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SharePoint 2013: Delivering a successful backup and recovery strategy

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AVAILABILITY
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Executive summary

Backup and recovery is often a service that doesn't get the attention it deserves until it's too late. Organizations adopt Microsoft SharePoint for a collaboration, document management, application and development platform, which grows organically and often becomes mission-critical to business users. As a result, IT departments are often in the position of playing catch-up in planning, testing and formalizing SharePoint (and SQL Server) operations activities such as backup and recovery to maximize data Availability.

When it comes to platform and data Availability, many organizations haven't fully tested backup and recovery. This is because they lack SharePoint-specific tools for operational activities such as backup, recovery, and particularly, granular recovery. Many companies use SQL Server backups and recovery farms for restoring. This approach is labor intensive and time-consuming, especially for large organizations with huge databases and backup and recovery responsibilities distributed among multiple departments (SharePoint and SQL Server teams to name a couple). In addition, users often want documents, lists and libraries available 24/7. SQL Server backups simply don't facilitate speedy recoveries. Consequently, users and business processes are often affected by delayed data recovery.

In this white paper, I will explain why it's critical for SharePoint data to be highly available from a service level and compliance point of view. I will list approaches for SharePoint data backup and recovery, with a focus on best practices for defining service levels for the business, architecture, operations and quality-assurance. Multiple stakeholder points of view for backup and recovery will be covered, as well. Finally, I will cover specifics of granular recovery in SharePoint environments and Veeam® Explorer™ *for Microsoft SharePoint*, a free toolset for item-level recovery of SharePoint data.

While this white paper was written primarily for SharePoint administrators at mid- and large-sized organizations, the best practices and toolsets are also applicable for small organizations, as well.

SharePoint data Availability challenges

Data Availability and compliance

It isn't easy for IT departments to meet today's business-user expectations, while also protecting SharePoint data. Business users aren't concerned with the technical complexities of SharePoint backup and recovery. For them, data recovery must be a simple and quick process. If IT cannot meet this expectation, user confidence in both SharePoint data and the IT department can be compromised, which often results in management escalations and reduced adoption of SharePoint adoption.

In addition, the Sarbanes-Oxley (SOX) Act mandates that all publicly traded companies must adhere to reporting guidelines. This includes requirements for the retention of original records. For those using SharePoint for records management, it's key to maintain SharePoint data integrity and the properties associated with the data, such as ownership and revision history for example. It is necessary for IT staff to understand and comply with SOX regulations when it comes to producing litigation and eDiscovery records and documents versus simply restoring those items for internal business purposes.

Given the business users' high expectations and SOX compliance requirements, having a toolset that enables IT administrators to search through several databases using specific criteria and restore data will allow them to quickly service both business user and eDiscovery team requirements.

Stakeholder points of view

Operating a SharePoint service is complex, due to multiple stakeholders who have different points of view based on their responsibilities. Stakeholders include the business user, SharePoint administrator, service/product manager, records manager, security manager, infrastructure manager, or third-party service provider. Each has a specific point of view about SharePoint data recovery needs, which organizations must incorporate in order to be successful. Let's take a deeper look at the stakeholder points of view:

- **Business user:** As part of day-to-day activities, the business user relies on SharePoint to find resources — such as people, documents and applications — to carry out their working tasks. While dealing with job pressures they are learning how to use SharePoint and want things to be simple: they don't want to hear about a complex process or steps they must carry out. Specifically, if they need to recover a site, list, library or document they want a simple (and fast) process to follow to recover their data so they finish carrying out their job.
- **SharePoint administrator:** This stakeholder handles SharePoint support and, most likely, support for other areas, such as SQL Server, Active Directory and other organization-specific applications and infrastructures. Specific to data recovery, this admin usually gets a few requests a week to restore SharePoint content such as sites, lists, libraries and documents. Without SharePoint-specific tools, this admin probably uses SQL Server backups, with a small instance of SharePoint running to attach databases and recover content.
- **Infrastructure manager:** Often in a separate department, this manager is in charge of servers, networks and storage services for SharePoint. This department is often not transparent, is understaffed, and lacks reporting tools and capabilities such as SharePoint-specific backup and recovery. In addition, the infrastructure is not always tailored to SharePoint's specific requirements,

such as the SP list's or library's need for granular recovery.

