

Carbonite Online Backup
Data Security Practices

Back it up. Get it back.
Simple. Secure. Affordable.



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When trusting valuable personal and business data to a third-party backup service, it's critical that consumers select a provider committed to (i) protecting the privacy of their data, (ii) using highly redundant storage technology to ensure that backups are not lost, and (iii) regularly validating the integrity of their backup to ensure a flawless restore experience. Carbonite brings our customers the technology and expertise that were once available only to the world's largest companies. This paper explains how we keep your data safe and private.



Introduction

When you entrust valuable data to an online backup provider, you must feel confident your data is private, secure, and can be restored without corruption. Carbonite® uses state-of-the-art technology, secure infrastructure, and industry-leading standard operating procedures to keep our customers' data safely backed up and easily restorable. There are five areas of critical importance for an online backup solution:

- Highly redundant storage
- Hardened data center facilities and best-in-class operations
- Specialized system monitoring software
- World-class network security and encryption
- Transparent access to your backup status

Read on to learn how Carbonite excels in each area.

Redundant Storage

Carbonite uses RAID 6 technology throughout our data centers. RAID 6 is a version of the “redundant array of independent disks” enterprise storage architecture that is optimized for data protection. This state-of-the-art technology is used around the world for the most demanding data security applications. In our implementation, your data is spread across 15 disk drives, with no less than three copies of your backup set. This means that in the unlikely event any one of the 15 drives fails, it can be “hot swapped”, or replaced in real-time, with no loss of data. This technology helps Carbonite ensure that single-disk failure never impacts our customers' data.

The enterprise-class disk drives used by Carbonite also use specialized technology like rotational vibration compensation to enable them to perform to the reliability standards demanded by data-intensive businesses like banks and airline reservation systems. In fact, the mean time between failure (MTBF) of the enterprise-grade drives used to store Carbonite customer data is 70% longer than drives typically found in personal computers: 1.2 million hours, compared to 700,000 hours for consumer drives¹. These enterprise drives also have “smart data” early-warning systems that enable our operations team to detect errors in a drive and replace it before a failure occurs.

Hardened Facilities and Best-in-Class Operations

Carbonite data centers are designed to maximize efficiency and reliability. Our RAID 6 arrays that store customer data are housed in climate-controlled data centers with fully redundant power distribution unit (PDU) diversity, independent AC systems, battery backup, uninterruptible power supply (UPS) and on-site generators with guaranteed fuel contracts. Carbonite data centers are guarded 24 hours a day, every day of the year. Personnel access to our data centers is controlled by multiple biometric scanners and electronic keycards with pin codes. A “man-trap” prevents physical theft of equipment or media. All activity is monitored through closed-circuit television (CCTV). This hardened infrastructure protects our customers from disruption caused by external factors such as power loss, weather events, or unauthorized access.

Data protection is also a function of solid policies and procedures and that’s another area where Carbonite excels. Our data center operating procedures call for immediate replacement of any disk drive that shows signs of possible failure. Our technology and standard operating process ensure that disk replacement has virtually no impact on the customer.

Specialized Software and Systems

Our proprietary Carbonite File System (CFS) provides additional protection for storing and retrieving customer data. Deployed after a cumulative 10 years of engineering effort, this advanced technology provides tools that enable automated monitoring of every storage server to ensure your data is captured and stored without corruption. Its highly specialized features identify disk defects at the physical block level so that data isn’t written to bad sectors on a disk. In addition, the Carbonite system software performs checks of every single stored file to ensure its integrity.

File integrity monitoring and data validation is critical to preventing the random error inherent to all storage systems, including computer hard drives. Called “bit errors,” these can increment over time and render a file unreadable. To prevent file corruption, Carbonite’s proprietary software will detect bit errors and automatically instruct the customer’s computer to re-send any affected files. This constant file integrity checking helps ensure that a customer’s backup remains an uncorrupted, exact copy of the original file.

CFS also provides the flexibility to spread data across all the arrays connected to the storage server’s logical volume. The robust monitoring tool was also designed to scale in line with our rapidly growing infrastructure, as we add storage at the rate of one million gigabytes a month.

Network Security and Encryption

Carbonite protects against physical and Internet-borne attacks with the highest levels of security. All of our servers are located behind redundant firewalls provided by Juniper Networks®, a leading enterprise provider. Systems operators can control access to our network with a high degree of precision. All data is encrypted before it leaves a customer's computer. Time-tested technologies like Blowfish, Triple DES encryption and 128-bit Secure Socket Layer (SSL) provide additional levels of security during the data transmission process. All data is encrypted on the customer's computer before being stored on Carbonite servers. Encrypted files are then encrypted again using SSL during transmission. To further protect our customer's data, encryption keys are never stored with customer data. Carbonite never receives or stores unencrypted files.

Transparent Backup Insight

Customers have the additional peace-of-mind of being able to check the status of their backups whenever they want. The Carbonite client provides up-to-date reporting on the backup status of any computer. Simply open the Carbonite InfoCenter on a PC or Carbonite Preference Pane on a Mac to view the status of your backup.

Summary

Our state-of-the-art data backup infrastructure protects both the privacy and safety of your data. We believe that the combination of industry standard technologies like RAID 6 and strong encryption, plus the unique and proprietary capabilities of the Carbonite File System, make Carbonite the most secure way to back up your files.

About Carbonite, Inc

We believe that computer users should never have to think about backup. That's our job. We've earned our customers' trust by providing an affordable, reliable, secure and easy-to-use online backup service that protects and preserves their irreplaceable data.

Carbonite launched its online backup service in May 2006. So far, we have backed up and protected more than 69 billion files and restored more than 6.1 billion lost files for customers in over 120 countries.

Carbonite is available to consumers and small business through numerous channels, including its corporate website, major US retailers and international distributors.

The Carbonite executive team is made up of industry veterans with proven experience in building stable, successful software companies. CEO and founder David Friend has been a successful technology entrepreneur and innovator for over 25 years. He previously co-founded five companies and has been featured in USA Today, Tech Capital, The Boston Globe, Mass HiTech, Fortune, Forbes and in Tom Peter's best-selling management book, The Pursuit of Wow!

David welcomes feedback from Carbonite customers and prospects, and can be reached at david.friend@carbonite.com.

1. Source: "Enterprise-class versus Desktop class Hard Drives," Intel, 2008