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ESG Lab Review

Druva inSync: Simplified, Robust Endpoint Data Protection

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Abstract: *This ESG Lab review documents hands-on testing of Druva inSync, an endpoint backup solution, with a focus on ease of deployment and use, near-continuous data protection, access and restore, and data deduplication in a mixed Windows and Mac environment.*

Data Protection Challenges

Today's workforce is increasingly mobile, with a good portion of workers connecting to corporate resources outside of a traditional office. This shift has contributed to higher worker morale and reduced absenteeism—often a boost to productivity. It's also created challenges for backing up endpoints (laptops, tablets, smartphones, etc.) distributed outside the confines of the corporate environment. While backup of endpoint data can be valuable, endpoint users don't want the responsibility of doing it themselves, nor do they like the disruption that can often accompany the process. IT organizations are increasingly looking at WAN-based backup to a centralized location as their preferred method of protecting remote and branch office endpoints[1]. This presents its own challenges considering the volume of data typically retained on endpoint devices and the bandwidth required to back it up.

The Tested Solution: Druva inSync

Druva inSync is a fully automated enterprise laptop backup solution designed to protect corporate data for office and remote users. Some of the key benefits provided by the Druva inSync solution are listed here:

- **Source-based Global Data Deduplication:** Stores only a single copy of duplicate data across all users. The deduplication happens at the source, eliminating the need to move large amounts of duplicate data across the network. Overall, full backups are faster while providing significant bandwidth and storage savings.
- **WAN-Optimized Backups:** Designed to provide transparent and efficient backups over any network – LAN, WAN or VPN. With bandwidth throttling and multi-threaded backup process architecture, the solution is designed to work efficiently across the WAN.
- **Anytime, Anywhere Access:** From a Web browser, iPad/iPhone, or Android mobile device, users can browse folders and files under multiple point-in-time backups or search for a file name or extension and quickly restore any point-in-time copy of any file.
- **Simple to Deploy & Use:** Druva inSync is designed with a focus on simplicity and ease-of-use. Easy to mass deploy and configure, inSync clients can be silently installed on end-user devices. Backups with inSync are non-intrusive and don't impact end-user productivity.
- **Bare Metal Restore:** Druva inSync enables organizations to backup an entire PC, including operating system files, installed applications, data, and settings. In case of disaster or total loss of a machine, the administrator can reconstruct the entire PC as of the most recent point in time.

Druva offers inSync both as an on-premises solution and a cloud service. The on-premises software comes in 2 editions: inSync Professional Edition, which is for installations with less than 250 systems to protect, and inSync Enterprise

[1] Source: ESG Research Report, *Remote Office/Branch Office Technology Trends*, June 2011.

The goal of ESG Lab reports is to educate IT professionals about emerging technologies and products in the storage, data management and information security industries. ESG Lab reports are not meant to replace the evaluation process that should be conducted before making purchasing decisions, but rather to provide insight into these emerging technologies. Our objective is to go over some of the more valuable feature/functions of products, show how they can be used to solve real customer problems and identify any areas needing improvement. ESG Lab's expert third-party perspective is based on our own hands-on testing as well as on interviews with customers who use these products in production environments. This ESG Lab report was sponsored by i365.

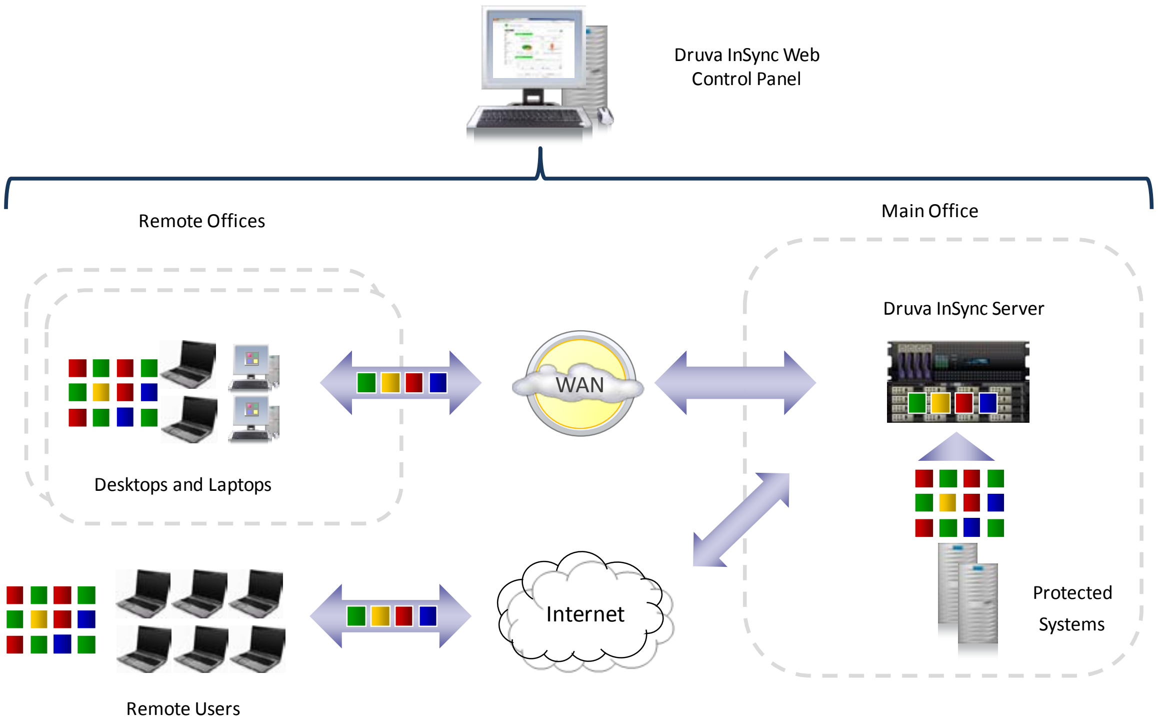
Edition, designed for larger organizations. inSync Enterprise Edition offers additional features designed to optimize performance and scalability for larger organizations:

- **Scalability –** Designed to handle up to 2000 users per server without performance degradation.
- **HyperCache Technology**– Boosts backup performance by caching a subset of the deduplication index in memory to maximize hit rate.
- **SSD support–**Enabling use of high performance solid-state disk to enhance backup and restore performance.
- **Multi-Administrator capability–** Enables role-based administration with server and profile administrators.
- **Advanced Active Directory integration–** Administrators can set up a periodic import of users and groups from Active Directory.