- **Records manager:** The records manager is responsible for all non-transitory records within the organization. SharePoint is on their radar as a con-tent repository and potential risk specific to data policy (retention and disposition) compliance. This is especially the case in regulated industries.
- **SharePoint security manager:** The SharePoint security manager is responsible for all SharePoint service — both platform and data security aspects — and for providing policy and operational guidance. Security ensures that the platform and its data are protected and cannot be compromised by technical failure or end-user error.
- **SharePoint service/product manager:** This is the hub of the SharePoint service from a communications perspective. It is responsible for budgeting, forecasting, roadmaps and more. The manager's role is a balancing act of business-user demands and IT realities (for example, budgets, resourcing, day-to-day firefighting issues and escalations). Service quality is often at the mercy of the SharePoint application tier level and executive funding priorities.
- **Director/CIO:** The director or CIO is responsible for IT services from a business-enablement perspective, while managing lean budgets, service-level expectations, stakeholder demands and cost-cutting goals. This role is responsible for many product lines and services and the complaints of the business users when data recovery or loss is an issue.
- **Third-party provider:** This stakeholder delivers according to a level documented in a services contract. When a contract's service level isn't met, monetary penalties are often a result.

Each stakeholder's point of view adds incremental complexity to SharePoint and data management. Additionally, organizations often struggle with constrained resources to provide affordable SharePoint services that meet their stakeholders' expectations. Often, guidance from a third party is needed to determine specific requirements, choose the best toolset and justify the investment.

Modern data center challenges

Many companies invest heavily in data center modernization and new technologies, such as virtualization, storage and the cloud. Data continues to grow at a yearly rate of 30 – 50%, and users expect access to 24/7 and have no patience for data loss. SharePoint has become a vital part of today's business processes and IT departments are now challenged to meet growing Availability expectations. Too often, IT admins use toolsets that are unable to satisfy today's business needs. They are also challenged to leverage modern data center technology.

IT challenges often include:

- Multiple locations with many data centers across geographies such as cities, states or continents
- WAN reach, latency, bandwidth, acceleration and the various associated implications
- Legacy physical server limitations such as space, power, heat, recovery, management, lease expirations, increasing service expenses and administration

- Virtualization and the introduction of density, capacity management, elasticity requirements and administration overhead.
- Off-premises cloud and data services (managing control vs. complexity vs. cost) — while infrastructure burdens are no longer on the radar, application and data management and protection matter now more than ever.

Backup and recovery strategies

Prescriptive data Availability architecture

To protect data and enable SharePoint and its components' efficient recovery, a multi-functional toolset is required. Specifically, most restore requests are related to items such as documents, lists, sites and farms — and to a much lesser degree, services and servers. To enable quick and efficient item restores while also protecting the SharePoint platform, you require tools that address the following:

- **Farm-level backup** and restore allows you to back up and recover all SharePoint farm components. Very few full recoveries will ever be required, assuming that your farm has built-in resilience and your operational practices are formalized.
- **Service/server-level** backup and restore lets you recover a failed service or server. Very few of these recoveries will ever be required, assuming your farm has built-in resilience and your operational practices are solid.
- **Item-level restore** enables you to recover items such as sites, lists, libraries and documents. This is where you can expect most requests for recovery to occur, as well as the expectation that turnaround time is minutes and not hours or days. Expect several requests per month from business users, and escalation if you don't perform the task quickly.

Best practices overview

There are several backup and recovery organization and technology best practices available from various sources. Microsoft TechNet is a good place to start. From my perspective, best practices should come from someone who has both managed SharePoint environments and worked with several organizations to design and build SharePoint environments because this provides a real-world perspective. The following are key best practices to follow:

Organization best practices

- **Thoroughly understand your organization's data and security policies to learn IT and business-user responsibilities.** These policies are related to data-protection practices such as backup and off-site replication, records management and the use of external file sharing sites. In addition, they explain why the document owner, or custodian, is accountable for data protection. From a security perspective, the theme is generally the same: Secure data (that doesn't use external sharing sites, for example) with a permissions model and ensure that SharePoint is protected accordingly. Specifically, being able to reference key policy items in your design will increase the overall credibility of your backup and recovery services.

- **Work with business stakeholders to document their requirements.** Most of the problems I've dealt with while managing SharePoint environments over the past five years were related to managing business-stakeholder expectations. Many have been allocated a backup and recovery IT budget that doesn't include toolsets. As a result, SQL Server tools were used to back up content databases. Due to organizational complexity, there was a 2-week recovery time for data. Each time a request was made, escalation occurred and there was a lot of noise and confusion. Each time I was asked to present a proposal for quicker turnaround times, the executive would not fund the service enhancements — a clear example of the disconnect between IT and the business side.

- **Document the service-level contract, publish compliance statistics, communicate it, sign off on it and review it on a regular basis.** The service level and compliance policies must be communicated, signed off on by all stakeholders (business and IT) and reviewed on a regular basis to make sure IT is meeting published service levels. It is also important that the business is aware of ITs service level compliance, the specific responsibilities of each party involved in delivering the service level are called out and carried out, and for roles to be documented and communicated openly.

- **Be prepared for stakeholder disconnects.** Generally, an organization will allocate an operating budget based on SharePoint's importance to the organization. In many cases, SharePoint is viewed as a nice-to-have administrative tool and, therefore, isn't viewed as critical by the executive management team. This view conflicts with the general business user who views it as critical, since this user stores documents in SharePoint and, in many cases, creates business applications using SharePoint Designer. The resulting disconnect creates escalations and poor service reviews and feedback.

