Embracing the Cloud: Strategies for Hybrid Microsoft SharePoint Deployments

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Introduction

As organizations worldwide continue to look for ways to stay ahead of a hyper-competitive business landscape, cloud computing is quickly coming to the fore as the de facto way companies quickly adjust to ever-changing requirements. Research firm IDC predicts that the market for public cloud products and services, currently at $10 billion, will grow to $56 billion by 2014. Merrill Lynch postulates that the market will reach $160 billion by 2011.

Gartner Research defines cloud computing as, "A style of computing where scalable and elastic IT-enabled capabilities are delivered as a service to customers using Internet technologies." Gartner also adds that cloud computing applications must be service-based, scalable and elastic, shared, metered by use, and utilizing Internet technologies. The immediate draw to cloud computing is clear – total cost of ownership is vastly reduced, as there is no need for capital expenses for physical servers and other hardware. Less hardware means less space taken up in offices, and less for already overburdened IT administrators to maintain. However, business agility is also a key driver: A recent survey conducted by *InformationWeek* found more than 65 percent of respondents believe that "reacting quicker to business" is an important driver for cloud computing.

Exsiting hosting companies, such as Rackspace and Fpweb.net, began hosting Microsoft Exchange and when Microsoft did not immediately offer a hosted solution for SharePoint, stepped into the void and began offering dedicated SharePoint hosting services as well. Cloud storage offerings have also been coming to market – not just from hosting companies, but also from organizations such as Amazon and EMC. Looking to stay in-step with this burgeoning trend, Microsoft released SharePoint Online, the cloud version of its popular SharePoint Server platform, as part of the Business Productivity Online Suite (now called Microsoft Office 365). Microsoft is now also offering its own cloud storage solutions via Azure for Windows Server and SQL Server.

However, some concerns remain regarding security, reliability, ownership, and existing on-premises technology investments. Organizations not willing to entirely jump entirely into cloud computing yet, but want to start taking advantage of its benefits, can do so with hybrid management. In the coming pages, we will outline the benefits to utilizing SharePoint Online, cloud storage, hybrid management, and the options organizations have for the proper management and governance of their hybrid deployments.

About AvePoint

AvePoint is a global technology company and proven software leader headquartered in the United States. Since its founding in 2001, AvePoint has become the world's largest provider of infrastructure management software solutions for Microsoft SharePoint Products and Technologies. Propelled by the world's largest SharePoint-exclusive research & development team, AvePoint is the premier provider for organizations demanding flexible infrastructure management solutions for their SharePoint environments and assets. AvePoint's award-winning DocAve Software Platform is recognized as the industry standard for comprehensive, scalable, and truly integrated SharePoint backup and recovery, administration, replication, migration, archiving, deployment management, reporting, storage optimization, and content lifecycle management.

AvePoint is headquartered and maintains its principle engineering center in Jersey City, NJ, with wholly owned sales and engineering centers in the USA, Canada, Australia, United Kingdom, Germany, South Africa, Japan, Singapore, and China. AvePoint's global team, fortified by an expansive network of certified partners, helps more than 6,000 enterprise customers – including many Fortune 500 companies and government agencies – to protect, manage, optimize, and integrate their mission-critical SharePoint environments. AvePoint is a Depth Managed Gold Certified Microsoft Partner and GSA provider.

As mentioned earlier, cloud computing applications can vastly reduce total cost of ownership by:

- Utilizing operational budgets rather than their capital counterparts
- Only paying for the level of service actually used
- Save organizations physical space in their office locations
- Reduce the hardware maintenance workload for already overburdened IT administrators

Now, let's take a look at why SharePoint Online was first created, as well as the features it possesses enabling organizations wishing to ramp up on the platform to do so quickly.

SharePoint Online

Designed to enable organizations of all sizes to enjoy collaboration capabilities with team members, knowledge sharing, and a centralized document repository, SharePoint Online comes in two flavors – standard and dedicated. The standard version – which Microsoft recommends for most organizations – is a multi-tenant model, which means that companies will be sharing the same server, whereas the dedicated version is a separate installation on a separate (or dedicated) server for a particular company.