Both editions also offer an optional data loss prevention module, inSync SafePoint, which protects critical data on endpoint devices through file-level encryption, remote data delete capability, and a geo-location feature to track the physical location of devices.

As seen in Figure 1, Druva inSync is designed to provide an end-to-end, capacity and performance optimized, disk based data protection option for all of an organization's users, whether in the office, remotely, or on the road.

Figure 1. Druva inSync

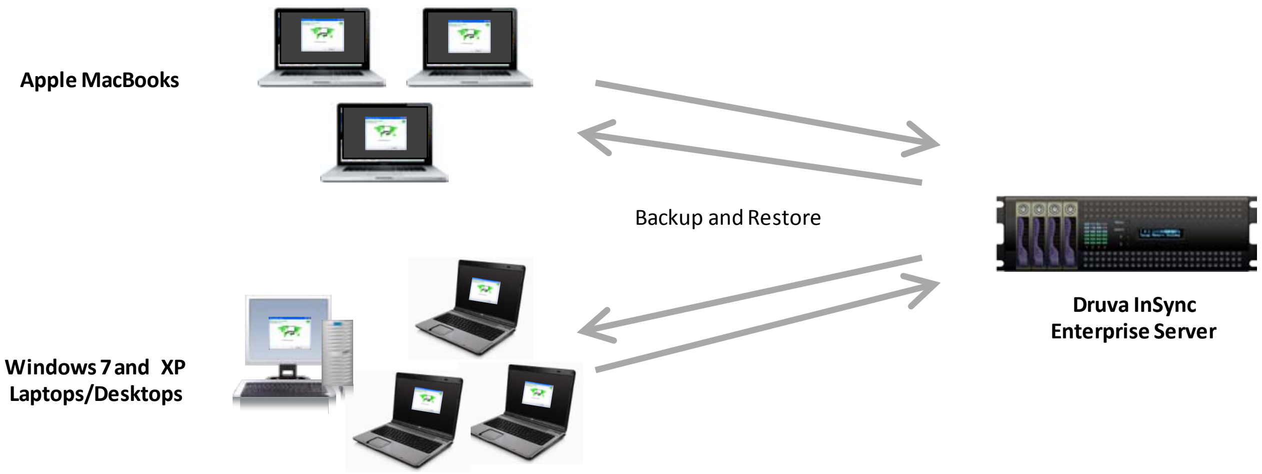


The ease of use and cross-platform capabilities of Druva inSync were validated using ESG Lab's own users and data from home and office locations in San Francisco, Oakland, and San Mateo, California.

Getting Started and Backing Up

Druva inSync is a lightweight software-based solution that provides data protection for Windows, Mac, and Linux endpoints. ESG Lab looked at the ease of installation and management of the Druva inSync Server and client software. Testing was executed in a lab environment that consisted of one Druva inSync Enterprise Server and several Windows and Mac endpoints, as seen in Figure 2.

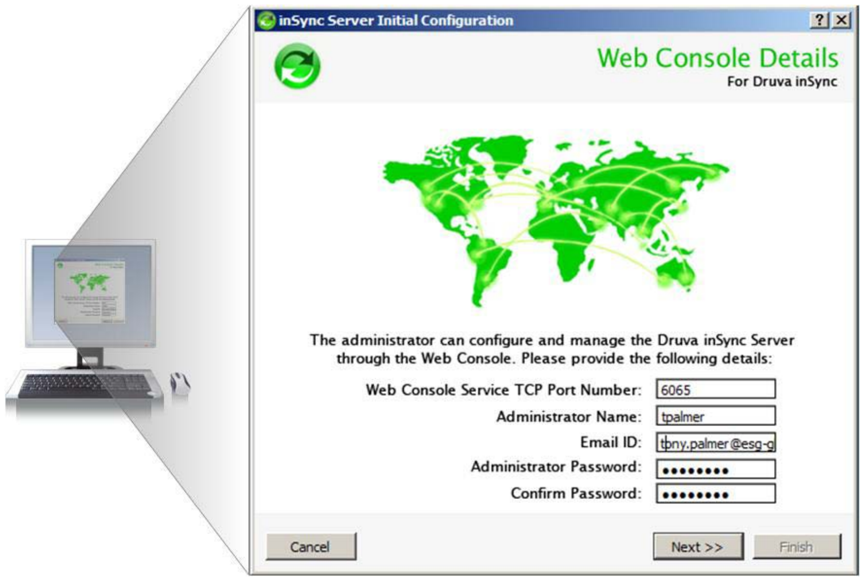
Figure 2. The ESG Lab Test Bed



ESG Lab Testing

Download and Set-up - ESG Lab began by downloading the Druva inSync software and installing it on a Windows 2008 server with a dual-core 3.0 GHz Intel processor and 2GB of RAM installed. The download and installation of Druva inSync consisted of a few simple steps. First, ESG Lab downloaded the inSync Enterprise Edition Software from Druva's website. The installation executable was a 50MB file, clicking on the file launched a standard installation wizard that installed the software, then automatically launched the web console in a browser to complete configuration.