- **Define the restore point objective (RPO) with business continuity planning.** This is the maximum-targeted period in which data might be lost due to a major incident.

- **Define the restore time objective (RTO).** This is the targeted time duration and a service level that a business process must be restored in after a disaster or disruption to avoid unacceptable consequences.

Technical best practices

- **Virtualize SharePoint.** Virtualization can save you many hours and you to improve the Service Level Agreement (SLA) for the business. It becomes so much easier to provide required Availability for SharePoint services and data with image-level backups and recovery tools like Veeam® Explorer™ for Microsoft SharePoint.

- **Utilize SharePoint-specific toolsets for backup and recovery.** Full SQL Server recoveries may help, but with SharePoint, most recovery scenarios are documents, lists, libraries and sites. SharePoint-specific tools are your best option so the process complexity, number of resources and time required to recover items is greatly reduced. It will also give you a better chance of meeting SLAs and business-user expectations.

- **Test your recovery thoroughly on an ongoing basis using a documented and agreed-on process.** Use formal disciplines for documenting your test plan, test cases and report. Your plan must include input from stakeholders when defining goals, outcomes, data set and test cases. Specifically, the test plan must detail the approach, expectations, resources, tools and data set to be used. Test cases include specific tests carry out and expected outcomes, such as site-level backups

and recoveries, document-level backups and recoveries, and the security, content types and workflows. Always utilize quality assurance literate staff and never allow the person who built the environment to do the testing.

- **Create a job schedule to prevent workload overlap that can result in performance issues and outages.** Each job (backup, virus scanning, replication, etc.) taxes the environment with its workload. This workload affects servers, network and storage and care must be taken to not overload the environment and cause slowdowns or outages. Environments with a shared infrastructure are at the most risk because they tend to be highly leveraged and dense (many applications and workloads sharing infrastructure). To get started, map out all of the applications that share the infrastructure, each job, start time, end time and the workload's load.
- **Leverage storage snapshots.** SharePoint content databases can become quite large over time. As a result, the operation window required for backups can increase substantially. Some vendors, like Veeam, can leverage hardware snapshots in conjunction with Volume Shadow Copy Service (VSS) to offload the backup process to the storage subsystem. This shrinks the backup window significantly and improves overall Availability of service.
- **Monitor your backup jobs and send notifications indicating success and or failure.** If there is a failure, configure the toolset to log the event and trigger the help desk system to open a ticket and assign the ticket to the appropriate individual. Be sure that tickets are reviewed. Attention must be applied to resolving the problem and then preventing it from occurring again.
- **Adopt governance to manage the backup and recovery solution effectively.** When assembling your governance team, make sure all stakeholders are actively involved in business, IT and third parties. Also, make sure that aggressive communications are utilized to keep stakeholders informed of decisions, responsibilities and service-level compliance. It is highly recommended that a senior executive manage stakeholder involvement, SLA compliance and politics.
- **If the cloud is on your roadmap, be prepared with a data and security policy and technology and operations perspectives.** The cloud is a great option if you have your business, risk management and IT personnel on board. Otherwise, roadblocks are sure to appear. It's better to be prepared and know you have the ability to respond to demand.
- **Follow the 3-2-1 backup rule, a popular industry concept that can effectively address any possible failure scenario.** This principle works for any virtual environment and helps to determine how many backup files you should have and where to store them. Simply put, make at least three copies of your data, store them on two different media and keep one copy off site. For more information, visit: http://www.veeam.com/blog/how-to-follow-the-3-2-1-backup-rule-with-veeam-backup-replication.html.

What to look for in a toolset

When choosing a toolset, look for the following commercial and technical features and functions:

- **Backup flexibility and performance** allow you to meet required RPOs
- **Full server restores** give you the ability to restore the Operating System (OS) and data on either a

virtual machine or for a physical bare-metal restore (keep track of SLAs you need to meet)

- **Granular file- and item-level restore** covers most typical restore scenarios without full-server restores (speed and simplicity matter here, and I will cover the peculiarities of granular recovery in SharePoint environments later in this white paper)
- **Application awareness** is necessary because because consistent backups are important. There are agentless solutions and agent-based solutions to handle requirements for target workloads such as Microsoft Exchange, SharePoint or SQL Server
- **Compression and deduplication** need to be in place. Data will be compressed and deduplicated at the source and on-target for overall data reduction
- **Encryption can be mandatory**, based on your corporate policy. Encryption can happen at the source, in-flight and at-rest (on the target)
- **Self-service recovery** allows for delegating restores to departments and offices. It can improve overall IT service and recovery times
- **Local support services** can respond within appropriate timeframes if additional help is required

eDiscovery and granular recovery for Microsoft SharePoint

When working in environments with a lot of stakeholders like Microsoft SharePoint, accidental file deletions can happen. Operating with only a full database restore can turn into nightmare for the SharePoint administrator, especially since Microsoft SharePoint is traditionally one of the most difficult applications for performing eDiscovery and granular recovery. It's vital for successful SharePoint management to leverage an effective granular discovery tool.

