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# Cisco Solution for EMC VSPEX for Deployment of Microsoft SharePoint 2013 on Microsoft Fast Track 3.0

Enabled by Cisco Unified Computing System B200 M3 Blade Servers, Cisco Nexus Switching, Microsoft Windows Server 2012 R2 with Hyper-V, and EMC VNX5500



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# **Executive Summary**

This guide describes how to automate the deployment of Microsoft SharePoint 2013 in a private cloud environment showcasing multitenancy on Microsoft Windows Server 2012 with Hyper-V on a validated Microsoft Private Cloud Fast Track 3.0 infrastructure. It explains the architecture and the tests conducted at the Cisco<sup>®</sup> Competency Lab, providing guidelines to understand the strategy used to deploy SharePoint Server 2013 with multitenancy support on Cisco Unified Computing System<sup>™</sup> (Cisco UCS<sup>®</sup>).

Multitenancy in SharePoint refers to a single instance of software (SharePoint farm) that serves multiple organizations or clients through virtually partitioning of its data and configuration, allowing those clients to work within a customized application instance and independent data spaces (known as site collections).

Microsoft SharePoint Server 2013 provides ideal multitenancy features, such as isolation of data, operational services, and management. This is achieved by data partitioning, usage administration, customization, and operations. An environment made up of several Microsoft SharePoint Server 2013 servers that collectively host the core applications and provide services is called a SharePoint farm. The most used SharePoint 2013 farm topology is one having a three-tiered architecture, in which each SharePoint tier (web, application, and database) is deployed using an independent Windows OS instance (VM) responsible for that tier.

A cloud service implementation on a set of dedicated resources is called a private cloud. The dedicated resources can be either on the consumer premises or co-located with a service provider chosen by the customer. Private clouds can easily provide several benefits as seen in cloud computing, such as self-service, scalability, and elasticity, with an added benefit of control, data security, and customization available from those dedicated resources.

System Center Virtual Machine Manager (SCVMM) is a core tool used to manage private cloud infrastructures, offering a wide range of scalability across virtual environments including Microsoft Hyper-V, Citrix XenServer, and VMware ESXi. SCVMM features support for consolidating physical servers into virtual infrastructures, intelligent placements for virtualized workloads to the best-suited physical host servers, and a library that enables the provisioning of predefined images to be manually or automatically provisioned.

Multitenancy is driven by key features of SharePoint 2013 and takes advantage of tight integration between SCVMM and Cisco Nexus<sup>®</sup> 1000V Switches. Together, these provide a comprehensive and extensible architectural platform for virtual machine and cloud networking. The switches are designed to accelerate server virtualization and multitenant cloud deployments in a secure and operationally transparent manner. It is possible to host multiple department or customer sites within the same infrastructure and farm, helping assure self-sufficiency and tenant isolation in a SharePoint farm. Each tenant has its own set of site collections that it can centrally manage and administer.

### Objective

This guide serves as a reference architecture to illustrate the benefits of using a Cisco, EMC, and Microsoft Fast Track 3.0 infrastructure to automate the deployment of a Microsoft SharePoint 2013 farm while enabling multitenancy to provide a robust, resilient, and efficient infrastructure solution that capable of meeting the needs of the business.

This guide assumes that the user is familiar with Cisco UCS; Cisco Nexus switches; EMC VNX storage; Microsoft SCVMM, specifically using service templates; and related Microsoft SharePoint Server 2013 product technologies.

### Audience

This guide is intended for solution architects, sales engineers, field engineers, and design consultants involved in planning, designing, and deploying Microsoft SharePoint Server 2013 hosted on the Microsoft Hyper-V virtualization solution on the Cisco UCS and EMC VSPEX Proven Infrastructure. It assumes that the reader has an architectural understanding of the base configuration and implementation knowledge of a Microsoft private cloud, Cisco UCS, Microsoft Hyper-V, Microsoft System Center 2012 Suite, Microsoft Office SharePoint 2013 Server, and other related software.

### Purpose of This Guide

VSPEX Proven Infrastructures are optimized for virtualizing critical business applications and provides\ customers the ability to design and implement the virtual resources necessary to deploy Microsoft SharePoint Server 2013 in a virtualized environment.

### Use Case

This paper discusses the aspects of building a SharePoint 2013 farm deployment in private cloud with multitenancy support ,using the core infrastructure of Microsoft Private Cloud Fast Track 3.0.

The scenario considers three fictitious private tenants (Private Tenant 1, Private Tenant 2, and Private Tenant 3), 1000 concurrent users, and 1.5 TB of content database storage.

The infrastructure setup is carried out using the Microsoft suite of products, Cisco UCS, Cisco Nexus switches, and EMC VNX storage:

- Microsoft Windows Server 2012 with Microsoft Hyper-V,
- SCVMM 2012 SP1
- AutoSPInstaller
- Custom Windows PowerShell scripts
- Cisco Nexus 1000V integration with Microsoft SCVMM

Included are recommended hardware and software requirements for running a Microsoft SharePoint Server 2013 farm in **Microsoft Private Cloud Fast Track 3.0.** 

Customers can now rapidly build and deploy robust, high-perfomance SharePoint 2013 collaborative environments by using the key benefits of the Cisco, EMC, and Microsoft Private Cloud Fast Track 3.0 infrastructure solution, enabled with integration and automation support packs.

**Note:** This paper covers SharePoint 2013 farm configuration for a private cloud with multitenancy. The infrastructure-related configuration details of the private cloud are outside the scope of this guide. To configure and install a private cloud infrastructure, see <u>Microsoft Private Cloud Fast Track 3.0 Solution Deployment Guide</u>.

Microsoft's Fast Track 3.0 validated infrastructures use the Microsoft System Center 2012 SP1 suite of products, with which you can manage and automate the deployment and configuration of servers, switches, and storage in private cloud environments. This white paper uses the following Microsoft products for SharePoint Server 2013 in a private cloud, providing support for multitenancy:

System Center Operations Manager (SCOM) with the following supporting management packs:

- Microsoft SharePoint Server 2013
- Cisco UCS
- EMC Storage Integrator (ESI)

Combined, they provide a comprehensive management and monitoring solution that can detect errors or outages across multiple levels of your infrastructure and application platform solution. This capability helps provide visibility into the health, performance, and availability of Cisco, EMC, and Microsoft Fast Track 3.0 infrastructure through a single familiar, easy-to-use interface. The management pack contains rules that monitor the VSPEX infrastructure, such as chassis, blade servers, rack servers, storage, and service profiles, across various domains to centrally monitor the private cloud.

### System Center Virtual Machine Manager (SCVMM)

Microsoft SCVMM is a tool for managing the private cloud infrastructure. In this solution SCVMM integrates with the Cisco Nexus 1000V Switches, providing a comprehensive and extensible architectural platform for virtual machine and cloud networking. The switches are designed to accelerate server virtualization and multitenant cloud deployments in a highly secure and operationally transparent manner. SCVMM does intelligent placements of workload on the best-suited physical host servers and provides a library of functionality that allows the management of predefined images that are ready to be manually or automatically provisioned.

### SharePoint Server 2013 Chargeback

System Center 2012 SP1 service manager offers chargeback reports. However, you can also achieve chargeback, from a SharePoint perspective, based on the number of sites or on total disk space utilization.

With SharePoint multitenancy, it is easier to track the sites that are associated with the different payers, as each site has a unique subscription ID. Therefore, it is easier to query and calculate chargeable metrics by using this ID.

### Architecture

The Cisco and EMC architecture is highly modular. Although each customer's components might vary in their exact configuration, after a Cisco and EMC configuration is built, it can easily be scaled as requirements and demands change. This includes both scaling up (adding additional resources within a Cisco UCS chassis and/or EMC VNX array) and scaling out (adding additional Cisco UCS chassis and/or EMC VNX arrays).

The Cisco UCS solution validated with Microsoft Private Cloud includes EMC VNX5500 storage, Cisco Nexus 5500 Series network switches, the Cisco UCS platforms, and Microsoft virtualization software in a single package (Figure 1). The computing and storage can fit in one data center rack, with networking residing in a separate rack or deployed according to the customer's data center design. Due to port density, the networking components can accommodate multiple configurations of this kind.