Figure 3. Creating a Protection Group

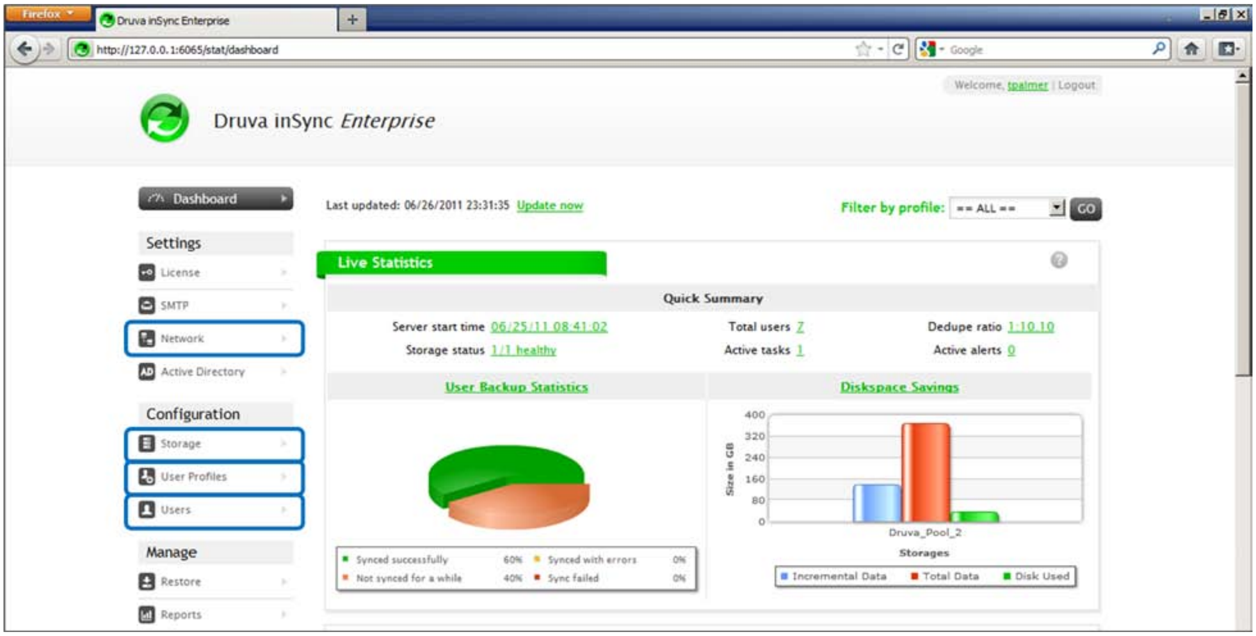


The administrator can configure and manage the Druva inSync Server through the Web Console. Please provide the following details:

Web Console Service TCP Port Number: 6065
Administrator Name: tpalmer
Email ID: tony.palmer@esg-g
Administrator Password: ••••••••
Confirm Password: ••••••••

Overall, installation and configuration took about 20 minutes, including configuring the network ports so that users could access the inSync server from outside the Lab firewall, configuring storage on the server and creating user profiles with the Druva inSync web console, seen in Figure 4.

Figure 4. The inSync Web Console


http://127.0.0.1:6065/stat/dashboard

Welcome, tpalmer | Logout

Last updated: 06/26/2011 23:31:35 Update now

Filter by profile: == ALL ==

Server start time 06/25/11 08:41:02
Storage status 1/1 healthy
Total users 7
Active tasks 1
Dedupe ratio 1:10.10
Active alerts 0

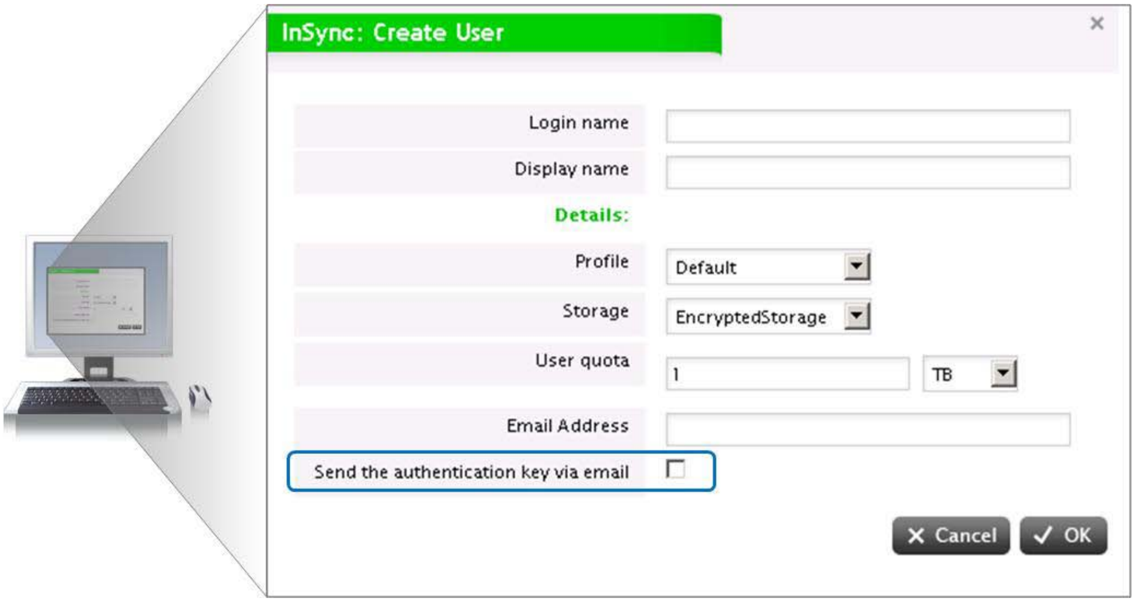
Synced successfully 60%
Not synced for a while 40%
Synced with errors 0%
Sync failed 0%

User Profiles - User profiles enable the inSync administrator to group users with similar backup requirements into configuration 'containers'. The inSync administrator can then set backup configuration parameters in the profile, which automatically apply to all the users using that profile. In user profiles, an administrator can specify numerous parameters, such as whether a user can change their backup schedule, bandwidth throttling, storage quotas, and whether a user can restore from the web interface, among others[2]. ESG Lab created two profiles, one for users requiring full bare-metal restore (BMR) capability, and another for users who only required backup of files and content.