Take a look into some most common situations when you might need an effective tool for granular recovery.

- **Restoring a single item**, or the ability to attach a single item to a content database, and then restore it either to its original location or another location
- **Searching for an item**, because the user might not know exactly where the file is located. There could also be multiple versions. In addition, the user might not know the exact name of the file
- **Restoring some or all of a library** that has been deleted, one that has had files deleted or one where the Recycle Bin rules have executed
- **Sending an item to the user via email**, because speed is often of the essence. The ability to send the file (for example, a document) to the end user reduces downtime and simplifies the recovery process
- **Viewing the version history** when a prior version is required, but has been deleted
- **Viewing file properties** to confirm that it's the correct file

Veeam Explorer *for Microsoft SharePoint* overview

Once you understand the need for the granular recovery tool, there are some other equally important questions you'll want to consider. A backup and recovery solution rarely gives you an item-level recovery option that's tailored specifically a particular application, such as SharePoint. This means that, most of the time, you will need to purchase another solution specific to your granular recovery needs. However, this is not always the case.

Veeam Explorer *for Microsoft SharePoint* is a free tool that gives organizations instant visibility into SharePoint backups with quick search and recovery of individual SharePoint items (for example, documents) or lists (for example, calendar events).

Veeam Explorer *for Microsoft SharePoint* comes with Veeam Backup Free Edition and Veeam Backup & Replication™, which is included Veeam Availability Suite™. That's right, there's no need to purchase a separate product for SharePoint recovery or a license for the main Veeam product. Learn more about Veeam Availability Suite here: http://www.veeam.com/availability.

The features available in the Veeam Explorer *for Microsoft SharePoint* toolset allow you to:

- Browse your SharePoint database directly from a compressed, deduplicated backup or replica
- Use the built-in, full-feature search capability to find specific SharePoint items
- Recover and export documents, lists, libraries and sites without restoring the full database
- Recover directly to the original or a different SharePoint server, send items as email attachments to specific users or simply copy to another location

Veeam Explorer *for Microsoft SharePoint* gives you the vital information you need, so you can be sure the file you're about to restore is the correct file. You can view a document's size, creation date and modification date. You can even open documents to verify that it's exactly what you want.

In most cases, all that's required is a simple right click — there's no need to restore an entire database. This saves you time and avoids complexity, which is great in organizations where multiple teams manage the environment. You can even use this tool to restore from any SharePoint (2010, 2013) database available to you, not just those backed up with Veeam.

The following versions and editions of Microsoft SharePoint Server (virtualized either on VMware or Hyper-V platform) are supported:

- Microsoft SharePoint 2010 Foundation
- Microsoft SharePoint Server 2010 Standard
- Microsoft SharePoint Server 2010 Enterprise
- Microsoft SharePoint 2013 Foundation
- Microsoft SharePoint Server 2013 Standard

- Microsoft SharePoint Server 2013 Enterprise

User interface and working process

The Veeam Explorer *for Microsoft SharePoint* interface mimics Microsoft Explorer's design patterns with browseable and expandable objects on the left and an item listing on the right. This makes the tool very intuitive to use with minimal learning curve, which reduces the need for training. You really don't need to be SharePoint expert to use it!

