REVERSE INCREMENTAL BACKUP:
## *EFFICIENCY MEETS RELIABILITY*

Intronis leverages a backup technique called Reverse Incremental for several of our advanced data protection services. Though relatively obscure, the Reverse Incremental technique enables more efficient and reliable backup and recovery than techniques used by most other backup vendors. Most importantly, the technique helps our IT service provider partners achieve high client satisfaction and improved account retention.

Intronis' Reverse Incremental technique improves on the backup and recovery techniques used by a majority of backup vendors and service providers in two mission-critical areas:

- Efficient data backup
- Reliable recovery

To explain the advantages of Reverse Incremental backups, a quick review of two commonly-used backup techniques - Full and Incremental – provides a useful backdrop.
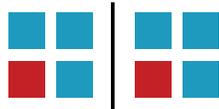
The Full Backup – simple but inefficient

In IT, change is a constant. Ongoing revisions, additions and retirement of digital files all go hand-in-hand with healthy business operations, as do constant refreshes of databases. Of course, unintentional events – system failures, site outages, human error, malware and other undesirable events – can lead to the loss of mission-critical data, and put an organization at serious risk. As a best practice, businesses therefore need to back data up serially over time.

The primary advantage of the full backup lies in its simplicity. The full backup automates the process of copying data from one disk or storage medium to another. Each full backup operation creates a bit-identical image (or *mirror*) of production data. Depending on the need, the mirror can comprise a disk or a networked storage system on premises, a storage target at a remote location, or a data center in the cloud. Should trouble arise, users can recover data by restoring the most recent mirror into the production environment.

However, because mirrors are as large as the source data they protect, full backups can rapidly consume a tremendous amount of storage capacity. The data quantities associated with full backups can also strain networks and prolong backup windows, particularly when users back up to remote sites or to targets in the cloud. These network strains can also increase data loss risk.

The Incremental Backup – efficient backups, compromised recoveries

Incremental backups overcome these data quantity problems by only capturing the changes (or *deltas*) between source data and the most recent backup, whether full or incremental. Instead of creating a new mirror image with each backup, the incremental technique relies upon a series of incremental captures, along with a much smaller set of mirrors created over longer intervals. As a result, incremental backups offer faster completion and higher storage efficiency than full backups under most conditions.

Unfortunately, when trouble strikes, the process for restoring the most recent backup image is complex and risky. This is because restoration requires combining data from the most recent mirror image and each subsequent incremental backup image up to the time of failure. Resuming business operations depends on the successful processing of multiple backup images, so the corruption of even a single incremental image can lead to a recovery failure, the loss of irreplaceable data, and critical business loss.
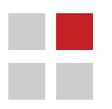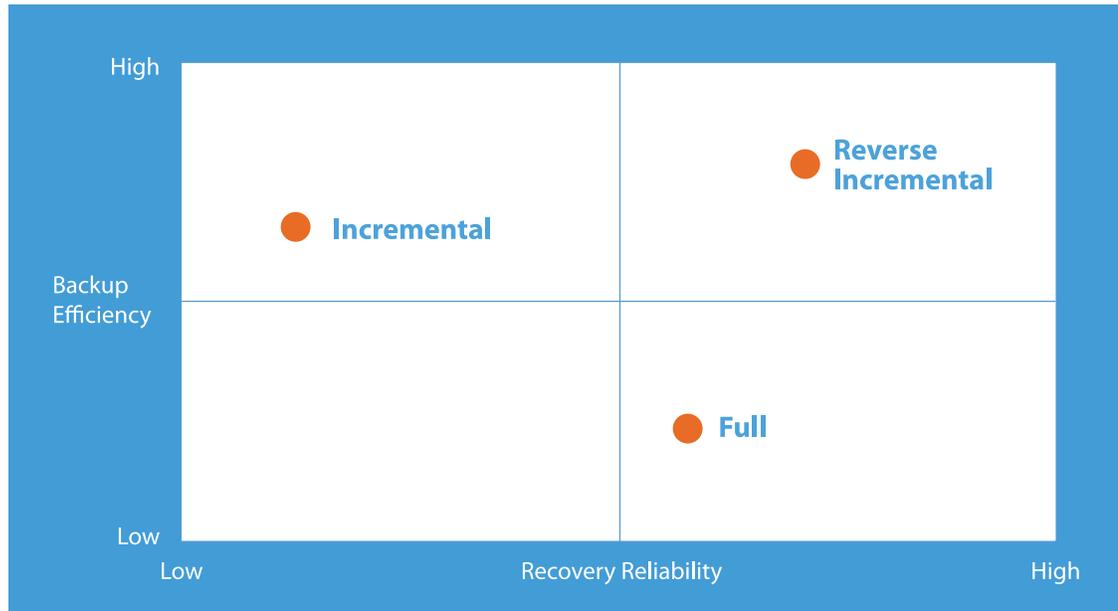
The Reverse Incremental Backup – efficient backups and reliable recoveries

The Intronis reverse incremental technique resembles the standard incremental technique in that it creates, transmits and stores only data changed since the time of the last capture. However, after capturing each delta, the reverse incremental backup technique proceeds to synthesize a full mirror image, and make it available for recovery. When the need arises to perform a recovery, this synthetic mirror is restored to the production environment, similar to the way recovery works with full backups. Moreover, the Intronis technique synthesizes the most recent mirror during backup instead of during recovery. This relieves server processors of having to rebuild mirrors at recovery time, when fast restoration is critical.