Users - Next, ESG Lab configured accounts for the users whose laptops and desktops would be protected. For larger installations, inSync allows automated mass-deployment of clients and also administrators to import users and groups periodically from Active Directory, but in these tests, we had a smaller group of users, and so their accounts were created manually. Figure 5 shows the User creation dialog, when a user is created, and authentication key file is automatically generated. The authentication key file contains the inSync Server IP Address and port information as well as the user's unique authentication key.

[2] See the Druva inSync Administrator's Guide for detailed information on user profiles.

Figure 5. Creating a User Using the Druva inSync Web Console



InSync: Create User

Login name

Display name

Details:

Profile: Default

Storage: EncryptedStorage

User quota: 1 TB

Email Address

Send the authentication key via email □

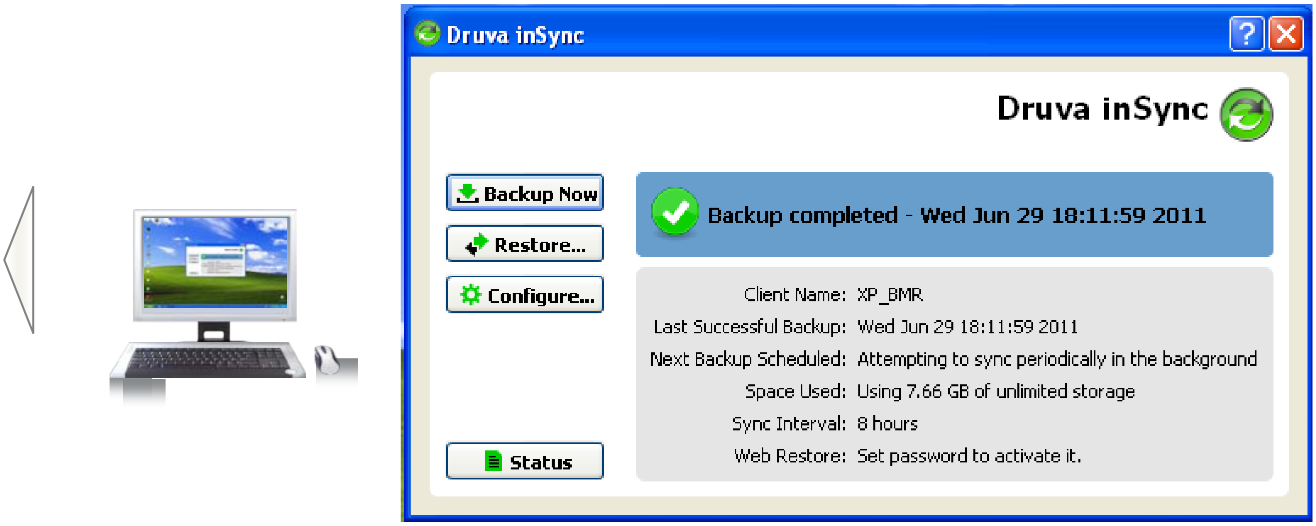
The administrator has the choice to save the key in a central location for distribution to users at a later time, or to send each user their authentication key via e-mail. ESG Lab chose to send each user their Authentication key via e-mail. Next, the inSync Client software was installed on the first client, a desktop running Windows XP SP3 inside a VMware Workstation virtual machine with 1 vCPU and 512MB of RAM, which was created as part of the BMR user profile. The client installation took less than five minutes. Once the client was installed, ESG Lab kicked off the initial synchronization of the XP machine with a single click of the 'Backup Now' button. The installation of Windows XP and user applications consumed approximately 5 GB of disk space at the time of the first backup.

Backup Performance - While the backup was running, ESG Lab looked at performance monitors on both the client and server. On the inSync Enterprise Server, all inSync processes combined were consuming just 11% of the CPU, and 140 Megabytes of RAM. On the client, similarly low resource consumption was observed. ESG Lab opened and edited several documents using Microsoft Word, presentations using Microsoft PowerPoint, and multiple photographs using Adobe Photoshop CS3. The system was responsive using all of these applications and there was no measurable impact to performing these actions while running the backup.

The backup completed in just over 12 minutes, and ESG Lab observed that while 5.23 GB had been backed up, only 1.8 GB was transferred to the inSync server, for bandwidth and capacity savings of just over 65%. It is important to note here that this is for just one user, backing up a typical mix of documents, images, and office files. As will be seen later in this report, with more users and a larger pool of data, there will be more duplicate data and better deduplication ratios.

Figure 6 shows the Druva inSync Client on the Windows XP system after several backups had been completed. The remaining clients were installed by remote users from their home or office networks, as soon as they received their authentication keys. In all, seven client machines were connected to the Druva inSync server for these tests.

Figure 6. InSync Backup Completed



Backup completed - Wed Jun 29 18:11:59 2011

Client Name: XP_BMR
Last Successful Backup: Wed Jun 29 18:11:59 2011
Next Backup Scheduled: Attempting to sync periodically in the background
Space Used: Using 7.66 GB of unlimited storage
Sync Interval: 8 hours
Web Restore: Set password to activate it.