Functional Area	Features
Sites	• RSS Content Syndication • Privacy and security • Audience Targeting • Site and document aggregation • Site Manager • Mobile Device Support • SharePoint sites and Documents Roll up web parts • Integration with SharePoint Designer
Communities	• People and groups lists • Calendars • Email Integration • Task Coordination • Surveys • Document Collaboration • Issue Tracking • Templates
Content	• Document Information Panel • Document Action Bar • Retention and Auditing policies • Navigation Controls • Content Publishing
Search	• Search within a single site collection
Composites	• Forms Libraries • Custom no-code workflows • Centralized forms management and control • Design once development model • Form import wizard • Integrated deployment model for no-code forms • Compatibility Checker

For reasons we will examine in an upcoming section of this paper, it may not be the best choice for an organization to entirely shift all their on-premises SharePoint assets into the cloud. There are some vital features and functionality that Microsoft still plans to only maintain on its on-premises or dedicated hosting version, at least for the time being.

However, many organizations not necessarily looking at SharePoint Online want to incorporate cloud storage as a cost-effective, scalable way to store its ever growing amount of data and information. For the purpose of this paper, cloud storage is managed storage that is multi-tenant and is priced according to used capacity. Benefits include:

1. Reduce IT costs by accessing a lower-cost tier of storage for existing hierarchal storage management investments
2. Shift storage costs from a capital expenditure to an operational expenditure, freeing capital for specific, evolving business requirements
3. Alleviate the load on overburdened IT administrators so they can focus on more strategic projects that will help improve company profitability
4. Replace or supplement tape backups by storing off-site data copies in the cloud
5. Access affordable disaster recovery as data copies stored in the cloud are, by nature, off-site and protected in the event of a local disaster
6. Eliminate the need for separate storage infrastructures because backup data can be consolidated in the cloud
7. Utilize unlimited storage scalability with a pay-as-you-go subscription model for increasing storage capacities as necessary, without growing data center footprints

Before making any final decisions for cloud storage, though, make sure to closely examine the Service Level Agreement put forth by the vendor. Some considerations include:

- Availability? Is it 99 percent or 99.9 percent?
- What is the throughput?
- Does the cloud storage vendor have redundant data centers?
- Is content distribution network (CDM) offered for active content?
- What kind of physical security is offered for the cloud storage vendor's data center, and where is it?
- What is the retention policy for content?
- Does the cloud storage vendor guarantee deletions?
- Do you trust the cloud storage vendor?

Why Hybrid Management?

While SharePoint Online offers the basic necessities organizations would need for basic collaboration and document sharing, there are some limitations to only utilizing the internet-based version. The table below outlines, according to Microsoft functional area, which vital features will still remain on-premises even when SharePoint Online is updated.

Functional Area	Exclusive On-Premises Features
Content	• Integration with Microsoft Information Rights Management • Site variations • Content staging and development • Configure Information Management
Search	• Business Data Search (via Indexing and federated query) • FAST Search • Defining new custom content sources • Crawlilng Business Data Catalog data • Search within a single site collection • Configure crawled file type • Authoritative pages
Insights	• Performance Point Services • Business data web parts • Business data actions
Composites	• Business Connectivity Services • Custom Installed Info Path form templates • External Lists
Other	• Configure blocked file type • Self-service site creation • Custom Managed Paths • Roll up usage analytics

For companies looking to get the full “SharePoint experience”, by deploying more-complex scenarios for application development or enterprise content management, only deploying via the cloud might not be the best option. There are opportunities, however, to reap the benefits of both on-premises and cloud applications through hybrid management.

Hybrid Management Options

Hybrid management can take on many forms and iterations, depending on geographic location, industry vertical, and company size, but for the purposes of this paper, we will discuss two scenarios:

1. Manage SharePoint Online (via Office 365 or other hosting companies) as well as SharePoint Portal Server in-house
2. Maintain an on-premises only deployment of SharePoint, but take advantage of cloud storage

In-house Hybrid Management

For several of the reasons listed earlier regarding features and functionality only available in on-premises versions of SharePoint – including FAST Search, Business Connectivity Services, and Content Staging & Deployment – many organizations may decide to deploy both on-premises and cloud versions of SharePoint. There are two main options for best utilizing hosted SharePoint:

1. Maintain an on-premises staging farm for testing, making changes to content, and users before deploying to the cloud production environment for enhanced scalability. As we previously discussed in this white paper, this option is recommended by Microsoft.
2. Host some of the sites from the production environment on-premises, and some in the cloud. For instance, content that requires managed metadata, or requires infopath forms and custom features, might be hosted on-premises. Meanwhile, sites that organizations plan to utilize for more basic uses such as document repositories or project sites could be online.