The backup and recovery profiles of the three backup and recovery techniques is summarized in Exhibit 1, below.
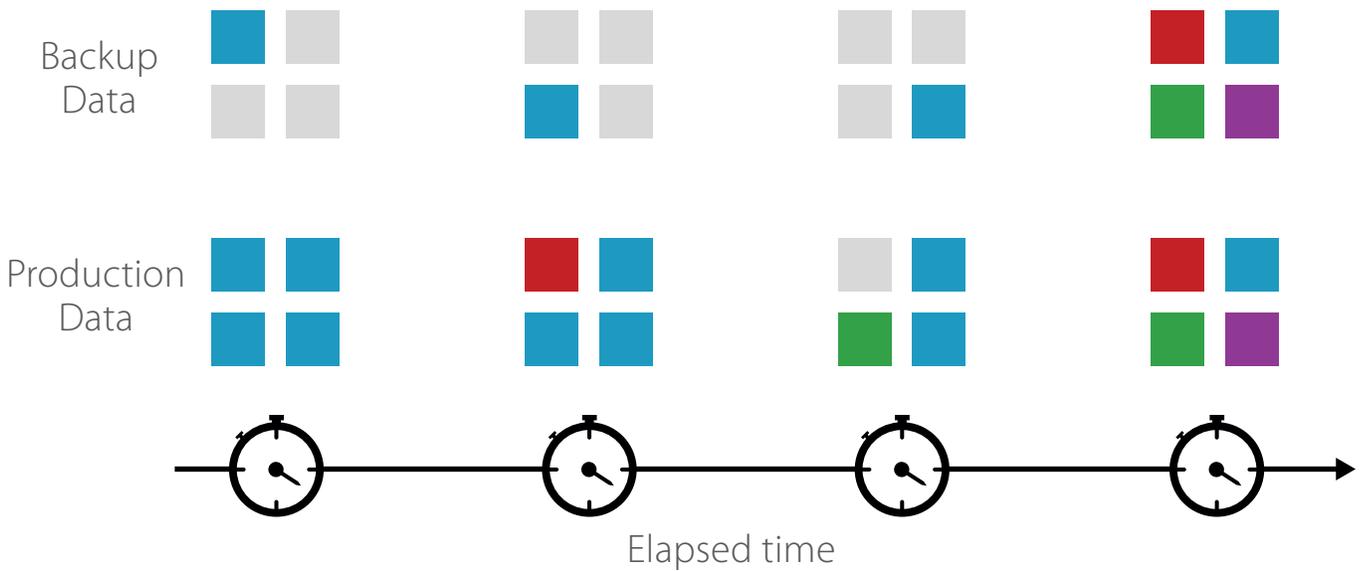

Exhibit 1: The Intronis reverse incremental backup & recovery technique combines the advantages of full and incremental techniques, while eliminating their shortcomings.

Conclusion

Despite a common misperception that backup techniques are interchangeable, a number of different techniques have evolved over time to suit different requirements, use cases, and environments. The ideal technique brings efficiency and effectiveness to both backup and recovery scenarios. The reverse incremental technique synthesizes a new mirror image with each incremental backup, to offer the high backup efficiency of the incremental technique and the high recovery reliability of the full technique. Intronis' implementation of the reverse incremental technique serves to empower our MSP partners to offer the best value in cloud backup and recovery services for their SMB clients.

The reverse incremental backup technique

Backup Data

Production Data

Elapsed time

To view a short video about the Intronis reverse incremental backup technique, please visit **www.intronis.com/revinc**

About Intronis MSP Solutions by Barracuda

Intronis MSP Solutions by Barracuda provides data protection for businesses, delivered exclusively through the IT channel. Intronis enables MSPs to centrally deploy and manage a broad portfolio of services — protecting business-critical files, folders, email, applications, and servers, locally and in the cloud — through a rebrandable console that integrates with major RMM and PSA tools. MSPs benefit from a true partnership with Intronis, through fixed pricing plans and partner enablement tools that help MSPs accelerate growth and increase profits. Intronis was acquired in October 2015 by Barracuda.

On the Web: www.intronis.com
Intronis Cloud Backup and Recovery Blog: blog.intronis.com
Social Channels: @Intronis | Facebook: intronisonlinebackup | LinkedIn: Intronis