Why This Matters

Reducing backup and recovery times for endpoint backup and recovery were both among the top challenges reported by IT managers in a recent ESG survey.[3] Providing an easy to implement, capacity and bandwidth-efficient disk-to-disk solution for data protection is a powerful value proposition for companies looking to protect their local and remote endpoint devices. With a simple to use GUI and a very efficient memory and CPU footprint, Druva inSync Enterprise requires no special training or expertise for IT administrators. Combining ease of use with enterprise class features like deduplication, WAN optimization, and bare-metal restore with a server platform installable on an industry-standard x86 server gives customers a rapid path to full endpoint data protection with minimal cost.

ESG Lab was able to quickly and easily deploy Druva inSync Enterprise Edition and was protecting local and remote Windows and Mac clients with minimal effort and no impact to user's normal workflows within 20 minutes of sitting down at the keyboard of the server.

Data Access and Restore

Over the course of several days, users were instructed to work as they normally would, creating and editing documents and presentations, sending and receiving email, and all other normal day-to-day functions of a typical knowledge worker. Observing each subsequent backup, only the new or changed data was transferred, allowing backups to complete very quickly.

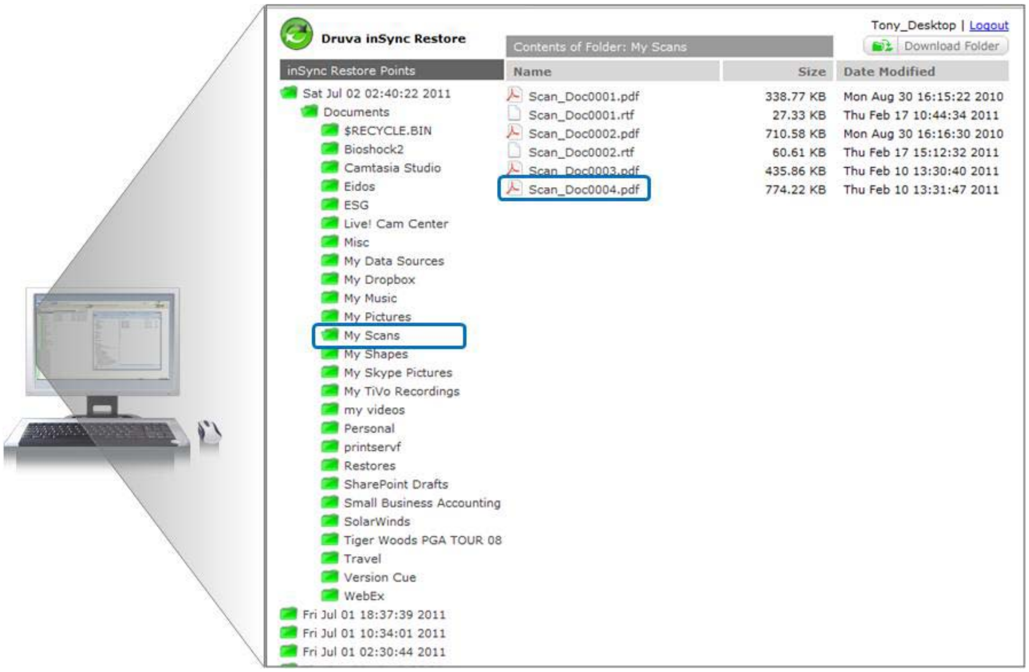
ESG Lab tested data access and selective restore of files to remote clients using the inSync Client on a user's device, from the web restore interface, and using the administrative console on the Druva In Sync server. Files were selected for deletion from the 'My Scans' folder under the 'Documents' folder on the client's machine. ESG Lab deleted the file Scan_Doc0004.pdf.

[3] Source: ESG Research Report, *2010 Data Protection Trends*, April 2010.

First, ESG Lab attempted the restore using the Druva inSync web restore interface. Using the Firefox web browser, ESG Lab entered the IP address and port number specified in the authentication key email for web restores.

As shown in Figure 7, after logging in, ESG Lab was presented with the list of available restore points to choose from. It's important to note that each restore point represents a restorable full backup. Data deduplication ensured that only new or changed data were transferred to the Druva server for every backup. ESG Lab selected the most recent restore point and browsed to the folder 'My Scans' that contained the file that was deleted.