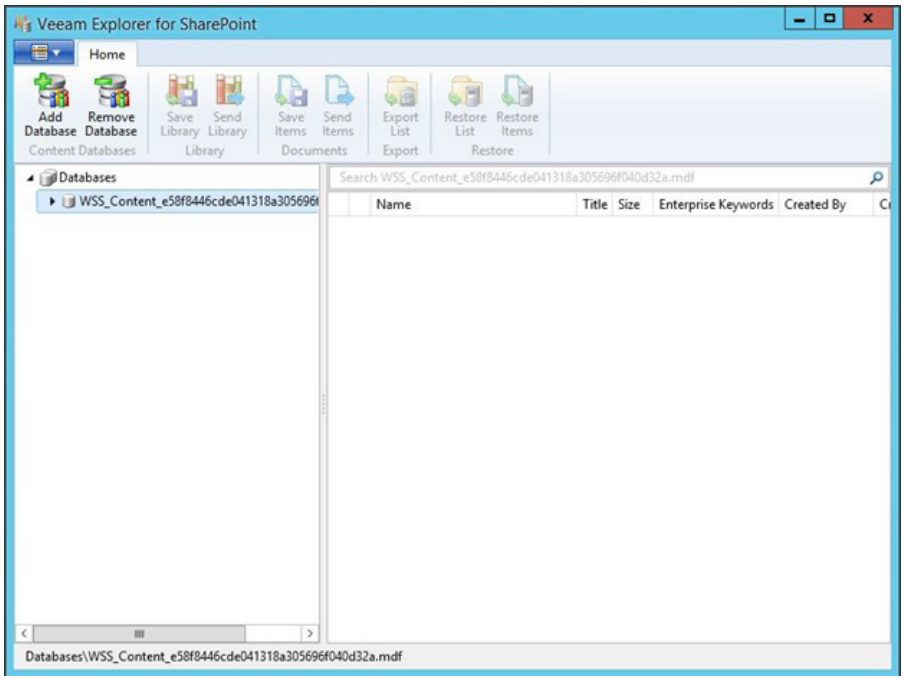


Figure 1 Interface

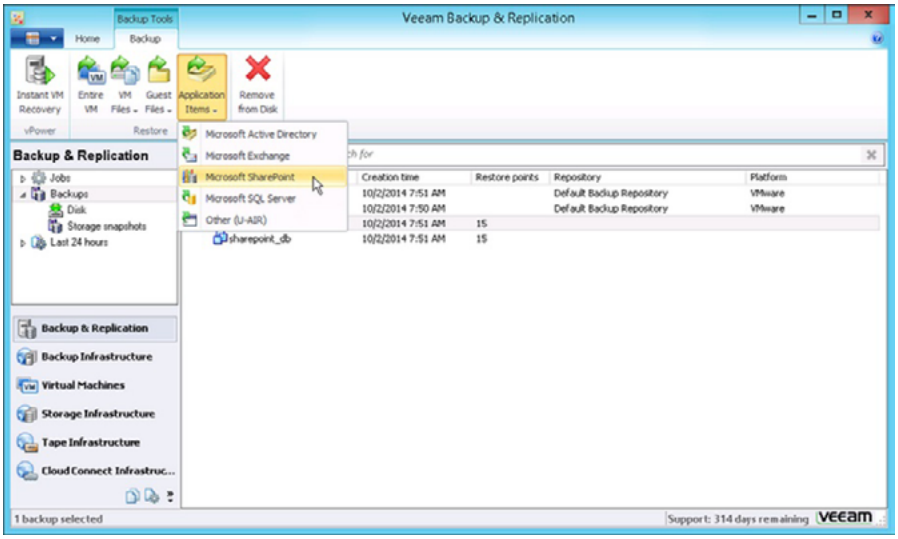
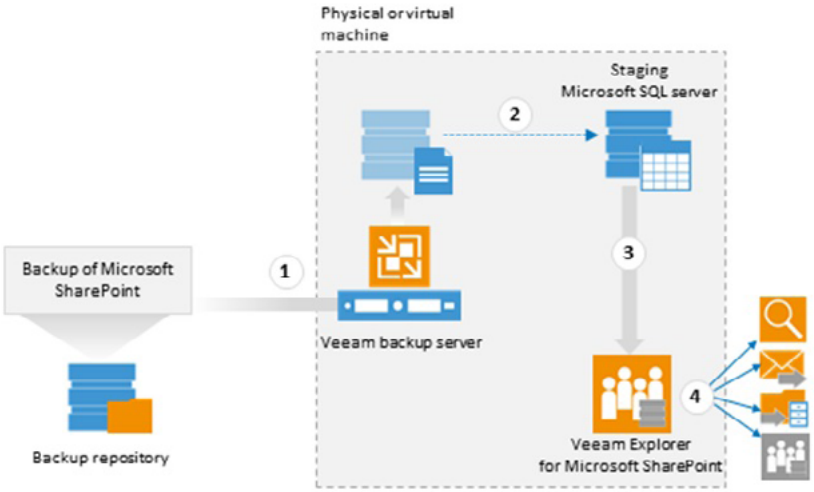


Figure 2 Interface

The basic search and restore procedure of Microsoft SharePoint items with Veeam Explorer *for Microsoft SharePoint* and Veeam Backup & Replication includes the follow-ing steps:



1. The backup administrator uses Veeam Backup & Replication restore options to extract SharePoint content database files (MDF) from the server's backup by mounting it to the Veeam Backup & Replication server.
2. Veeam Explorer f*or Microsoft SharePoint* automatically attaches the content database to a staging Microsoft SQL Server, so SharePoint content (e.g., libraries, webpages, etc.) becomes available for browsing, searching and other operations.