The reference configuration shown in Figure 1 contains the following components:

Cisco UCS 5108 Blade Server Chassis, each with eight Cisco UCS B200 M3 Blade Servers, dual Intel<sup>®</sup> E5-2640 2.50-GHz processors, 256-GB memory, and Cisco UCS Virtual Interface Card (VIC) 1240

Two Cisco UCS 2108 Fabric Extenders per chassis Two Cisco UCS 6248UP 48-Port Fabric Interconnects

Two Cisco Nexus 5548UP Switches

10 Gigabit Ethernet (GbE) and 8-Gbps Fibre Channel connections

EMC VNX5500 Unified Platform

115 x 600-GB 15,000-rpm 3.5-inch SAS disks

6 x 200-GB enterprise flash drives (EFDs)

Hot spares:

4 x 300-GB 15,000-rpm 3.5-inch SAS

1 x 200-GB EFD

EMC SnapView

Storage is provided by an EMC VNX5500 storage array with accompanying disk shelves. All systems and fabric links feature redundancy, providing for end-to-end high availability (HA configuration within a single chassis). For server virtualization, the deployment includes Microsoft Hyper-V. Although this is the default base design, each of the components can be scaled flexibly to support specific business requirements. For example, more (or different) blades and chassis could be deployed to increase computing capacity, additional disk shelves or flash disks could

be deployed to improve I/O capacity and throughput, or special hardware or software features could be added to introduce new features.

The remainder of this document provides guidance on the low-level steps of deploying the base architecture, as shown in Figure 1. This includes everything from physical cabling, to computing and storage configuration, to configuring virtualization with Microsoft Windows Server 2012 Hyper-V.

### Software Requirements

Table 1 lists the software requirements for the base architecture.

Table 1.	Software Requirements
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Specification	Supported Version	
SharePoint version	SharePoint Server 2013 Enterprise edition	
System Center	System Center 2012 SP1	
Operating systems	Target virtual machine operating system: Windows Server 2012	
	Hyper-V <sup>®</sup> host operating system: Windows Server 2012 with Hyper-V	
Network	Cisco Nexus 1000V	
SQL Server version	SQL Server 2012 SP1 Enterprise x64	

**Note:** Refer to the <u>Microsoft Private Cloud Fast Track 3.0 Solution Deployment Guide</u> for a detailed list of software requirements.

# Microsoft SharePoint Server 2013

Microsoft SharePoint Server 2013 is an extensible and scalable web-based platform consisting of tools and technologies that support the collaboration and sharing of information within teams, throughout the enterprise, and on the web. The total package is a platform on which one can build business applications to help better store, share, and manage information within an organization. Microsoft SharePoint turns users into participants, allowing users to easily create, share, and connect with information, applications, and people. SharePoint Server 2013 provides all the good features present in the earlier versions of the product, along with several new features and important architectural changes to improve the product.

### **Three-Tier Role-Based Architecture**

The three-tier role-based architecture of a Microsoft SharePoint 2013 farm includes a web server role, application server role, and database server role (Figure 2).

### Web Server Role

The SharePoint web server is responsible for hosting web pages, web services, and web parts that are necessary to process requests served by the farm. Also, the server is responsible for directing requests to the appropriate application server.

### **Application Server Role**

The SharePoint application server is associated with services, where each service represents a separate application service that can potentially reside on a dedicated application server. Services with similar usage and performance characteristics can be grouped on a server. The grouped services can then be scaled out into multiple servers.

### Database Server Role

The SharePoint databases can be categorized broadly by their roles as search database, content database, and service database. In larger environments, SharePoint databases are grouped by role and deployed onto multiple database servers.

All the data, including content, configuration, and metadata, is stored in the SQL server. Not all service applications affect database servers, because only some of them require databases. However, storage access times and storage capacity are key requirements for this role.

In the default configuration, SharePoint 2013 stores data by uploading it to a SharePoint site in a SQL Server database. Since the process of uploading a document to the SQL database is not as efficient as simply storing a file on a file share, optimizing the I/O on the SQL server is very important.



### Figure 2. Three-Tier Architecture

### Search Server

The Microsoft SharePoint 2013 search service offers significant benefits for users but places a large workload burden on the farm. When considering the farm performance, you must consider search performance considered specifically in the context of the farm.

The search comprises the components listed in Table 2.

### Table 2. Search Components

Component	Description
Crawl	Crawls content sources to collect properties and metadata from crawled items and sends this information to the content processing component.
Content processing	Transforms the crawled items and sends them to the index component. This component also maps crawled properties to managed properties and interacts with the analytics processing component.
Analytics processing	Analyzes the crawled items and lets users interact with the search results. The analysis is used to improve the search relevance and to create search reports and recommendations.
Index	Receives processed items from the content processing component and writes them to the search index. This component also handles incoming queries, retrieves information from the search index, and sends back the result set to the query processing component.
Query processing	Analyzes incoming queries, which helps optimize precision, recall, and relevance. The queries are sent to the index component, which returns a set of search results.
Search administration	Runs the system processes for search, and adds and initializes new instances of search components.

To support these new components of search in SharePoint 2013, the databases listed in Table 3 are created.

Table 3.	Databases	That Support Search	
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Database	Description
Crawl	Stores tracking information and details about crawled items such as documents and URLs. It also stores information such as the last crawl time, the last crawl ID, and the type of update (add, update, or delete) during the last crawl.
Link	Stores unprocessed information that is extracted by the content processing component and information about search clicks. The analytics processing component analyzes this information.
Analytics reporting	Stores the results of usage analysis, such as the number of times an item has been viewed. It also stores statistics from the different analyses. These statistics are used to create the usage reports.
Search administration	Stores the settings for the search service application, such as the crawl rules, topology, and query rules, and the mapping between crawled and managed properties.

### Planning and Sizing SharePoint 2013

In the context of SharePoint, the term "farm" is used to describe a collection of one or more SharePoint servers and one or more SQL servers. These servers together provide a set of basic SharePoint services bound together by a single configuration database in SQL.

A farm in SharePoint marks the highest level of SharePoint administrative boundary. Microsoft SharePoint 2013 can be configured as a small, medium, or large farm deployment. The topology service provides you with an almost limitless amount of flexibility, so you can tailor the topology of your farm to meet the specific needs of multiple tenants.

Analyzing the characteristics of the demand that the solution is expected to handle is necessary for proper sizing. You must understand both the workload characteristics, such as the number of users and the number of concurrent users at the peak time, as well as the most frequently used operations and dataset characteristics, such as content size and distribution. The farm used in this solution has the objective to support a multitenant environment and has two web front-end servers, two application servers, and a database server supporting 1000 users concurrently with three tenants (Private Tenant 1, Private Tenant 2, and Private Tenant 3).

Table 4 lists the inputs considered for sizing.

 Table 4.
 Inputs for Sizing a SharePoint Farm

Input	Farm 1
Annual growth rate %	10%
Is the SharePoint web application going to be accessed globally?	Yes
Initial farm size (GB)	1500 GB
Number of users	10,000
Concurrent users at peak (%)	10%
What is the main purpose for the SharePoint web application?	Document management
Farm description	Farm 1
Do you use or intend to use the My Sites function?	No
Do you rely heavily on SharePoint's search function?	Yes
Do you intend to enable FAST VP?	No

Table 5 shows the sizing recommended by the EMC VSPEX sizer tool. Table 6 shows the disk requirements.

Role	Number of VMs	vCPU of RVM	Memory of RVM	OS Volume Cap of RVM	OS Volume IOPS of RVM	Total RVM
Web servers	2	4 vCPUs (4 RVM)	12 GB (6 RVM)	100 GB (1 RVM)	25 IOPS (1 RVM)	12
SQL Server	1	8 vCPUs (8 RVM)	32 GB (16 RVM)	100 GB (1 RVM)	25 IOPS (1 RVM)	16
Application servers (with crawler)	1	12 vCPUs (12 RVM)	12 GB (6 RVM)	100 GB (1 RVM)	25 IOPS (1 RVM)	12
Application servers (query and other service roles)	1	4 vCPUs (4 RVM)	12 GB (6 RVM)	100 GB (1 RVM)	25 IOPS (1 RVM)	6
Total	5					46

### Table 5. Recommended Sizing

### Table 6.Disk Requirements Summary

Pool Name	Disk Type	Disk Size (GB)	Number of Drives	RAID
SP content DB pool	15,000 SAS	300	16	RAID 5 (4+1)
Total			16	

**Note:** Reference virtual machines(RMV)The reference architectures create a pool of resources sufficient to host a target number of reference virtual machines. It is entirely possible that your virtual machines may not exactly match the specifications above. In that case, you can say that a single specific virtual machine is the equivalent of some number of reference virtual machines, and assume that number of virtual machines have been used in the pool.