Note: This most-appropriate option will be based upon organization-specific information architecture and services requirements. An additional consideration could include where data centers are located. For instance, users in South Africa typically dealing with poor internet connections may have more reliable access to SharePoint if their sites are hosted on-premises, while users in North America or Asia – where country infrastructures are more robust – can access SharePoint via the internet.

When determining how to move existing enterprise content to SharePoint Online, there are a couple of options to consider:

1. Consolidate existing contents (via manual migrations or with the help of third-party tools) into an on-premises SharePoint Server 2010 farm, and then ship the databases to Microsoft for them to incorporate into your Online environment.
2. Enable power users to slowly, manually migrate content they own to the online platform.
3. Utilize a third-party tool to migrate existing contents to SharePoint Online.

Before launching a hybrid environment, however, organizations must first ask themselves a vital question: What do I want to accomplish with SharePoint now that I did not before? Companies cannot successfully architect their SharePoint environment without having a clear business goal in mind. Once that is clearly established, then it is time to decide on site structure and taxonomy necessary to meet that goal. To optimize the manageability of the SharePoint environment, it is recommended to standardize branding with **Site Templates** and **Master Pages**. For more Microsoft recommendations, please visit: http://technet.microsoft.com/en-us/library/cc262873.aspx#section2.

Then, it is time to create a SharePoint architecture for the hybrid environment that has scalability at top-of-mind. Proven practices include:

1. **Build redundancy into production** in order to decrease potential downtime while customizations and application development is in progress.

2. **Maintain a test environment** so administrators can freely experiment with SharePoint in order to maximize its value to the company without fear that the production environment will be negatively affected.
3. **Make all changes in the test environment before propagating to production** in order to improve the stability of the end-user facing farm.
4. **Take a multi-step approach**, including a development farm, testing/quality assurance farm, staging/pre-production farm, and a production farm.
5. **Consider Service Applications**, or even a Shared Services Farm, to expand the possibilities of architecting a multiple-farm environment that best meets the organization's business needs.

If the hybrid SharePoint deployment includes multiple farms, organizations must not forget about proper governance and management of the burgeoning environment. Key administration questions to answer pre-deployment include:

- Who can create – and/or delete – sites and subsites?
- What are the main content types, and what metadata should be required for each?
- Who will manage Term Stores and Content Type Hubs? Who can add terms?
- Who can add content? Is there a review process?
- Who can add users and edit permissions? What are the security groups?

The table below shows how migration and seamless management of online SharePoint environments – including SharePoint Online – is now possible with DocAve:

Challenge	Opportunity with DocAve
Migrate content from various disparate legacy sources onto SharePoint staging farm while maintaining all metadata, customizations, and securities.	***DocAve Migrator*** enables administrators to automate the process of consolidating 14 legacy content sources – including Lotus Notes and EMC Documentum – into SharePoint while retaining all of its associated metadata.
Deploy changes to the production cloud farm once testing has been completed in the on-premises environment.	***DocAve Content Manager for SharePoint Online*** facilitates to co-existence of on-premise and online SharePoint deployments, as well as the transfer of all content, security, and configurations between cloud and on-premises locations.
Ensuring its entire SharePoint environment – including SharePoint Online – meets SLAs for data protection, is managed from one interface, and has the same opportunities for optimization as it did when only deploying an on-premises version.	***DocAve Hybrid Management for SharePoint Online*** offers organizations the ability to ensure their cloud SharePoint deployments enjoy the same level of protection, streamlined management, integration, and optimization as its on-premises counterpart.

Cloud Storage Complementing On-Premises SharePoint Deployments

Earlier, we discussed several benefits companies can realize by utilizing cloud storage as part of their overall hierarchal storage management (HSM) investment strategy. SharePoint deployments primarily rely upon the SQL Server content database to store all data and content, be it structured or unstructured. SQL is meant to handle structured data, such as Excel spreadsheets. Unstructured data includes Word documents, PDFs, audio files, video files, and images – and SQL Server struggles to efficiently store this data.