NOTE: *Staging the database for recovery should not take more than five minutes, regardless of size, because Veeam doesn't extract the database itself, but simply reads it and presents it to the server via proprietary NFS emulation.*

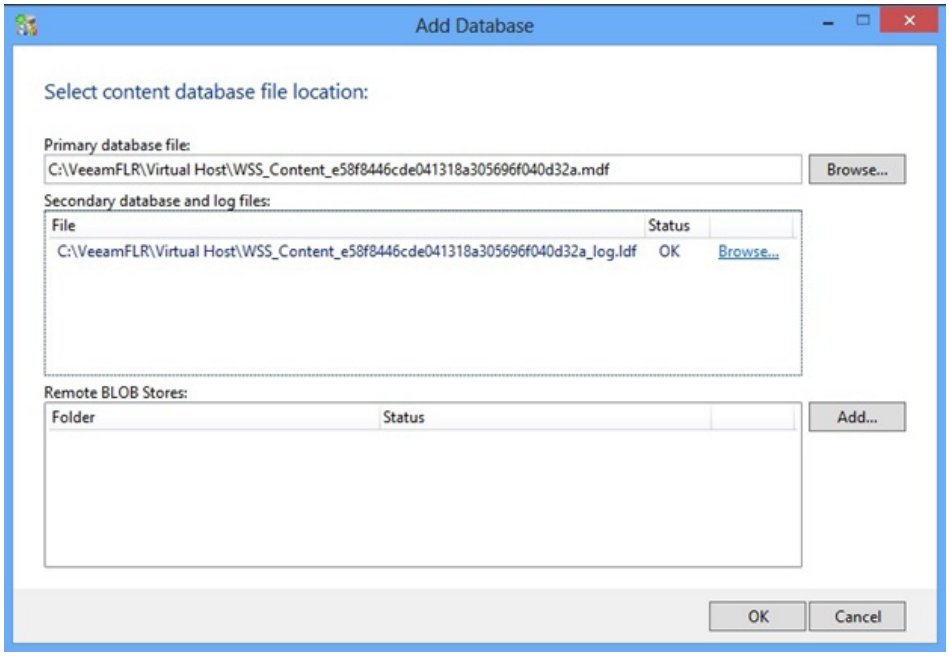


Figure 3 Attach content database

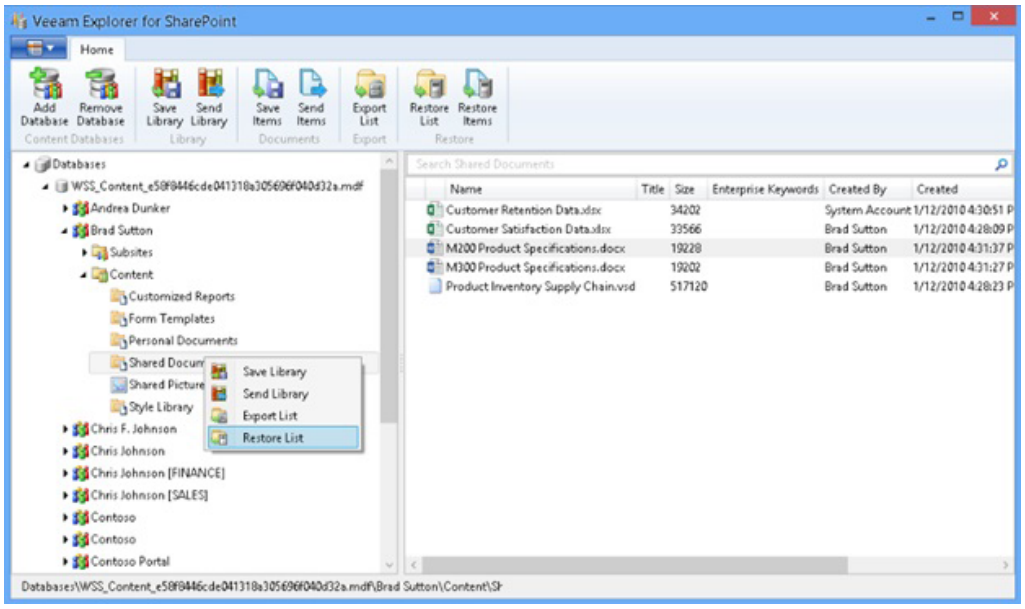


Figure 4 List and library options

3. The Veeam Explorer *for Microsoft SharePoint* user can easily locate and restore SharePoint documents by saving them to selected location, emailing to specified recipients or exporting to XML before restoring to the production system.