\*RVM—Refernce Virtual Machine

# Microsoft SharePoint 2013 Farm Architecture

The enterprise deployment design was determined using results from the evaluation deployment based on concurrent users, requests per second, and page response times for different features. The final design incorporates additional Cisco UCS servers, Cisco Nexus switches, and EMC VNX 5500 storage end-to-end solution components. This solution (Figure 3) comprises four Cisco UCS B200 M3 servers running on Windows Server 2012 with Hyper-V. All SharePoint servers (web server, application server, and SQL Server) are deployed on it as virtual machines.





We used the <u>VSPEX sizing tool</u> for SharePoint Server 2013 to determine the number of server roles, the computing resources, and the recommended storage layout.

### **Physical Host**

For the purposes of this study, we configured two Cisco UCS B200 M3 servers to host a SharePoint host server environment (Table 7). However, expansion of the physical servers is possible due to the design of the Fast Track architecture. Scaling up is just a matter of adding servers.

Table 7.	Physical Host Servers
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Vendor	Name	Version	Description	Quantity
Cisco	UCS B200 M3	2.1 (1b)	Blade server	2

### SharePoint 2013 Farm

Table 8 shows the virtual machines used for this study and their configurations.

Role	Number of VMs	vCPUs	Memory	OS Volume
Web servers	2	4 vCPUs	12 GB	50 GB
SQL Server	1	8 vCPUs	32 GB	50 GB
Application servers (with crawler)	1	12 vCPUs	12 GB	50 GB
Application servers (query and other service roles)	1	4 vCPUs	12 GB	50 GB

# **Storage Configuration**

When planning for content storage on SharePoint 2013, you must choose a suitable storage architecture. SharePoint 2013 content storage has a significant dependency on the underlying database; therefore, database and SQL Server requirements will drive the storage choices.

Figures 4 and 5 show the cluster shared volumes (CSVs) created for SharePoint 2013 application workload, which are in addition to the existing volumes in the infrastructure of Private Cloud Fast Track 3.0.





SharePoint database storage is provisioned on separate drives for databases and logs. Disks are configured with RAID 5 and RAID 10. Databases (.mdf) files are hosted on RAID 5 and (.ldf) on RAID 10. SharePoint application server (search) index files are provisioned on a separate drive on RAID 10.

#### Figure 5. List of CSVs

📲 Failover Cluster Manager	Disks (5)				Actions	
<ul> <li>F3-InfraClus.VSPEX.com</li> <li>Roles</li> </ul>	Search		R	Queries 🕶 🔛 💌	Disks	
⊿ 🎒 Nodes	Name	Status	Assigned To 👻	Owner Node	🔮 Add Disk	
F3-HyperV3	🚑 Cluster Disk 1	Online	Disk Witness in Quorum	F3-HyperV4	🏥 Move Available Storage	
F3-HyperV4 ⊿ 📇 Storage	Cluster Disk -DataStore	Online	Cluster Shared Volume	F3-HyperV4	View	
2 Corage	Cluster Disk -DB	🕥 Online	Cluster Shared Volume	F3-HyperV4	G Refresh	
Pools	Cluster Disk -DBLOG	Online	Cluster Shared Volume	F3-HyperV4	R Help	-
A Petworks	Cluster Disk -SearchComponents	Online	Cluster Shared Volume	F3-HyperV4		
CSV					Cluster Disk -DB	<b>.</b>
LiveMigration	< ш			>	Bring Online	
VMAcessInternal	51%m				Take Offline	
B Cluster Events	V Rouster Disk -DB			🚯 Information Details	_	
				3	Show Critical Events	
	Volumes (1)				Move	-
	DB (C:\ClusterStorage\Vol	ume1)			More Actions	
	CSVFS 1.5 TB free of 1.5	TB			Remove from Cluster Shared Volu	-
						<u></u>
					Properties	
					🛛 🕜 Help	_

SharePoint 2013 database and index files are configured on different drives for performance. Refer to Table 9. The SQL database is configured on Volume 3, and the underlying disks are configured with RAID 5.

SQL logs are configured on Volume 1, and the underlying disks are configured with RAID 10 .

Application server search and log files are configured on Volume 2, and the underlying disk are configured with RAID 10.

Table 9.	Configuration of Database and Index Files

SharePoint Server Role	Volume Name	Volume Size	VHDX File Path	RAID Type
Application -1	Search Components	200 GB	C:\CSV\Volume 1	RAID 10
Application-2	Search Components	200 GB	C:\CSV\Volume 1	RAID 10
SQL Server	Content Database	1.5 TB	C:\CSV\Volume 3	RAID 5
	Log files	500 GB	C:\CSV\Volume 2	RAID 10

### **Disk Requirements Summary**

Table 10 summarizes the disk type, disk size, and number of disks required with the RAID configuration for this SharePoint setup.

Table 10.         Disk Requirements
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Pool Name	Disk Type	Disk Size (GB)	Number of drives	RAID
SP content DB pool	15,000 SAS	300	16	RAID 5 (4+1)
Total			16	

Use the VSPEX sizing tool to determine the recommended VSPEX Proven Infrastructure for your virtualized SharePoint 2013 solution. For more information about the VSPEX sizing tool, refer to the <u>VSPEX sizing tool on the</u> <u>EMC VSPEX Sizing Portal</u>.

**Note:** Refer <u>Microsoft Private Cloud Fast Track 3.0 Solution</u> for the storage configuration (RAID configuration, storage pools, storage group, and create LUN).

Networking Considerations When Providing Multitenancy for SharePoint Server 2013

SharePoint 2013 applications follow a three-tiered functional model, consisting of web, application, and database tiers. Servers in the web tier provide the public-facing front-end presentation services for the application, while servers in the application and database tiers function as the middleware and back-end processing components. Due to this functional split, servers in the web tier are typically considered to be likely targets of malicious attacks, with the level of vulnerability increasing in proportion to the scope of the user community. Several methods exist for separation of application tiers:

- Network-centric method. This method involves the use of VLANs within the Layer 2 domain to logically separate each tier of servers.
- Server-centric method. This method relies on the use of separate VM virtual network interface cards (vNICs) to daisy-chain the server tiers together.

To support multitenancy while providing the same degree of tenant isolation as a dedicated infrastructure, the architecture uses path isolation techniques to logically divide a shared infrastructure into multiple (per-tenant) virtual networks. These rely on both data path and device virtualization, implemented in end-to-end fashion across the multiple hierarchical layers of the infrastructure and include the following:

**Network Layer 2 separation (access, virtual access):** VLAN IDs and the 802.1Q tag provide isolation and identification of tenant traffic across the Layer 2 domain and, more generally, across shared links throughout the infrastructure.

Traditionally, security policies were implemented at the physical server level. However, server virtualization and mobility introduce new security challenges and concerns; to meet these challenges, policy must be implemented at the virtual machine level and be capable of following virtual machines as they move from host to host.

Separation of per-tenant traffic in the computing layer of the infrastructure uses the following technologies:

- vNICs: In the highly virtualized data center, separation of traffic is accomplished via the use of multiple vNICs, rather than physical NICs. For example, multiple vNICs are used to logically separate production (data) traffic from back-end management traffic. This is accomplished with the Cisco UCS Virtual Interface Card (in this case, the 1240 VIC), which allows the creation of virtual adapters mapped to unique virtual machines.
- VLANs: VLANs provide logical isolation across the Layer 2 domain, including the Nexus 1000V virtual access switching domain within the computing tier of the infrastructure.
- Port profiles: When combined with Cisco's VN-Link technology, port profiles provide a means of applying tenant traffic isolation and security policy at the VLAN and virtual machine (vNIC) level of granularity.
   Implemented at the virtual access switching domain, these map to System Center Virtual Machine Manager port groups, and thus provide policy mobility through live migration events.

### Nexus 1000V Configuration

This section describes how to configure the Cisco Nexus 1000V Switch for Microsoft Hyper-V in this solution.

- Virtual supervisor module configuration
- SCVMM configuration

**Note:** For information on installing and configuring the Nexus 1000V and SCVMM, refer to the <u>Microsoft Private</u> <u>Cloud Fast Track 3.0 Solution</u>

Table 11 lists the constructs that Microsoft SCVMM 2012 SP1 introduces to model and configure the networks on the Hyper-V server.