Figure 7. Selecting a Restore Point

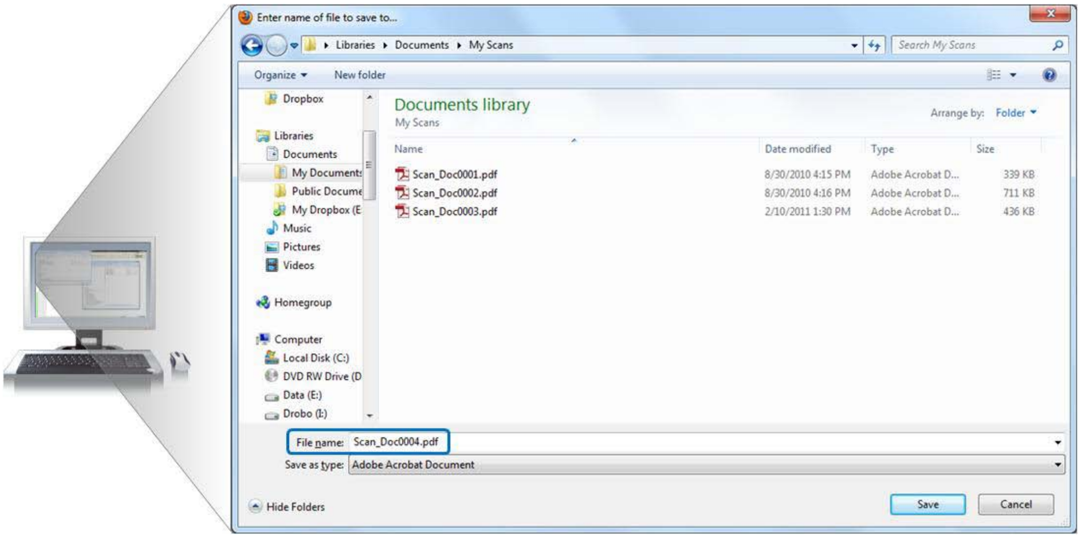


- Sat Jul 02 02:40:22 2011
  - Documents
    - $RECYCLE.BIN
    - Bioshock2
    - Camtasia Studio
    - Eidos
    - ESG
    - Live! Cam Center
    - Misc
    - My Data Sources
    - My Dropbox
    - My Music
    - My Pictures
    - My Scans
    - My Shapes
    - My Skype Pictures
    - My TiVo Recordings
    - my videos
    - Personal
    - printservf
    - Restores
    - SharePoint Drafts
    - Small Business Accounting
    - SolarWinds
    - Tiger Woods PGA TOUR 08
    - Travel
    - Version Cue
    - WebEx
- Fri Jul 01 18:37:39 2011
- Fri Jul 01 10:34:01 2011
- Fri Jul 01 02:30:44 2011

Name	Size	Date Modified
Scan_Doc0001.pdf	338.77 KB	Mon Aug 30 16:15:22 2010
Scan_Doc0001.rtf	27.33 KB	Thu Feb 17 10:44:34 2011
Scan_Doc0002.pdf	710.58 KB	Mon Aug 30 16:16:30 2010
Scan_Doc0002.rtf	60.61 KB	Thu Feb 17 15:12:32 2011
Scan_Doc0003.pdf	435.86 KB	Thu Feb 10 13:30:40 2011
Scan_Doc0004.pdf	774.22 KB	Thu Feb 10 13:31:47 2011

Next, ESG Lab browsed to the file, which had been deleted. Right clicking on the file brought up two options, 'Restore to Original Location' and 'Download to New Location'. ESG Lab chose to restore the file to its original location, as seen in Figure 8.

Figure 8. Restoring Files from the Web Interface



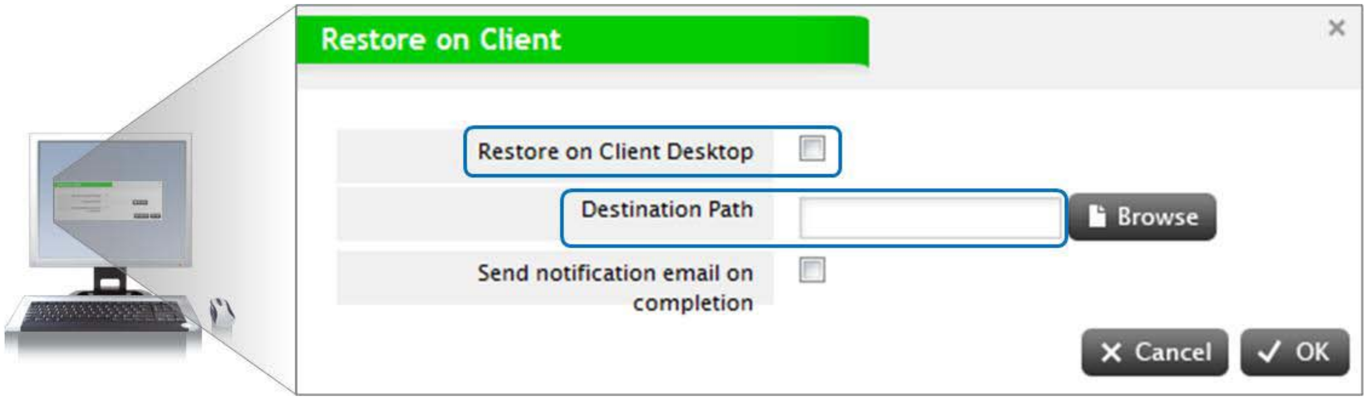
Name	Date modified	Type	Size
Scan_Doc0001.pdf	8/30/2010 4:15 PM	Adobe Acrobat D...	339 KB
Scan_Doc0002.pdf	8/30/2010 4:16 PM	Adobe Acrobat D...	711 KB
Scan_Doc0003.pdf	2/10/2011 1:30 PM	Adobe Acrobat D...	436 KB

File name: Scan_Doc0004.pdf
Save as type: Adobe Acrobat Document

Next, ESG Lab repeated this test from the inSync Client software. The procedure was just as easy, allowing the user to browse to exactly the correct version of the file desired, and restore it with one click.

Finally, a restore from the Administrative interface was executed. When restoring from the server, the administrator has multiple options for delivery of the restored files. The administrator can elect to restore the files to a location on the server, and then deliver the restored files to the end user or, as shown in Figure 9 the files can be delivered directly to the user's machine.

Figure 9. Restoring Files from the Server



Restore on Client Desktop ☐

Destination Path

Send notification email on completion ☐

It is important to note that the files can be restored to ANY location on the end user's machine using the 'Destination Path' option, provided the administrator knows the correct path to the location of the file. The simpler method is to restore the files to the user's desktop, and allow the user to put the files in the correct location. When using this method, the administrator can have the inSync server send a notification email to alert the user that files have been restored to their system.

While not tested by ESG Lab for this report, data access and restore is also supported from mobile devices including Apple iOS, as well as Google Android devices.

ESG Lab also simulated what would happen when an organization suffers a total loss, such as a hard drive crash or the theft of a Laptop. In this case, Druva inSync provides for recovery of the entire system, including applications, network credentials, operating system settings, and user data, in a single operation.

