Microsoft SharePoint has become a mission-critical platform for sharing information and delivering improved collaboration to organizations of all sizes throughout the world. Organizations have invested heavily in SharePoint, making it the fastest product in Microsoft’s history to reach $2 billion in annual sales. Four of five Fortune 500 companies reported some use of SharePoint last year, and it will continue to play a significant role for the foreseeable future.

SharePoint’s success has not come without deployment issues and operational complexity. Uncontrolled SharePoint sprawl, silos of data, and improperly deployed server farms have led organizations to question how they use SharePoint and to look for alternatives to inefficient server farms and unrealized potential.

Virtualization and cloud computing is coming into sharp focus as a better way to improve the efficiency of IT spending and increase the value of SharePoint. In this paper, we’ll examine why cloud
computing for SharePoint—both public and private—offers a way to significantly improve the value companies are receiving. Our examination will conclude with a suggested approach to deploying SharePoint in a private cloud using solutions from EMC.

The Challenge of Managing SharePoint in a Physical Farm
SharePoint, currently in its fifth major release, has grown from a simple fileshare replacement in SharePoint 2000 to a rich platform that allows for immense scalability and flexibility. It offers a platform to develop complex, business-focused solutions that improve organizational productivity and information sharing. The underlying architecture has grown from a self-contained set of front-end web servers and back-end databases to a collection of servers that span many services, including search, indexing, analytics, Office Web Apps, Workflow, the front-end presentation layer, SharePoint services, and SQL data stores.

For solution developers, the flexibility and scalability of SharePoint 2013 is breathtaking. SharePoint 2013 introduces a new App Model that lets developers spread business processing across multiple middle tiers hosted in remote data centers. The App Model opens up SharePoint as a repository to interact with third-party solutions using an enhanced Client Side Object Model (CSOM). The solutions you design will be based upon the characteristics of business requirements and the capability of IT staff to monitor and manage the increasingly complex server farm and related systems. The wide array of architecture options has organizations looking for nimble, scalable, and elastic ways to adopt the promise of the SharePoint without slowing down to procure and deploy new dedicated hardware and software farms. These pressures are making companies look to virtualization and cloud alternatives for their SharePoint needs.

Cloud Computing
Cloud computing consists of servers, a software platform, some sort of identity management, and a way to meter usage and bill for it. It generally offers...
service-level agreements and an administrative console to add users, manage the service, and procure additional computing resources. It usually comes with some strings attached, meaning you have to follow certain guidelines and rules set up by the operations team responsible for running the cloud platform to ensure the service can meet its stated service level goals. It also usually involves a great deal of virtualized servers to improve the efficiency and utilization of physical hardware that underlies the cloud service.

A public cloud is hosted by a third party and is accessible to anyone willing to pay for the service. Public cloud offerings generally come in two configurations, multi-tenant and dedicated. A dedicated offering ensures that only your data, application logic and web front sever resides on the hardware associated with your cloud tenant. A multi-tenant share offering shares hardware with many customers. Office 365 from Microsoft is a multi-tenant cloud offering.

All hardware and operations are managed by the public cloud provider and you generally do not have access to the data center hosting the cloud service, or direct access to the operations team. Change requests and support is managed through a service desk that is responsible for assisting you with any design changes or improvements to the underlying cloud service that you may require. A public cloud service can be very attractive because of price, but you must be comfortable having data housed outside of your control and you must be able to balance the needs of the organization against the restrictions placed on you by the public cloud’s operations and support teams.

A private cloud shares many of the characteristics of a public cloud, but the hardware and operations are managed by you. You are in full control of all aspects of the service and responsible for maintaining service-level agreements and data integrity. Many companies with data security concerns or with solutions requiring server-side code are attracted to private cloud offerings.

**The Promise of Cloud Computing with Virtualization**

Cloud Computing that includes virtualization offers simplicity, lower costs, more efficient cost allocation, better elasticity, predictability, and increased
organizational agility. Let’s examine each of these features in more detail.