Constructs	Description
Logical network	A logical network (for example, Internet, intranet, DMZ) is a connectivity abstraction that models separate networks managed by an enterprise. Logical network abstraction hides VLANs and IP subnets from users (VM network administrators, the tenant administrators, and the server administrators), except for the fabric administrator managing the physical fabric.
	In other words, a logical network is composed of one or more network segment pools; each network segment pool is a group of VLANS, IP subnets, or VLAN/IP subnet pairs.
Network segment pool	A network segment is associated with a unique broadcast domain and facilitates the availability of the network resources to a VM. SCVMM uses the VM networks and VM subnets to provide the isolated virtual machine networks.
	When a Nexus 1000V manages the virtual network, the VMM administrator creates the VM networks that use external isolation. To create external isolation, the network administrator creates network segments on the Nexus 1000V and provisions the isolated networks using VLANs and private VLANs.
IP pool template	Server administrators can manage IP addresses for the virtual environment using IP pool templates. You can use the IP pool templates to assign a range of IP addresses to hosts and VMs in the Microsoft SCVMM-managed environment. When creating an IP pool template for a VM network, you can define a range of IP addresses for VMs managed by SCVMM.
Network segment	Each network segment is a member of the network segment pools. A network segment has an access port with an access VLAN. You must publish each network segment.
Port profile	Unlike the Nexus 1000V for ESX, in which a port profile identifies both network policy and network isolation (VLAN), SCVMM networking decouples this information into a VM network and the port classification. When the Nexus 1000V is used with Hyper-V, the network administrator creates network segments to isolate networks. The SCVMM server administrator uses network segments in the resulting VM networks. The network administrator creates port profiles to define port policy. The server administrator uses port profiles to create a port classification. To deploy a VM to the virtual access layer, choose the port classification, VM network, and VM subnet. When a VM is deployed, a port profile is dynamically created on the Nexus 1000V for each unique combination of port classification, VM network, and VM subnet. All other VMs deployed with the same policy to this network reuse the dynamic port profile, which is a combination of network isolation and network policy.
	When a port-attach notification is received, the port profile globally unique identifier (GUID) and network segment GUID are generated. A GUID provides a unique reference for the port profile and the network segment.
	When a GUID is generated, a new port profile, combining the port profile and the VLAN, is created on the virtual supervisor module (VSM). This auto-created port profile is inherited on the interface. If more than one port uses the same combination of port profile and network segment, the port profile is shared. Port profiles are dynamically created during the interface attach process.
Network uplink	An uplink port profile is essentially a template that defines a list of network segment pools to be associated with any (physical) network adapters to which the uplink port profile is applied. An uplink port profile enables you to specify protocols and port policy for the uplink adapter, using an Ethernet port profile to be specified.

Table 11. Constructs for Modeling and Configuring Networks on Hyper-V Server

We have implemented the scenario shown in Figure 6 to achieve multitenancy at the network side for SharePoint 2013 tenants.

The instructions given in Table 12 show how to add additional virtual Ethernet modules (VEMs), logical networks, network segment pools, virtual Ethernet port profile, Ethernet port profile, and network uplink.

Three private tenants' logical networks were created, and three private network segment pools were created (PT1, PT2, and PT3). The three private network segment pools were each configured as an individual member of the three private tenant logical networks.



### Figure 6. Multitenancy Scenario for SharePoint 2013 Tenants

Table 12. Steps for Configuring the Cisco Nexus 1000V Switch for Microsoft Hyper-V

Step	Configuration	Commands
1	Logical network	nsm logical network PrivateTenant1
		nsm logical network PrivateTenant2
		nsm logical network PrivateTenant3
2	Network segment pool	nsm network segment pool PT1
		nsm network segment pool PT2
		nsm network segment pool PT3
		nsm network segment pool PT1
		member-of logical network PrivateTenant1
		nsm network segment pool PT2
		member-of logical network PrivateTenant2
		nsm network segment pool PT3
		member-of logical network PrivateTenant3

Step	Configuration	Commands
3	IP pool template	nsm ip pool template PT1-VL2013-IP-Pool
		ip address 200.1.3.2 200.1.3.250
		network 200.1.3.0 255.255.255.0
		default-router 200.1.3.253
		nsm ip pool template PT1-VL2014-IP-Pool
		ip address 200.1.4.2 200.1.4.250
		network 200.1.4.0 255.255.255.0
		default-router 200.1.4.253
		nsm ip pool template PT2-VL2023-IP-Pool
		ip address 200.2.3.2 200.2.3.250
		network 200.2.3.0 255.255.255.0
		default-router 200.2.3.253
		nsm ip pool template PT2-VL2024-IP-Pool
		ip address 200.2.4.2 200.2.4.250
		network 200.2.4.0 255.255.255.0
		default-router 200.2.4.253
		nsm ip pool template PT3-VL2033-IP-Pool
		ip address 200.3.3.2 200.3.3.250
		network 200.3.3.0 255.255.255.0
		default-router 200.3.3.253
		nsm ip pool template PT3-VL2034-IP-Pool
		ip address 200.3.4.2 200.3.4.250
		network 200.3.4.0 255.255.255.0
		default-router 200.3.4.253

4		
	Network segment	nsm network segment PT1-NetworkSegment2013
		member-of vmnetwork PT1-NetworkSegment2013
		member-of network segment pool PT1
		switchport access vlan 2013
		ip pool import template PT1-VL2013-IP-Pool
		publish network segment
		switchport mode access
		nsm network segment PTI-NetworkSegment2014
		member-of network segment pool PT1
		switchport access vlan 2014
		ip pool import template PT1-VL2014-IP-Pool
		publish network segment
		switchport mode access
		nsm network segment PT2-NetworkSegment2023
		member-of network segment pool PT2
		switchport access vlan 2023
		ip pool import template PT2-VL2023-IP-Pool
		publish network segment
		switchport mode access
		nsm network segment PT2-NetworkSegment2024
		member-of network segment pool PT2
		switchport access vlan 2024
		ip pool import template PT2-VL2024-IP-Pool
		publish network segment
		switchport mode access
		nsm network segment PT3-NetworkSegment2033
		member-of network segment pool PT3
		switchport access vlan 2033
		ip pool import template PT3-VL2033-IP-Pool
		publish network segment
		switchport mode access
		nsm network segment PT3-NetworkSegment2034
		member-of network segment pool PT3
		switchport access vlan 2034
		ip pool import template PT3-VL2034-IP-Pool
		publish network segment
		switchport mode access
5	Virtual Ethernet port profile	publish port-profile
		port-profile type vethernet PT1-PortProfile
		no shutdown
		state enabled
		publish port-profile
		port-profile type vethernet PT2-PortProfile
		no shutdown
		state enabled
		publish port-profile
		port-profile type vethernet PT3-PortProfile
		no shutdown
		state enabled
		publish port-profile

Step	Configuration	Commands
6	Ethernet port profile	<pre>port-profile type ethernet nlkv_uplink_network_603_VSM-N1K channel-group auto mode on mac-pinning no shutdown max-ports 512 state enabled nsm network uplink NexusUplinknlkv_uplink_network_603_VSM-N1K import port-profile nlkv_uplink_network_policy_VSM-N1K allow network segment pool PT1 allow network segment pool PT2 allow network segment pool PT3</pre>
7	Network uplink	<pre>port-profile type ethernet nlkv_uplink_network_policy_VSM-N1K inherit port-profile nlkv_uplink_network_policy_VSM-N1K switchport mode trunk switchport trunk allowed vlan 101-103,603,2013-2014,2023-2024,2033-2034, 200-203 no shutdown max-ports 512 description NSM created profile. Do not delete state enabled</pre>

# **SCVMM Configuration**

Table 13 describes how to integrate the Nexus 1000V switch (VSM and VEMs) with Hyper-V through SCVMM. To install the VSM, refer to <u>Cisco Microsoft Private Cloud Fast Track 3.0 Deployment Guide</u>.