ESG Lab created media and performed a bare metal restore to a new, blank virtual machine. Within 15 minutes, the virtual machine was restored, and Windows XP started normally. All files, application credentials, and settings were verified and the system was confirmed to have been fully restored.

Why This Matters

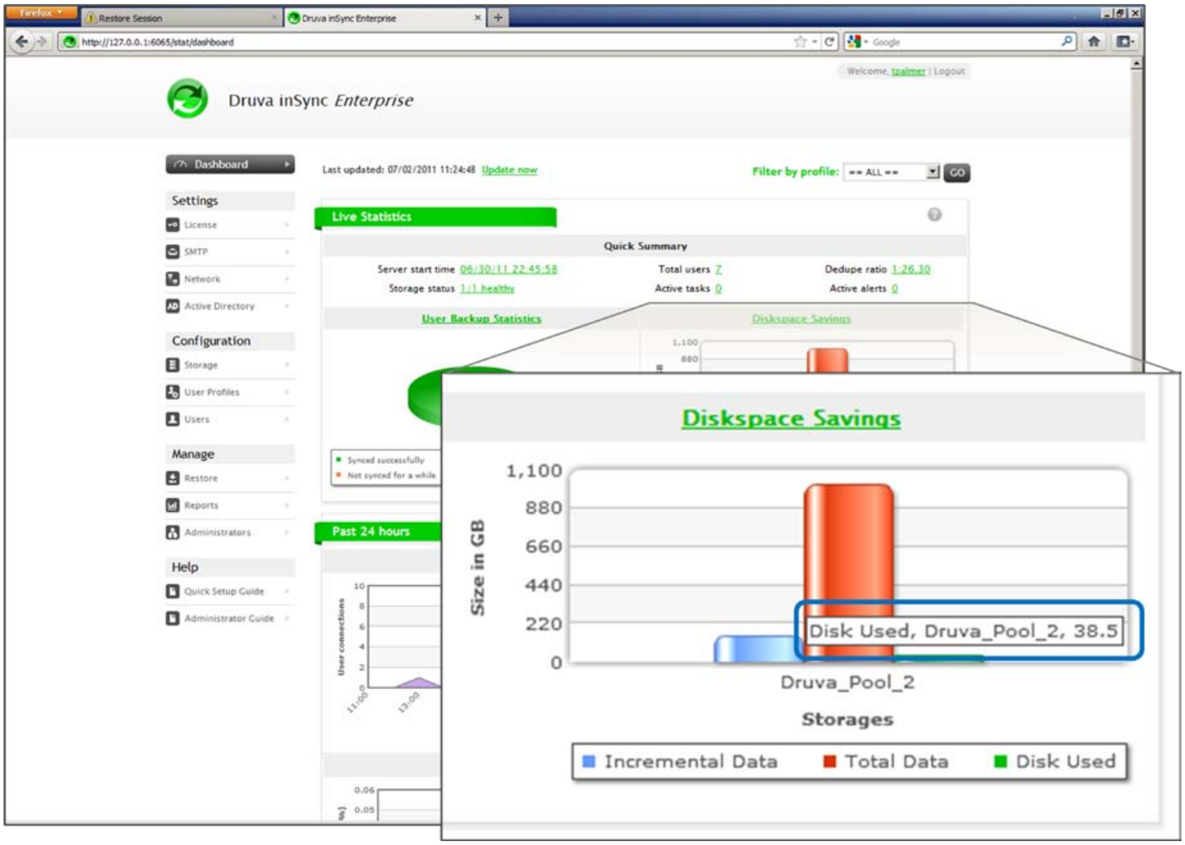
When asked to name their organization's most important IT priorities with respect to supporting Remote Office/Branch Office locations, 32% indicated improving backup and recovery processes. Simplifying backup and more importantly, recovery for administrators and users creates significant value for widely dispersed IT environments with an increasingly mobile workforce.

Through hands-on testing, ESG Lab validated the ease of use and consistent management functions for backup and recovery of local and remote users, including physical and virtual Windows and Macintosh systems performing multiple simultaneous deduplicated backups of heterogeneous systems with little to no impact on clients. Bare metal restore was particularly fast and efficient, reconstituting a full restore image using multiple deduplicated backups and enabling recreation of a complete Windows workstation, including all installed applications and user data in less than 15 minutes.

Deduplication

Finally ESG Lab examined deduplication in the Druva inSync platform. After 30 days of users working normally, with Druva inSync backing up users machines on a regular schedule, ESG Lab logged into the server and examined the Diskspace Savings chart on the home page of the administration console. As can be seen in Figure 10, the cumulative capacity of all of the full backups performed by the inSync server totaled almost exactly 1 terabyte, but the storage space actually used was only 38.5 GB.