- **Simplicity**—Cloud computing hides a lot of the complexity underlying the platform from the organizational unit requesting the service. Users simply request new accounts, computing power, or storage space and it is allocated by the cloud platform and billed appropriately. The requesting party does not have to worry about hardware procurement, configuration, or installing upgrades and patches or operating the servers associated with the cloud.

- **Lower cost**—Cloud computing with virtualized servers allows the operations team to tune physical hardware to balance maximum utilization while achieving service-level performance and availability. This lets the operations team look across the physical server farm and spread the load to achieve maximum utilization as the load changes. Organizational units are not tied to a physical set of servers, allowing underutilized resources to be called upon across the entire organization to optimize and maximize IT investment and reduce overall costs.

- **More efficient cost allocation**—Cloud computing offers a way to meter resource usage and efficiently bill users for use of virtual resources within the cloud platform. Users can be charged for just the amount of highly utilized storage, processing, or support that they use. Costs and billing can be spread among all cloud consumers based upon usage and dynamically be adjusted as needed.

- **Better elasticity**—A properly deployed virtualized cloud allows dynamic growth and contraction of resources. The long procurement cycle to increase physical resources is broken while resource contraction frees up the resources for other organizational units to use.

- **Predictability**—Cloud providers offer Service-Level Agreements (SLA’s) that can be achieved regardless of your resource requirements. They offer predictable availability and alert you if a service is unavailable because of a technical problem or a software or hardware update. Public providers will generally offer a contractual money-back guarantee or credit with
their SLA commitments and the commitments will generally include at least 99 percent plus uptime.

- **Increased agility**—A virtualized cloud empowers organizational units to work on productivity solutions rather than infrastructure projects. New applications and faster adoption can be implemented quickly if the cloud provides a stable, elastic platform with predictable costs and service levels.

## Public Cloud Considerations

Cloud computing offers a tremendous opportunity to improve the value that IT delivers and to create a competitive advantage for the organization. However, publicly hosted cloud solutions may not be advisable or even possible for some organizations. In this section, we’ll examine characteristics of a public cloud and offer guidelines to consider when evaluating a public cloud option.

- **Data control and custodial duties**—Public cloud offerings are hosted in data centers that can be located nearly anywhere in the world. By their very nature, public cloud customers don’t have control of how the data is managed or backed up and that is the whole point: Public cloud customers should not worry about how the data is stored, what format it is stored in, and where the backups are kept. If you worry about how your data is stored, the format it is stored in, how it is backed up or if you can trust the cloud provider to meet the SLA’s they promise, then a public cloud offering is probably not for you.

- **Throttled server-side processes**—Public cloud providers are bound to tight SLAs and so they will generally restrict the resources that processes can consume within their virtualized environment. This is especially true in a multi-tenant environment with many clients running applications on virtualized servers within a single physical server. Many public cloud providers offer resource “throttling,” meaning applications are limited to a predefined threshold of resources. Any process that exceeds the threshold will be terminated. This protects their servers from excessive resource
consumption and runaway processes. If you need to run processes that exceed threshold limits set by the public cloud provider, then a public cloud is not for you.

- **Restricted access to the server**—Public cloud providers will generally not allow you to access servers to run application logic unless the logic is executed within a sandbox or similar protected structure. This is especially true in a multi-tenant environment. This is required so that the code you execute on their servers does not interact or hijack any other tenants in the cloud. The sandbox in SharePoint online in Office 365 is very powerful, but it also lacks some important functionality you may need. Additionally, you will not be allowed to run full trust code so you can’t access all of the resources on the servers or hijack another process—and for good reason. If you need to run customized solutions on the server that are not supported within the restrictions of the cloud provider—like the sandbox in SharePoint Online—or if you need to run full trust code, then a public cloud is probably not for you. Microsoft offers some alternatives to remediate the restrictions associated with sandbox solutions by leveraging Azure and ASP.Net and CSOM or JavaScript on the client with CSOM, but this is still in the early phases of release. Not all functionality found on the server is available within CSOM.

- **Restrictions on changing settings with SharePoint services**—A public cloud offering will have a number of setting on services like the frequency of content crawls, the connection size of InfoPath Data Connections, the iFilters associated with the indexer, the size of the files that can be uploaded and the types of files that can be stored within the farm. You need to look closely at the requirements of all the applications the organization needs and ensure that the publicly available cloud offering you are considering meets your needs.