Table 13.	Integrating the Nexus 1000V with Hyper-\
Table 13.	integrating the Nexus 1000v with Hyper-

Create	e Logical Switch in SCVMM	
Step	Configuration	Details
1	<ul> <li>Create logical switch in SCVMM.</li> <li>After the VSM is installed, do the following: <ol> <li>Create a logical switch in SCVMM using VSM information.</li> <li>Define extensions and port profiles for the logical switch.</li> <li>Create classifications containing the native port profile and a port profile for each extension.</li> <li>Right-click Logical Switch and select Create Logical Switch.</li> </ol> </li> </ul>	Addministrator - FT-SCVMM.VSPEX.com - Virtual Machine Manager (Evaluation Version - 170 days re  Home Fabric Create Add Show Virtual Machines Fabric View Dependent Remove Properties Fabric Fabri



Creat	Create Logical Switch in SCVMM					
Step	Configuration	Details				
4	Check the previously configured VSM (n1kv_VSM-N1K) and click <b>Next.</b> The VSM has the following attributes: Extension type: Forwarding Extension Manager: Cisco Nexus 1000V Chassis Only one virtual switch extension can be selected.	General       Choose the extensions you want to use with this logical switch         Select the check box for each extension that you want installed and configured when an instance logical switch is created on a host. Only one forwarding extension can be selected.         Uplink       Virtual switch extensions:         Wirtual Port       Microsoft Windows Filtering N/A         Microsoft Windows Filtering Platform       Cisco Nexus 1000V Chassis	e of the tove Up we Down			
5	Select <b>Team</b> in the uplink mode field and click <b>Add</b> to add the uplink port profile.					
6	Select the uplink port profile and click <b>OK</b> . Confirm the uplink port profile settings and click <b>Next</b> . The host group <b>SP Host Group</b> is created in Hyper-V. The network sites PT1, PT2, and PT3 were created during Nexus 1000V command-line interface (CLI) configuration.	NexusUplinkn1kv All Hosts PT1, PT2, PT3, T1, T Faise	X switch is. Edit temove			

Step	Configuration	Details				
,	Specify the port classifications and click <b>Next.</b>	10971	n1kv_VS	M-N1K Properti	es	
	Port classifications must be created in SCVMM and linked to port profiles created in the VSM. One port classification per port profile was created. When adding VMs to the logical	General Extensions Uplink	Specify the port classific The port classifications configur virtual machines. Virtual ports:	red here will be avai	lable for use by virtual network	adapters in a host or
	switch, select the port classification and VM	Virtual Port	Port Classification		Marked For Deletion	Add
	network when configuring network adapters		Management Fabric	197.1	False	Edit
			PT1-PortProfile		False	Remove
			PT2-PortProfile		False	
		Contraction of the	PT3-PortProfile		False	Set Defau
			T1-PortProfile		False	
		36	T2-PortProfile T3-PortProfile		False False	Clear Defau
		View Script			Activate W	OK Cancel



Step	Configuration	Details			
	Right-click VM Network and select Create	Home Folder			,
	VM Network.	Create Create Virtual Create Service Create Virtual Create Cloud Create	reate Host Create VM Group Network Cloud Cloud	Overview VMs Services VM Show	PowerShell     Jobs     PRO     Window
		VMs and Services	< VM Networks and IF		
		🐝 Tenants 👄 Clouds	Name	Subnet	Available Addresse
		J. VM Networks	Create VM Network	No results matching your search	were found
		VMs and Services			
		🚆 Library			
		📋 Jobs			
		Settings			
	Create the VM network name and select the	6	Create VM	A Network Wizard	
	logical network. Select the network segment.	S. Name			And the
	For example:	Name	Specify a name and desi	cription for the VM network	
	Name: PT-VL2013 Logical Network:	Notation			
	n1kv_logical_network_VDM-N1K	Summary	Name PT1-VL2013 Description		
			Logical network: nTkx_logical,	network VSM-N1K	
			reden conner [liste'sdow)	options and the second s	
				Рземіся	Nest Cancel
	Confirm the VM network settings.		Cicate VM	Previo 1 Network Wigard	Next Cancel
	Confirm the VM network settings.	- isolation	Coato VIJ		Nest Cancel
	Confirm the VM network settings.	isolation	Configure the isolation fr		
	Confirm the VM network settings.			f Network Wizard	
	Confirm the VM network settings.	lane	Configure the isolation fr configured for you () Automatic	I Network Wizard or this VIA network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation for configured for you	I Network Wizard or this VIA network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia © Satoly an estenally spoted	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	
	Confirm the VM network settings.	Name Solation	Configure the isolation fr configured for you O Ackendia I Specify an extensity suppled Extensit VM network	I Network Wizard or this VM network, or select	automatic to have it







# SharePoint 2013 Private Cloud Deployment

# Prepare Your Environment

The service template model helps IT administrators automate deployment of SharePoint Server 2013 Enterprise on Windows Server 2012 in a three-tier configuration. You also can easily extend the service template to automate more advanced deployment scenarios if required in your environment. This section focuses on how to prepare your environment to use a service template.

# Create User Accounts for SharePoint 2013

The service template for SharePoint 2013 Enterprise can potentially take advantage of service accounts for the installation of SharePoint. These are defined in the provided AutoSPInstaller .xml example file that the AutoSPInstaller script uses. (AutoSPInstaller is discussed in a later section.) For details on service account requirements, see <u>Plan for administrative and service accounts in SharePoint 2013</u>.

This service template package uses the user accounts shown in Figure 7. Figure 8 shows the example AutoSPInstaller script, and Figure 9 shows the system responses to the script.

### Figure 7. User Accounts



### Figure 8. Script Example

📕 addSPusers - Notepad	
File Edit Format View Help	
Set-ExecutionPolicy bypass -f dsadd user "cn=spadmin,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd dsadd user "cn=spcachereader,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd dsadd user "cn=spcacheuser,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd dsadd user "cn=spfarm,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd dsadd user "cn=spprofile,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd dsadd user "cn=spseroine,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd dsadd user "cn=spseroine,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd dsadd user "cn=spservie,ou=SharePoint2013,dc=VSPEX,dc=com"-disabled no -pwd	
	-

### Figure 9. System Responses from Windows PowerShell

Z Administrator: Windows PowerShell	_ 🗆 ×
Vindows PowerShell Copyright (C> 2009 Microsoft Corporation. All rights reserved.	
PS C:\Users\Administrator> C:\Users\Administrator\Desktop\addSPusers.ps: dsadd succeeded:cn=spadmin,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spcacheuser,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spcacheuser,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spfarm,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spprofile,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spsearch,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spsearch,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spservie,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spservie,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=spservie,ou=SharePoint2013,dc=USPEX,dc=com dsadd succeeded:cn=installer,ou=SharePoint2013,dc=USPEX,dc=com PS C:\Users\Administrator>	
•	

Prepare the VHDX for the Service Template (SQL Tier) Use the following information to complete this step.

### Prepare the Base Virtual Hard Disk

### To prepare the base virtual hard disk (VHDX)

Install the operating system: Create a base VHDX using the Windows 2012 operating system. For more
information on creating a virtual machine on a blank VHDX, see the Microsoft article <u>How to Create and
Deploy a Virtual Machine from a Blank Virtual Hard Disk</u>.

**Note:** Do not use SysPrep on the operating system at this point. The SysPrep requirement is detailed later in this section.

### Install SQL Server 2012 SP1

### To download and stage SQL Server 2012 SP1

- On the download page for Microsoft SQL Server 2012 Service Pack 1 (SP1), in the list under Files in this download, select the download link for SQLServer2012SP1-FullSlipstream-ENU-x64.iso.
   Use the following information to install SQL Server 2012 SP1 onto the base VHDX image you just created:
  - Install SQL Server 2012 on base VHDX: To do so, see the Microsoft article Install SQL Server 2012
     Using SysPrep. Follow the instructions in the Prepare Image section.

**Note:** Do not use SysPrep on the operating system at this point. The SysPrep requirement is detailed later in this section.

SQL Server 2012 SP1 media is accessed during the service template customization of SQL. This media must be located on a local drive on the SQL Server VM that is accessible by the service template execution account (Figure 10).



	~	Name	Date modified	Type	Size
T Favorites	-	Name	Datemouned	туре	DIZE
🛄 Desktop		퉬 1033_ENU_LP	9/14/2013 1:33 PM	File folder	
📕 Downloads		퉬 boxstub_sql	9/14/2013 1:33 PM	File folder	
🖳 Recent places		PCUSOURCE	9/14/2013 1:33 PM	File folder	
		퉬 redist	9/14/2013 1:33 PM	File folder	
🗃 Libraries		🎍 resources	10/24/2012 8:51 AM	File folder	
Documents	≡	🍌 StreamInsight	9/14/2013 1:33 PM	File folder	
al Music		🍌 Tools	9/14/2013 1:33 PM	File folder	
Pictures		🍌 x64	9/14/2013 1:34 PM	File folder	
📑 Videos		autorun 👔	2/10/2012 5:29 PM	Setup Information	1 KB
		Medialnfo	10/20/2012 1:44 PM	XML File	1 KB
Computer		🔛 setup	10/20/2012 12:21	Application	197 KB
🏭 Local Disk (C:)		📄 setup.exe	2/10/2012 4:29 PM	XML Configuratio	1 KB
		sqmapi.dll	10/20/2012 12:16	Application extens	147 KB

### Finalize the VHDX and Copy It to the Virtual Machine Library

Use SysPrep to finalize the VHDX, and then copy it to the library so that it can be used by the service template for SharePoint 2013 Enterprise Three Tier.