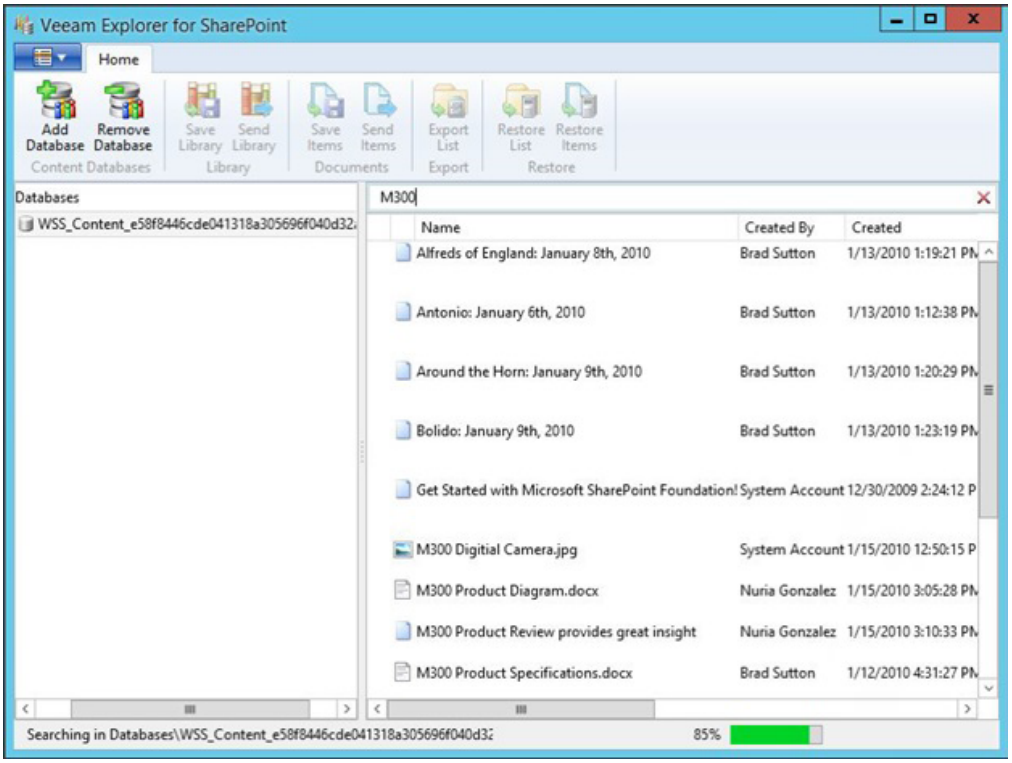


Figure 5 Search for Items

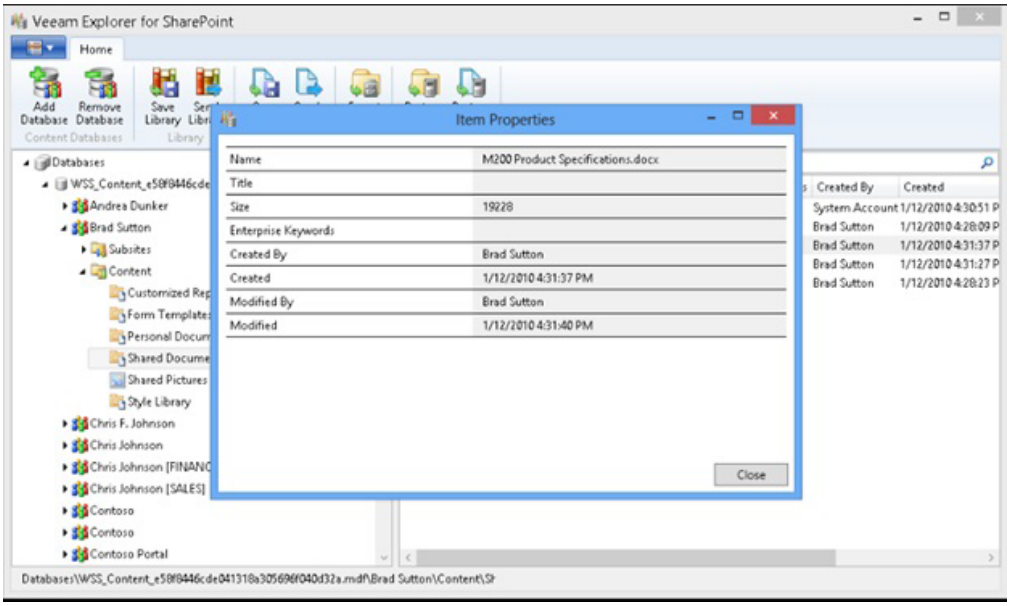


Figure 6 Item properties

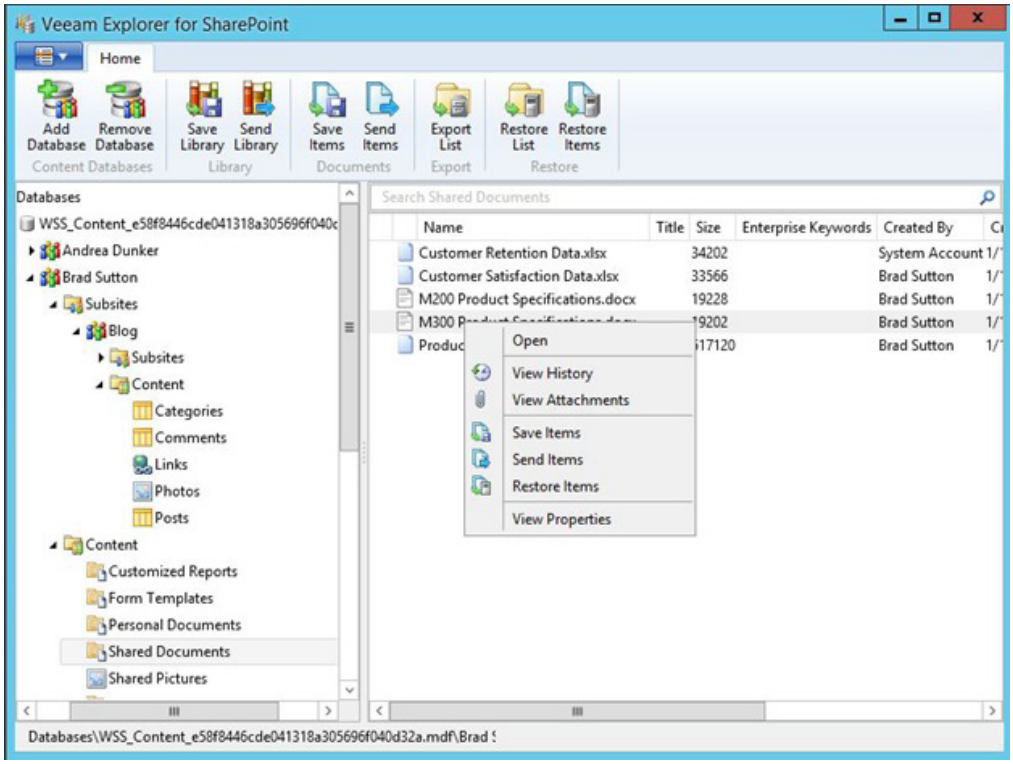


Figure 7 Options for item recovery

4. After a user finishes working with SharePoint content and closes the Veeam Explorer *for Microsoft SharePoint* console, the content database will be detached from the staging Microsoft SQL Server.

Veeam Explorer *for Microsoft SharePoint* does not keep original ownership and access settings for restored documents. Access permissions for the saved document are inherited from the folder where the restored document is copied.

NOTE: *Veeam Backup & Replication v9 will include an updated version of Veeam Explorer for Microsoft SharePoint with new features such as full-site, site collection and list and item permission restores. Additionally, Veeam Explorer for Microsoft SharePoint will support the use of a remote staging SQL Server for restore tasks.*

Want to see more? See the following resources:

- Quick start for developing a SharePoint backup strategy and recovery plan
  http://www.veeam.com/videos/sharepoint-recovery-made-easy-5782.html
- Veeam Explorers Product Guide
  https://www.veeam.com/veeam_backup_8_explorers_pg.pdf

Summary

With today's increasing data center complexity and business users' increasing expectations, it's important that organizations adopt a backup and recovery solution that will enable them to respond to business needs quickly while also utilizing IT resources efficiently. I've outlined the essentials of successful backup and recovery strategies for SharePoint 2013. I explained points of view from different stakeholders in SharePoint environments, related challenges and organizational and technical best practices. I also covered typical use cases and commercial and technical aspects to consider when choosing toolsets that enable efficient farm-level, service-level and item-level recovery. I've explained how Veeam Explorer *for Microsoft SharePoint* is a great toolset that gives organizations instant visibility into SharePoint backups with quick search and recovery of individual SharePoint items. All in all, the described best practices or perhaps steps to follow should enable IT admin to deliver Availability for SharePoint with confidence.