Figure 10.Reported Disk Capacity Savings



Last updated: 07/02/2011 11:24:48

Filter by profile: == ALL ==

Server start time 06/30/11 22:45:58

Storage status 1/1 healthy

Total users 7

Active tasks 0

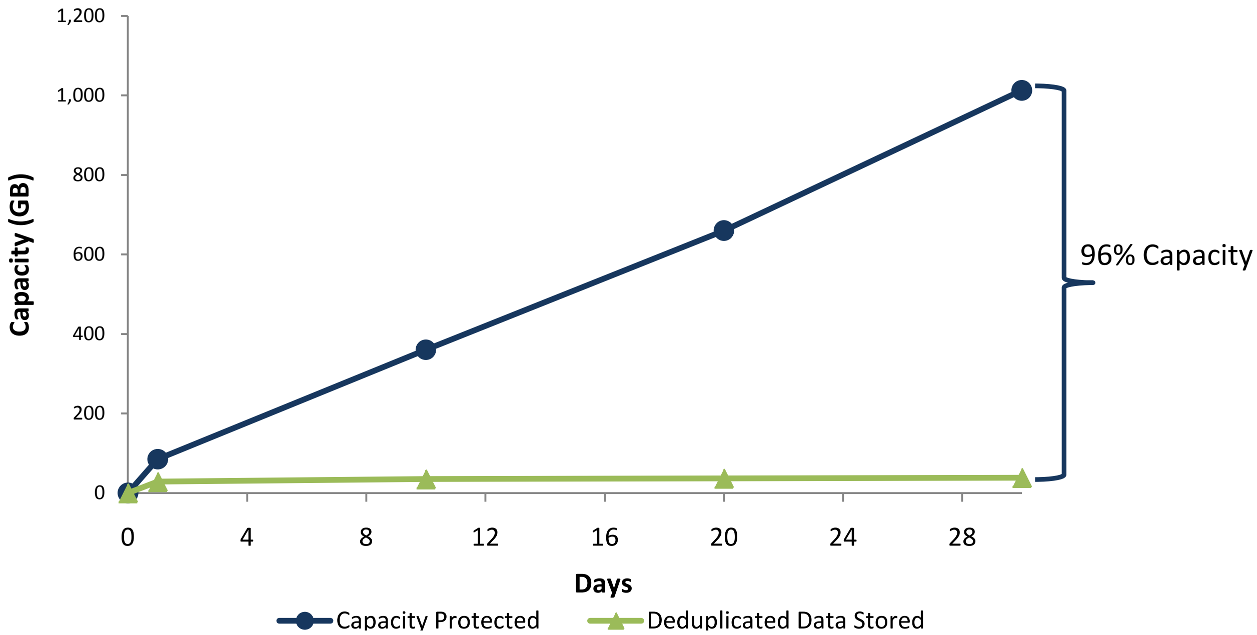
Dedupe ratio 1:26.30

Active alerts 0

Disk Used, Druva_Pool_2, 38.5

Figure 11 illustrates the effects of data deduplication over time as observed by ESG Lab.

Figure 11. Deduplication Savings Over Time



Each user's system was protected by near continuous data protection, with backups scheduled to run every 8 hours for 30 days. Deduplication effectiveness is commonly expressed in two ways, as a percentage of the total volume of protected data sent to the system by the clients that was actually stored to disk, or as a ratio, of protected data to data stored on disk. In this example, the amount of data stored on disk by Druva inSync after 30 days was 38 GB—about 4% of the total 1,013 GB of user data protected. This represents a 96% reduction in data storage requirements or a deduplication ratio of 26:1.

What the Numbers Mean

- inSync deduplication reduced the required disk capacity 30 days of full backups for seven users from 1.01 TB to only 38 GB. This enables organizations to protect very large numbers of users with relatively modest storage resources.
- The amount of capacity reduction that can be achieved with Druva inSync will vary according to the retention period for backups being stored and the type of data being backed up. In this scenario, capacity was reduced by 96% over 30 days with just seven users.
- inSync's global, source-based deduplication technology is application-aware and saves only a single copy of emails and attachments duplicated across users. By understanding the disk-structure of commonly used file-formats, inSync performs deduplication at the object level for Microsoft Outlook, Office documents and PDFs.
- inSync's source-based deduplication also provides significant bandwidth savings because less data needs to be sent from the user device over the network to the inSync server.

Why This Matters

ESG research indicates that cost and impact to performance are two of the leading obstacles to disk-based data deduplicated backup deployments. The ability to efficiently deduplicate data across all users' backups with client-side processing addresses both of these issues by reducing the amount of data retained on disk while providing optimal performance.

ESG Lab has validated that data deduplication provided by Druva inSync can be used to reduce disk capacity significantly with minimal impact to client or server resources. Administrators can effectively provide high performance backup services to remote users, plus fast and reliable restores, using greatly reduced disk capacity. This lowers the cost per GB for backup data and enables companies to retain larger numbers of users' data exponentially longer while minimizing the impact of deduplication on users' workflows.

The Bigger Truth

Businesses want to reduce the risk associated with protecting vital information within endpoints (laptops and mobile devices). IT is increasingly interested in WAN based backup solutions to a centralized location, but this presents its own challenges considering the volume of data typically retained on endpoint devices and the bandwidth required to back it all up [4].

Druva inSync is designed to greatly reduce the risk and cost of endpoint data protection while minimizing recovery time for distributed computers and laptops. It is a software-based solution that uses application-aware, source-based global data deduplication technology to reduce the volume of backed up data sent across the WAN and stored on disk by up to 90 percent. In fact, ESG lab observed 96% data reduction with a small number of users. WAN utilization was also optimized, with inSync only transferring unique data across the wire. Starting with the very first backup, ESG lab observed 65% bandwidth reduction, improving to over 90% in subsequent backups.

ESG Lab found that Druva inSync provides secure centralized storage of backup data with an effective, easy to deploy, distributed data deduplication technology that reduces the cost and complexity associated with protecting distributed desktops and laptops. Particularly impressive was the easy installation, tiny server footprint, manageability over the web, and enterprise-class functionality. A rich set of bandwidth tuning and scheduling policies can be used to ensure that backup activity has no impact on business productivity.

Organizations are looking for cost effective, easy to manage solutions for endpoint data protection. ESG Lab was able to deploy a new Druva inSync server and begin protecting users' desktops and laptops in 20 minutes. With enterprise class distributed data deduplication and user management built in to a low cost package, Druva delivers a compelling solution for businesses of all sizes.

[4] Source: ESG Research Report, *Remote Office/Branch Office Technology Trends*, June 2011.