### To use SysPrep to finalize the VHDX

- 2. Ensure that you have completed all of the previous substeps in this section.
- 3. Access SysPrep in the following directory on your virtual machine: %windir%\system32\SysPrep. Then, at an elevated command prompt, execute the following example command. C:\windows\system32\SysPrep\SysPrep.exe /oobe /generalize /shutdown
- 4. After the virtual machine fully shuts down, navigate to the location of the VHDX on your Hyper-V host, and copy the VHDX to the subdirectory where you store the virtual machine templates in your VMM library. <u>\\FT-SCVMM\MSSCVMMLibrary\VHDXs\</u>

Prepare the VHDX for the Service Template (Web Front End) Use the following information to complete this step.

### Prepare the Base VHDX

### To prepare the base VHDX

- Install the operating system: Create a base VHDX using the Windows 2012 operating system. For more information on creating a virtual machine on a blank VHDX, see the Microsoft article <u>How to Create and</u> <u>Deploy a Virtual Machine from a Blank Virtual Hard Disk</u>.
- Download SharePoint Server 2013 Enterprise edition from the following location: <u>Download Microsoft</u> <u>SharePoint Server 2013</u>.

### Install SharePoint Server 2013 Enterprise

Use the following Microsoft resources to install SharePoint Server 2013 (use the base install with no configuration):

- Overview of SharePoint 2013 installation and configuration
- Install SharePoint 2013 across multiple servers for a three-tier farm

### To install SharePoint Server 2013 Enterprise

- 1. Run the prerequisite checker for SharePoint Server 2013 that is included with your source media to install and enable any server roles or download and apply any updates required for SharePoint.
- 2. Install SharePoint Server 2013 Enterprise on the virtual machine.

**Note:** Be sure to only install SharePoint and not configure it. Configuration happens during the service template deployment process using the AutoSPInstaller script and configuration XML.

### CodePlex

CodePlex is an open-source project hosting website from Microsoft. It allows shared development of open-source software. The site enables engineers and computer scientists to share projects and ideas.

While CodePlex encompasses a wide variety of projects, including SQL, Windows Presentation Foundation (WPF), and Windows Forms-related projects, major activities center around the .NET framework, including ASP.NET, and Microsoft's collaboration server, SharePoint. The most prominent and used project that was born inside CodePlex, the AJAX Control Toolkit, is a joint project between the community and Microsoft. Microsoft solely owns and operates <u>CodePlex.com</u>.

### AutoSPInstaller

AutoSPInstaller is a CodePlex project. The aim of the project is to provide a set of unified scripts for installing SharePoint 2013. Scripted installations create repeatability and consistency and are very useful when creating separate environments for test, QA, and production. It offers:

- · Centralized, remote install of every SharePoint server in your farm using PowerShell remoting
- Support for parallel binary installations, whether remote install is enabled or not (useful for speeding up multiserver farm installations)
- Ability to specify a different SQL server for each web application and service application, plus support for creating an alias for each (except search, currently)
- Screen output and log display the elapsed time to install SharePoint and Office Web App binaries
- Ability to specify an arbitrary XML input file by passing the XML file name as an argument, or just dragging it onto AutoSPInstallerLaunch.bat

Note: AutoSPInstaller as used in this solution has no support from Cisco.

### Download and Stage AutoSPInstaller

The service template for SharePoint 2013 Enterprise takes advantage of a robust scripted solution for the installation of SharePoint. This community script is located on CodePlex at <u>AutoSPInstaller</u>, and it must be downloaded and placed on a VM web front end (WFE) and application servers.

### To download and stage AutoSPInstaller

Download the AutoSPInstaller configuration script from AutoSPInstaller on the CodePlex website.

Copy the SharePoint binaries and prerequisites to the AutoSPInstaller folder structure. Extract the downloaded contents to your VM local drive that will be accessible by the account used to deploy the service template (Figure 11).

- -× Local Disk (C:) 🚢 l 🗋 🚺 = l File Home × 0 Share View ・ C
 Search Local Disk (C:) ( → ▼ ↑ ▲ · Computer · Local Disk (C:) Q -~ Name Date modified Siz Type Y Favorites E Desktop AutoSPInstaller 9/17/2013 11:47 PM File folder b Downloads 9/20/2013 1:12 PM File folder 🍌 inetpub Secent places PerfLogs 7/26/2012 12:44 AM File folder Program Files 9/20/2013 1:36 PM File folder 词 Libraries Program Files (x86) 9/21/2013 1:30 PM File folder Documents l root 9/20/2013 2:15 PM File folder J Music sysprep 9/20/2013 12:26 PM File folder Pictures Ju Users 9/20/2013 1:48 PM File folder Videos Windows 9/20/2013 1:28 PM File folder Computer ~ < 1 item selected -9 items - -\* 🎉 l 💽 🚺 👳 l SharePoint 0 Home Share View ~ ] ≪ AutoSPInstaller 🕨 SP 🕨 2013 🕨 SharePoint 🕨 (a) + 1 V C Search SharePoint Q 0 -J Music ~ Name Date modified Туре Size wisioserver.en-us rile tolder Pictures 9/17/2015 11:50 PIVI wasrv.en-us 9/17/2013 11:30 PM File folder Videos \rm wdsrv.en-us 9/17/2013 11:30 PM File folder wss.en-us 9/17/2013 11:30 PM File folder 🜉 Computer klserver.en-us File folder 9/17/2013 11:30 PM Local Disk (C:) autorun 12/13/2011 1:05 PM lcon 2 KE 🍌 AutoSPInstaller 12/13/2011 1:05 PM Setup Information 1 KE autorun 🗼 inetpub 0 KE CopyTheContentsOfTheSharePointMedi... 6/13/2011 8:08 PM Text Document 📙 PerfLogs 🛅 default 9/29/2012 10:00 AM HTML Application 14 KE 🃗 Program Files svcr100.dll 12/14/2011 11:50 ... Application extens... 810 KE 🎍 Program Files ( 🚡 prerequisiteinstaller 10/1/2012 5:22 PM Application 1,602 KE 🗼 root 🗧 readme 5/19/2012 8:02 PM HTML Document 1 KE 🗼 sysprep 🚳 setup 12/13/2011 1:05 PM Windows Comma... 1 KE = k Users 🚳 setup.dll 10/1/2012 5:23 PM Application extens... 1,036 KE Nindows 1 setup 10/1/2012 5:25 PM Application 210 KE 🛅 splash 9/29/2012 10:00 AM HTML Application 3 KE 📬 Network Svrsetup.dll 10/1/2012 5:22 PM Application extens. 9,687 KE 🗸 Activate Window × < Ш 36 items

Figure 11. AutoSPInstaller in VM Local Drive

# Configuring AutoSPInstaller

Table 14 gives the steps for configuring AutoSPInstaller.