- **Design Change Requests** – Multi-tenant public cloud offerings have to strike a balance between performance and reliability. The operations team responsible for the farms in a multi-tenant environment will likely
be resistant to changes in architecture or settings that you may need since it will ripple through many client tenancies in the shared environment. It may not be easy or even possible to get a design change request approved (DCR) to meet your needs in a public multi-tenant cloud offering.

- **Integration of existing business systems with the publicly hosted cloud offering**—It may be difficult to integrate internal systems with an externally hosted SharePoint farm in a pubic cloud. Processes will need to be developed to push data from the existing applications into SharePoint online. Alternatively, if SharePoint in the cloud is allowed to pull information from legacy systems, the organization must be comfortable allowing an external service hosted in a public cloud to query an internally hosted line of business legacy system. Data will need to be securely transmitted through a firewall via an encrypted internet connection. If your organization is not comfortable exchanging information to a publicly hosted SharePoint solution, than alternatives should be explored.

**A Private Cloud Alternative**

The cloud offers tremendous promise however a public offering, particularly in a multi-tenant configuration, comes with restrictions, default settings, and concerns about data management—all of this is outside of your control. If you are interested in moving to the cloud, but feel you can’t because of data concerns or a lack of support for your requirements, then a private cloud may suit your needs.

A private cloud offers all the capabilities of a public cloud with the added benefit of direct control and management of the servers and data. It puts you in control and lets you set all the policies, procedures and services to meet your business needs. It gives you the ability to realize all of the benefits of the cloud and removes restrictions like throttling and settings outside of your control that prevent you from moving to a publicly hosted alternative.
EMC SharePoint Private Cloud Offering

EMC offers reference architectures and products to build a private cloud that blends advanced storage and operations management with best-in-class offerings. EMC private cloud offerings support in virtualization technology and hypervisors from Microsoft and VMWare. EMC solutions have been tested and built to give you a roadmap that will ensure predictable results for SharePoint deployed within your private cloud. Highlights from the reference architecture and products include:

Solution Overview

- **System Center 2012 SP1**
  - Provides centralized management
  - Windows Server 2012 support

- **ESI Management Packs for SCOM**
  - Monitor health and performance

- **EMC SMI-S provider**
  - Allows SCVMM 2012 SP1 to easily manage and provision EMC storage

- **ESI PowerShell**
  - Allows automated provisioning and allocation of EMC storage with SCO 2012 SP1

- **SCVMM 2012 SP1**
  - Provides simplified and centralized management of both ESCi and Hyper-V

**VNX**

- **Automatic in-tier rebalance**
- **Fast VP policies** for workload co-location
• Simplified storage management and monitoring using VNX and EMC Storage Integrator (ESI) snap-ins for the Microsoft Management Center (MMC) and ESI management pack and/or adaptors
• Easy allocation of additional block or file storage using ESI on VNX and VNX(e) series storage using wizards and an intuitive user interface
• Configurable charge-back and monitoring through Microsoft System Center 2012 based upon users, CPU usage, VM’s, memory or other components of your private cloud.
• Centralized management, operations and reporting on hard disk, CPU and memory health using ESI integration with SCOM.
• Reliable backup and recovery with offerings that include EMC Data Domain, EMC Avamar and/or EMC NetWorker.
• Additional back-up and recovery options using back-up appliances that support recovery of a single file or the entire database.

A private cloud powered by EMC and integrated with best-in-class offerings will help you realize the potential of an elastic and efficient platform to host SharePoint. It offers you all the benefits of the cloud without the restrictions and data concerns of public cloud alternatives.

Conclusion
SharePoint is a mission-critical platform delivering tremendous value to over 125 million users in tens of thousands of organizations. IT leaders are searching for the best way to leverage SharePoint in the most cost efficient and productive way possible. Users are demanding more solutions with predictable service levels and capabilities. Deploying SharePoint in a virtualized cloud offers lower costs, higher productivity, and increased resource utilization.