Consequently, Binary Large Objects (BLOBs) are created when unstructured data is stored in SQL and clogs the server. Keep in mind that SQL Server is the engine that powers the SharePoint machine – if the engine is not running at full speed, then the platform's performance is degraded and will not be able to scale as

quickly as today's business environment demands. This can lead to a decline in user adoption, forcing knowledge workers to go rogue and use local drives and other means by which to conduct business – exactly what organizations were attempting to avoid by deploying SharePoint in the first place.

The first thought among many would be to purchase additional SQL Servers in order to meet the demand for the growing amount of information stored. This is simply a Band-Aid solution to a longer-term problem. SQL is a relatively expensive storage media compared to other HSM investments, and if BLOBs and unstructured data are not properly managed, it will perpetuate an ongoing SQL purchasing cycle.

Organizations are quickly recognizing that cloud storage is a viable outlet to lower the cost of storage. The challenge, however, is ensuring that there is seamless access to this content for use in their on-premises SharePoint environments. Microsoft helped address this issue by providing an External BLOB Store (EBS) API with Microsoft Office SharePoint Server (MOSS) 2007 SP2, which enabled organizations to write a provider which leverages the API to extend the storage of SharePoint BLOBs to other media.

EBS providers can take ownership of BLOBs and move them off to cheaper, more efficient file-based storage while leaving a token or stub in the SQL Server, so SharePoint can retrieve the object if necessary. Users can still access and interact with contents, creating a seamless user experience. One potential problem, though, is that EBS isn't granular – it's only deployable at the farm-level. Consequently, administrators have to deploy any EBS solution on every SharePoint web front end server, limiting the number of EBS providers and organization can leverage to one. Fairly deep knowledge of scripting and coding is required in order to successfully script a provider for the EBS API, and then deploy the provider.

SharePoint Server 2010 improves upon this with the support of the Remote Blob Storage (RBS) API, a SQL-based API. More flexible than EBS, RBS enables storage of all content in a SharePoint Content Database on the file system, or other designated storage location (with metadata retained in the SQL content database). Microsoft made the RBS API more accessible for organizations by also supplying a free provider, SQL FILESTREAM. This provider is easier to enable than custom EBS providers via Powershell commandlets, but limitations with this default provider nonetheless exist. The FILESTREAM provider, as its name suggests, externalizes SQL BLOBs to a file system, but limits users to the file system *locally* attached to the SQL database. Consequently, organizations cannot even utilize a SAN environment, much less a cloud store, as a storage location for BLOBs. To work around this limitation, organizations should evaluate third-party solutions such as DocAve, which use the RBS or EBS APIs in BLOB externalization or archiving solutions.

By utilizing either BLOB externalization or archiving solutions that use Microsoft's BLOB APIs to maintain seamless end-user access and interaction with contents, organizations can turn to the cloud for Tier 1, Tier 2, and/or Tier 3 levels of storage. Basic externalization solutions that simply change the storage location of *all* of the BLOBs to the cloud are, by default, making the cloud a Tier 1 storage solution. While a viable option, it is extremely important that organizations note the pricing model of cloud storage providers. It is a common practice to not only charge for the amount of storage organizations consume, but also for bandwidth usage which comes into play when organizations are accessing, downloading, and uploading contents. This means that heavily downloaded or accessed contents might cause the costs associated with using the cloud as a Tier 1 storage location to dramatically increase.

As an alternative, consider RBS or EBS solutions to create business rules around SharePoint contents and customize storage policies. This way, the cloud can just be part of the hierarchical storage system – storing infrequently accessed archived data, backup files, or compliance archives – to consolidate all of your organizations Tier 2, 3, and compliance storage systems into the cloud. There's an added benefit here of storing backup files and compliance archives in the cloud: Cloud storage providers offer built-in redundancy, so it's guaranteed that the backup files or compliance archives will be available in the event of a local disaster or litigation request.