 Table 14.
 Configuring AutoSPInstaller

Step	Configuration	Details
1	AutoSPInstaller can be run in either offline mode or online mode. In offline mode you need prerequisites files. First we will prepare the SharePoint 2013 installation. For that, extract the AutoSPInstallerGUI. Then load the AutoSPInstallerInput.XML using the AutoSPInstallerGUI.Exe Configurations are saved in the XML input file.	AutoSPInstallerGUI by Ivan Josipovic, Softlanding.ca (0.0.0.22)     - □ ×       File     Helo     About       Install     Farm     Web Applications     Enterprise Service Applications     Other       Environment:
		AutoSPInstallerGUI by Ivan Josipovic, Softlanding.ca (0.0.0.16)         Image: Service Applications         Endad XML         File         Serve XML         Serve XML         Serve XML         Serve XML         Serve XML         Discher         Open         Open         Discher         Parabel Install         Discher         Discher

Step	Configuration	Details
2	Main tab:	Install Farm Web Applications Service Applications Enterprise Service Applications Other
	Provide passwords for the accounts.	Main Services Logging
	These are created using the	Passphrase: pass@word1
	PowerShell script.	Farm Account Wanaged Accounts Add To Local Admins During Setup
	For example:	VSPEX0\\spservice   Please Note: This is the Service Account which will be used as the Application
	vspex0\spservice	Username: VSPEX0\spfarm User Name: VSPEX0\spservice Pool Account for most of the Service Applications. By default, only Search
	vspex0\spfarm	Password: pass@word1 pass@word1 uses a separate Managed Account.
	vspex0\spcacheuserreader	Central Administration     Provision:     true     Object Cache Accounts
	vspex0\spcacheuserreader	DB Name: Content_Admin Super User: VSPEX0\\spcacheuser
	Database section:	Port: 2013 Super Reader: VSPEX0\spcachereader
	Provide the DB Server and Instance name.	Database
		DB Server: SQL2012
	Specify web applications as needed. Two web apps are defined by default: Portal and	- Database Alias IV Create
	Myhost.	Instance: SQL2012\SPSQL
	By selecting those from the drop-down	Port: 2013
	menus, you can specify the Name, App Pool	DB Prefix: AutoSPInstaller Activate Windows Config DB: Config
	Name, URL, and Port.	Go to Action Center to a
	Specify the App Pool Account.	Install Farm Web Applications Service Applications Enterprise Service Applications Other
	Specify the SharePoint admin user (spadmin).	Add URL To HOSTS
	user (spadmin).	Web Applications: Portal   Add  Managed Path: help  Add
		Type: Portal Remove URL: help Remove
		Name: Portal I Explicit
		App Pool Account: VSPEX0\spservice
		URL:         http://localhost           Add             Port:         80         Site URL:         http://localhost              Remove               Remove
		Port: 80 Site URL: http://localhost Remove Database Name: Content_Portal Host Named Site Collection
		Use Host Header Owner: VSPEXO spadmin
		Add URL To Local Intranet Zone     Name:     Portal Home     Grant Current User Full Control
		Vuse Claims Authentication Description: Portal Home Site
		Use Basic Authentication Search URL: http://localhost/search Use Online WebPart Catalog Gustom Template Collaboration Portal
		Database Web Template: SPSPORTAL#0
		DB Server: SQL2012 LCID: 1033
		Create     Locale:     en-us      Instance:     SQL2012(SPSQL     Time 24h
		Port: 2013
3	Services tab:	MMS UPS Search State Web Analytics Usage and Health Secure Store BDC
	Applications configuration. Most of the	Search Service Instance Search Service Application
	services work with the default configuration.	Name: Search Service Application Pools
	Specially configure the user profile and	Proxy Name: Search Service Application Application Pool Name: SharePoint Search Application Pool
	search service.	Proxy Partitioned:     Application Pool Account: vspex/0/spservice      Proxy Group:     Default
	The Sync account is the account used for	Failover DB Server:
	Active Directory synchronization. Therefore, add an spprofile account.	Admin Compt App Pool Account: vspex0\spsearch
	Specify database names for profile, Sync,	Partitions: 1 Search Topology Application Type: Regular Crawl Component: SP2013-App1   Add Remove
	and Social.	Application Type: Regular Crawl Component: SP2013-App1   Add Remove Content Account: vspex0\spservice Query Component: SP2013-App2  Add Remove
	Select the Search Service	Content Acc Password: pass@word1 Search Query and Site Settings Service: SP2013-App1 T Add Remove
	account (spsearch).	Search Center Urk Admin Component: SP2013-App1 _ Add Remove
	Specify the spsearch service account.	Database Name: Search Index Component: SP2013-App2  Add Remove
	Search topology.	Database Server:         SQL2012         Content Processing Component:         SP2013-App1         Image: Add Content Processing Component:         SP2013-App1         Add         Remove           Database Alias         Analytics Processing Component:         SP2013-App1         Image: Add Content Processing Component:         SP2
		Instance:     SPSQL
		Port: 2013 Note: For Single Server Installations, the Search Topology does not need to be modified. All of the Search Roles will be installed on the same server IVATE WINDOWS
		Go to Action Center to activate Wi
4	Save the XML file.	
4		

For simplicity in automated deployment, we have maintained a separate XML file configuration for each tier, with different roles. After the configuration settings are complete, copy the entire folder structure to the application and web front-end servers (the SP folder with all subfolders).

The VM is provisioned through an SCVMM service template, and then AutoSPInstaller is run through the VM startup post-deployment script to achieve automation.

# System Center Virtual Machine Manager

Figure 12 shows the process followed in configuring SCVMM for the SharePoint installation.

Figure 12. SCVMM Configuration Process



Log in to SCVMM, and click Library > Select Profiles (Figure 13).



Figure 13. Preparing to Create Profiles

# **Create Application Profile**

You can use the procedure in Table 15 to create an application profile in SCVMM. An application profile provides instructions for installing Microsoft Server Application Virtualization (Server App-V) applications, Microsoft Web Deploy applications, and Microsoft SQL Server data-tier applications (DACs), and instructions for running scripts when a virtual machine is deployed as part of a service.

You can use an application profile only when you deploy a virtual machine as part of a service.

 Table 15.
 Creating an Application Profile

Step	Configuration	Details
1	Open the Library workspace. On the <b>Home</b> tab, in the Create group, click <b>Create</b> , and then click <b>Application Profile</b> . The New Application Profile dialog box opens.	Library   Profiles (0)  Templates  Profiles  Profiles  Application Profile  Create Application Profile  Guest OS Profiles  Hardware Profiles  SQL Server Profiles  SQL Server Profiles  Profiles

Step	Configuration	Details
2	On the <b>General</b> tab, in the Name box, enter a name for the application profile. For example, SP2013Appserver Profile.	Image: Mex Application Profile       General     General       Application Configuration     Name:       Applyrofile     Description:       Compatibility:     General       Type:     Image: Applyrofile
3	On the General tab, in the Compatibility list, choose an appropriate option—for example, Windows 2012 STD.	Image: Second Server 2003 Enterprise       Application         View Script       OK
4	Click <b>OK</b> to complete.	

# Create Guest OS Profile

You can use the procedure in Table 16 to create a guest operating system profile in System center Virtual Machine Manager (SCVMM). A guest operating system profile specifies the operating system settings that you want the virtual machine to use when the virtual machine is created and deployed.

Table 16. Creating a Guest OS Profile

1       Open the Library workspace.         On the Home tab, in the Create group, right- click Create, and then click Guest       Library       Profiles (0)         >       Templates         Image: OS Profile.       Name	Step	Configuration	Details
Application Profiles     Capability Profiles     Guest OS Profile     Hardware Pro     FOC Create Guest OS Profile     Host Profiles     SQL Server Profiles	1	On the <b>Home</b> tab, in the Create group, right- click <b>Create</b> , and then click <b>Guest</b>	<ul> <li>Templates</li> <li>Profiles</li> <li>Application Profiles</li> <li>Guest OS Profiles</li> <li>Hardware Pro</li> <li>Create Guest OS Profile</li> <li>Host Profiles</li> </ul>



### Create Hardware Profile

You can use the procedure in Table 17 to create a hardware profile in System Center Virtual Machine Manager (SCVMM). A hardware profile specifies the hardware settings that you want the virtual machine to use when it is created and deployed.






Similarly, follow the steps in the previous table to create hardware profiles for the application server and SQL Server.

# Create SQL Server Profile

You can use the procedure in Table 18 to create a SQL Server profile in System Center Virtual Machine Manager (SCVMM). The SQL Server profile provides instructions for installing an instance of Microsoft SQL Server on a virtual machine.



