.1. Most upgraded to Windows 7 because of seemingly global dissatisfaction with Windows 8.1.

Now, less than a year later, on January 13, 2015, Windows 7 users were told that they must upgrade to Windows 10. The good news is that users of Windows 7 and Windows 8.1 can upgrade to Windows 10 at no cost for one year after the general availability of Windows 10 later this year.

Windows 7 is an extraordinarily successful operating system. It powers over 50% of PCs worldwide (Windows XP runs on about 25% of PCs, and Windows 8.1 runs on about 7%).

There is some indication that Microsoft's support policy is changing for Windows 10. Microsoft now thinks of its Windows operating system as a service that should be kept current for its supported lifetime rather than as a product. Just as it does not make sense to ask which version of an Internet service someone is running, likewise it should not make sense to ask which version of Windows someone is running.

[--more--](#)

Recommended Reading

Reliability and Availability of Cloud Computing

The robustness of clouds, especially public clouds, is a topic of continuing concern today. There are significant economies available to companies for hosting their applications in clouds. However, the reliability of cloud computing continues to be spotty; and most companies are still reluctant to move their critical applications to the cloud.

In their book "Reliability and Availability of Cloud Computing" (John Wiley & Sons, 2012), authors Eric Bauer and Randee Adams analyze the factors contributing to cloud downtime and make recommendations for steps to achieve uptimes of 99.999% (five 9s), a level of availability that they consider appropriate for mission-critical applications.

As the authors state, the book provides an "analysis of reliability and availability risks and architectural opportunities [to] offer guidance on how to develop cloud-based solutions that meet or exceed service reliability and availability requirements of traditional systems."

The contents of the book are highly redundant. Each chapter includes the concepts that are important to the topics covered in that chapter. Therefore, the reader can choose any chapter that seems important to him and read it with full understanding of all of the underlying concepts.

[--more--](#)

Tweets

@availabilitydig – The Twitter Feed of Outages

A challenge every issue for the Availability Digest is to determine which of the many availability topics out there win coveted status as Digest articles. We always regret not focusing our attention on the topics we bypass.

Now with our Twitter presence, we don't have to feel guilty. This article highlights some of the @availabilitydig tweets that made headlines in recent days.

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