While SharePoint in a public cloud like Office 365 looks attractive, there may be important reasons like data security, restrictive service settings, integration with existing line-of-business applications, and throttled or restricted server-side code that prevent moving to a publicly hosted cloud deployment of SharePoint.
EMC offers solutions to enable a private cloud for SharePoint that delivers all the benefits of the cloud without the restrictions and concerns of a public cloud offering. Contact your local EMC representative to obtain additional information outlining all of EMC’s SharePoint and Private cloud offerings or follow the links provided below:
www.emc.com/platform/microsoft/microsoft-sharepoint-solutions.htm#!resources
www.emc.com/microsites/cloud/cloud.htm

Top 8 Reasons Why Customers Virtualize SharePoint with EMC

Your business depends on collaboration to be productive and successful
EMC is the strategic partner of choice with our proven, industry leading expertise and solutions across the many critical dimensions of a robust information infrastructure. Our expertise and solutions use leverage the best of EMC, Microsoft and VMware technologies to enable you to confidently manage, protect and optimize a virtualized SharePoint Infrastructure.

You want to ensure flexibility and agility over the long term to respond to changing collaboration and communication requirements
You have seen how SharePoint is becoming integral to your business and also how the application SLAs are evolving. You need to ensure that your infrastructure can respond to changes in both business and IT requirements. EMC offers a range of best practices and infrastructure solutions to help you accelerate deployments; leverage the latest functionality and simplify overall management. EMC’s breadth of storage platforms including VNX, VMAX, and Isilon, plus our integrated offerings like VSPLEX provide cost-effective scalability and performance for any size SharePoint environment.

You want to confidently leverage the benefits of virtualizing SharePoint in a Private Cloud environment
SharePoint Farm sprawl and data growth results in increasing cost and management complexity. EMC can help you eliminate the isolated SharePoint silos with proven solutions for consolidating and virtualizing SharePoint Farms. EMC’s virtualization capabilities span the desktop to the datacenter. EMC also has industry
leading expertise in both Microsoft and VMware technologies and is the recognized leader in SharePoint storage. We have the expertise and solutions to help you transform SharePoint to a virtualized, private cloud environment that works for you and your users.

You want to simplify management and empower your SharePoint and Infrastructure Administrators with more automation and integrated tools
EMC can help you give control and empowerment back to your administrators. EMC’s tools like EMC Storage Integrator (ESI) can help your admins provision and replicate your SharePoint infrastructure quickly and efficiently. EMC’s support and integration with Microsoft System Center helps you to leverage the existing tools and knowledge to manage both physical and virtual infrastructure from single console.

You need to enable the level of recovery that your business and users require – addressing all levels of granularity from item level to datacenter
EMC can help you simplify backup and recovery for SharePoint and all of your Microsoft applications. EMC can help your admins to take backups in a split second, recovery instantly to infinite points—in-time and also recover individual documents, files, databases, servers and datacenters. EMC’s industry leading portfolio including Data Domain, Avamar, and Networker, provide the range of backup and recovery options your business mandates for SharePoint.

It is essential to your business to provide increasing levels of SharePoint data protection
SharePoint is important to how your business collaborates, communicates, and operates. You need to ensure you can restart operations quickly after a disaster or unplanned outage. Your requirements have evolved where you need to provide both local and remote recovery options. EMC’s depth of expertise and replication solutions including RecoverPoint and VPLEX can help you ensure the highest levels of SharePoint Protection.

You need to integrate with your existing document management applications like Documentum
EMC enables you to gain direct access to the Documentum content server natively through the SharePoint interface. My Documentum for Microsoft SharePoint leverages the SharePoint user interface and provides access to document lifecycles, business process management capabilities, subscriptions, and rendition services—all from a familiar SharePoint interface.
You want to confidently upgrade or migrate to the latest SharePoint and Microsoft technologies

With over 10,000 consultants, EMC Global Services organization offers a broad portfolio of strategic consultation, planning, delivery, and support across the SharePoint lifecycle. EMC has helped thousands of SharePoint users migrate and upgrade and virtualize SharePoint... and transform their Microsoft Applications to the Cloud. Additionally, EMC is recognized by Microsoft as Microsoft Search Partner of the Year for 2012.
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