About the Author

Ron Charity is an Enterprise Architect that has worked with SharePoint since 2000. He has international experience working in Canada, the USA, Europe, and Australia. He has both architected solution for enterprises and also managed SharePoint environments for large enterprises providing him with a well-rounded and proven approach. He is focused on designing sustainable environments, applying best practice architecture, and operational disciplines. Currently, he works for software and Services Company and is focused on SharePoint and office 365 based solution. In his spare time, he plays guitar and sings in a top 40 rock band and enjoys riding his Harley Nighster.

About Veeam Software

Veeam® recognizes the new challenges companies across the globe face in enabling the Always-On Business™, a business that must operate 24/7/365. To address this, Veeam has pioneered a new market of *Availability for the Always-On Enterprise*™ by helping organizations meet recovery time and point objectives (RTPO™) of less than 15 minutes for all applications and data, through a fundamentally new kind of solution that delivers high-speed recovery, data loss avoidance, verified protection, leveraged data and complete visibility. Veeam Availability Suite™, which includes Veeam Backup & Replication™, leverages virtualization, storage, and cloud technologies that enable the modern data center to help organizations save time, mitigate risks, and dramatically reduce capital and operational costs.

Founded in 2006, Veeam currently has 34,500 ProPartners and more than 168,000 customers worldwide. Veeam's global headquarters are located in Baar, Switzerland, and the company has offices throughout the world. To learn more, visit http://www.veeam.com.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