With DocAve, organizations can rest assured that they can successfully externalize the data and content from their on-premises deployments of SharePoint for BLOBs, backup files, archive files, and even audit logs. DocAve supports numerous storage devices, allowing organizations to take advantage of any network or cloud file shares, including SAN environments, NetApp, EMC, or IBM hardware, as well as cloud storage providers. DocAve will also expose existing network or cloud files through SharePoint without the need for migration into SharePoint. Supported cloud storage systems include Microsoft Azure, Rackspace Cloud Files, Amazon S3, and EMC Atmos. The table below outlines how several solutions on the DocAve Software Platform handle challenges regarding the management and presentation of cloud storage throughout the enterprise.

Challenge	Opportunity with DocAve
Prevent BLOBs from bloating SQL Server content databases, and offload them onto cloud-based storage while still maintaining end-user access to the file as if it still resided in SharePoint.	***DocAve Extender for SharePoint*** automatically routes any unstructured documents, or Binary Large Objects (BLOBs), to cheaper, file- or cloud-based storage without ever entering SQL.
Present and manage legacy file and cloud-based data through SharePoint without migrating it directly into the SQL Server content database.	***DocAve Connector for SharePoint*** presents and manages any documents, audio, or video files via SharePoint without the need for import.
Architect an automated and customizable strategy for alleviating SQL Server of unstructured, stale content via a content lifecycle management regime.	***DocAve Archiver for SharePoint*** offers business-rule aware, item-level archiving capabilities with full content index and search support regardless of file location – tiered on-premises storage or in the cloud.
Fully incorporate all externalized data and content in an enterprise-wide data protection strategy.	***DocAve Backup and Restore for SharePoint*** offers full-fidelity backup and restore of all externalized lists, libraries and items.
Ensure Audit logs and other vital compliance information, while stored in cloud storage, is easily discoverable and accessible in order to comply with regulatory obligations.	***DocAve Vault for SharePoint*** securely stores all records and audit data, and ensures it is easily discoverable regardless of storage location. ***DocAve Auditor for SharePoint*** stores audit logs for all user interactions, security changes, and search queries in cloud-based storage.

Note: For organizations wishing to utilize a third-party hosting vendor, AvePoint's DocAve Software Platform fully supports several hosting vendors, including **Rackspace** and **FPweb.net**. Companies utilizing these vendors can fully utilize the DocAve Software Platform for their multi-tenant SharePoint deployments, including:

Administration	Unify the management of all SharePoint permissions, users, objects, and content from a single interface for multiple SharePoint environments and instances.
Storage Optimization	Keep SQL Server resources optimized with intelligent archiving, real-time binary large object (BLOB) offloading, and migration-free SharePoint connectivity to network and file-share content.
Reporting & Monitoring	Monitor and access all mission-critical analytics regarding SharePoint infrastructure, health, and activity.
Replication & Integration	Enable real-time one-way, two-way, and one-to-many synchronization of SharePoint content and configurations, within or across farms.
Data Protection	Provide granular, item level through platform level backup, and swift, full-fidelity recovery of SharePoint content and architecture.
Regulatory Compliance	Deliver the comprehensive auditing, flexible reporting, and automated lifecycle management necessary to meet all regulatory obligations.
Migration	Companies using prior versions of SharePoint, or a variety of legacy platforms – including Lotus Notes and EMC Documentum – can perform a secure and lossless migration to Microsoft SharePoint Server 2010.

Conclusion

Organizations recognize that cloud computing may very well be the next technological trend they must incorporate into their overall strategies in order to stay competitive in an ever-evolving business landscape. While, on the surface, cloud-based applications offer reduced total cost of ownership and can help companies scale quicker to changing business demands, there are also several drawbacks to an entirely cloud-based model – including security, control, and the robustness of offered features.

Microsoft has taken several steps to enter the cloud computing game – most notably its release of SharePoint Online, a cloud-based option for organizations wishing to utilize the platform for its reputation as an optimal home for a centralized document repository as well as collaboration. However, while it is a viable entry for many organizations, those wishing to get the full features SharePoint offers will still need to incorporate an on-premises environment into their repertoire.

With DocAve, this hybrid management is now made possible. With tools for seamlessly migrating to online SharePoint environments, co-existence and integration of all currently deployed SharePoint environments, and utilizing the cloud as a storage location, organizations can move to the cloud at their own pace – assured that they will still enjoy the same level of protection, management, integration, optimization, and compliance they have with their on-premises deployments.

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