Step	Configuration	Details
1	Open the Library workspace. On the <b>Home</b> tab, in the Create group, click <b>Create</b> , and then click <b>Create SQL</b> <b>Server Profile</b> .	Library   Profiles (0)  Templates  Profiles  Name  Name  Name  Libraries  Capability Profiles  Capability Profiles
2	On the <b>General</b> tab, in the Name box, enter a name for the hardware profile. For example, enter SQL2012.	Image: Server Configuration     Server Configuration       SQL Server Configuration     Name:       SPSQL2012       Description:       SharePoint 2013 database server Profile       Type:   SQL Server Profile
3	Enter the SQL Server Deployment. For example, SQLDeployment.	SQL Server Configuration     SQL Server configuration       SQL Server Configuration     Configure the SQL Server installations in this profile.       Add: IP SQL Server Deployment     Image: SQLDeployment       Image: SQL Server Deployment     Image: SQLDeployment       Image: SQL Server Deployment     Image: SQLDeployment       Image: SQL Server Deployment     Image: SQLDeployment       SQL Server Deployment     Image: SQLDeployment       Image: SQL Server Deplo
4	Provide the Media Source for the SQL configuration. For example, C:\SQL. Add a SQL Server Administration account. For example, vspex0\administrator.	Image: Sold Server Configuration         Sold Server Configuration           Sold Server Configuration         Configure the Sold Server Installations in this profile.           Add::::::::::::::::::::::::::::::::::



## **Create SharePoint Templates**

System Center Virtual Machine Manager (SCVMM) profiles contain configuration settings that you can apply to a new virtual machine template or virtual machine. You can create, view, and modify profiles in the **Library** workspace.

The steps in Table 19 provide information about how to create virtual machine templates for SharePoint 2013. For example, it contains steps to create a web front-end (WFE) server template and a SQL Server template.

 Table 19.
 Creating Virtual Machine Templates for SharePoint 2013

Step	Configuration	Details
1	Open the Library workspace. On the VM Templates tab, right-click Create. A new dialog opens.	Administrator - FF-SCVMMVSPEX.com - Virtual Machine Manager (Evaluation Version - 170 days remaining)     Forder     Forder

	Configuration	Details			
2	On the Select Source tab, click Browse.		Create	e VM Template Wizard	x
-	The SCVMM library opens.	Select Source			
		Select Source	,e	and the second	
	<ul> <li>Select the VHDX library.</li> <li>Select the SysPrep WFE VHDX file, which has been copied to the</li> </ul>	Select Source	Select a source for the	new VM template	
		VM Template Identity		or a virtual hard disk stored in the librar	v
	SCVMM library.	Configure Hardware		Select VM Templa	
	• For example, create a web front-end	Configure Operating System Configure Applications	Select a virtual hard disk	or an existing VM template as the	source for the new VM template.
	server template.	Configure SQL Server			٩
		Summary	Name	Type Operatin Relea	
			SP2013-App1 SP2013-WFE1	VM Templ 64-bit edit VM Templ 64-bit edit	
			SQL	VM Templ 64-bit edit	
			Blank Disk - Large.vhd	VHD None	Microsoft \\FT-SCV
			Blank Disk - Small.vhdx SQLLOG.vhdx	VHDX None VHDX Unknown	Microsoft \\FT-SCV Unknown \\FT-SCV
			IPLvhdx	VHDX Unknown	Unknown \\FT-SCV
			SQL2012.vhdx	VHDX Unknown	Unknown \\FT-SCV
			IndexPartition.vhdx GoldenCopy2012.vhdx	VHDX Unknown VHDX Unknown	Unknown \\FT-SCV Unknown \\FT-SCV
			SQLDB.vhdx	VHDX Unknown	Unknown \\FT-SCV
			Blank Disk - Large.vhdx		Microsoft \\FT-SCV
			Blank Disk - Small.vhd SP2013-App1.vhdx	VHD None VHDX Unknown	Microsoft WFT-SCV-++++ Unknown WFT-SCV-+++++
			SP2013-WFE1.vhdx	VHDX Unknown	Unknown \\FT-SCV
3	SharePoint 2013-WFE1.	VM Templat	e Identity VM Template name:		
		VM Template Identity	SharePoint 2013 WFE1		
		Configure Hardware	Description:		
		Configure Operating System			
		Configure Applications			
		Configure SQL Server			
		Summary			
٨		•			
4	On the Configure <b>Hardware</b> tab, select the <b>bardware profile</b> created in Table 17 for the			e VM Template Wizard	
•	On the Configure <b>Hardware</b> tab, select the <b>hardware profile</b> created in Table 17 for the WFE VM.	Configure Ha	ardware Configure hardware for	the virtual machine. You ca	n import settings from a hardware
•	hardware profile created in Table 17 for the	Configure Ha	ardware Configure hardware for profile or save a new pr	the virtual machine. You ca rofile based on your settings	n import settings from a hardware
•	hardware profile created in Table 17 for the	Configure Hat	Configure hardware for profile or save a new pr Hardware profile: [Default or [Default or	the virtual machine. You ca	n import settings from a hardware
•	hardware profile created in Table 17 for the	Configure Ha	Configure hardware for profile or save a new pr Hardware profile: [Default - or Ing Save as] Ngsilentwer	the virtual machine. You ca ofile based on your settings aste new hardware configuration settin refere	n import settings from a hardware
•	hardware profile created in Table 17 for the	Configure Hardware Configure Hardware Configure Derating System	Configure hardware for profile or save a new pr Hardware profile: [Default - or mail Save as   Verfault - or A Compatibility (2) Oud Capability Pr	the virtual machine. You ca offie based on your settings eate new hardware configuration settin table and the bardware configuration settin table and the bardware configuration settin table	n import settings from a hardware
•	hardware profile created in Table 17 for the	Configure Hardware Configure Hardware Configure Deparating System Configure Applications	Configure hardware for profile or save a new pr Hardware profile: Default - or Ing Save as Not profile the A Compatibility	the virtual machine. You ca ofile based on your settings aste new hardware configuration settin refere	n import settings from a hardware
•	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default - or save as Not control Save as Not control Cond Copositiv Pr Ceneral Processor processor processor	the virtual machine. You ca ofile based on your settings eate new hardware configuration settin profile Base8-starup-FE1-vapex v Channel: [many channel (() (in use)] Disk:	n import settings from a hardware
•	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default - or Save as Not before Constituting Constituting Constituting Constituting Processor Processor Memory Star MB	the virtual machine. You ca colle based on your settings sate new hardware configuration settin thete Channel: Channel: Channel: Channel: Oisk: () Use an existing vitual hard	n import settings from a hardware
•	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default or Save as Verbauerer Constantion Courd Capability P Concessor T processor memory	the virtual machine. You ca ofile based on your settings eate new hardware configuration settin profile Base8-starup-FE1-vapex v Channel: [many channel (() (in use)] Disk:	n import settings from a hardware ga] ga] dx disk. sk
•	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default on Save as Negrocome Courd Capability Pr Courd Capability Pr Courd Capability Pr Courd Capability Pr Good Capability Pr Nether Captured No Media Captured Courd Capability Pr	the virtual machine. You ca colle based on your settings sate new hardware configuration settin the new hardware configuration settin the new hardware configuration settin the new channel (0) (n use) Disk: © Use an existing virtual hard ○ Pass through to physical d	n import settings from a hardware
•	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default - or Save as Not be a supported Cond Copability Pr Concord Processor Memory S12 MB Processor Memory S12 MB Processor Memory S12 MB Processor Memory S12 MB Processor Memory S12 MB Processor Memory S12 MB Processor Memory S12 MB	the virtual machine. You ca colle based on your settings sate new hardware configuration settin the new hardware configuration settin the new hardware configuration settin the new channel (0) (n use) Disk: © Use an existing virtual hard ○ Pass through to physical d	n import settings from a hardware ga] ga] dx disk. sk
-	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default - or Save as Default - or Save as Default - or Cond Capability Cond Capability Pr Concessor Tprocessor Biz MB Popy Drive No Media Captured No Media Captured To On 1 None	the virtual machine. You ca ofile based on your settings eate new hardware configuration settin the new hardware configuration settin as Base8-startup-FE1-vapex.v Channel: [Primary channel (0) (in use) Disk: © Use an existing virtual hard O Create a new virtual hard O Create a new virtual hard O Pass through to physical d [VFT-SCVMM.VSPEX.com/M File name:	n import settings from a hardware
-	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default - or Save as Version of the save Cloud Capability F Cloud Capability F	the virtual machine. You ca offie based on your settings eate new hardware configuration settin de new hardware configuration settin de new hardware configuration settin de new settings and the setting de new settings and the setting Disk: © General Configuration setting Disk: © Use an existing virtual hard © Create a new virtual hard	n import settings from a hardware
-	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default or Save as Neutocome Save as Neutocome Configure hardware Cloud Capability Pr Cloud Capability Pr	the virtual machine. You ca ofile based on your settings eate new hardware configuration settin the new hardware configuration settin as Base8-startup-FE1-vapex.v Channel: [Primary channel (0) (in use) Disk: © Use an existing virtual hard O Create a new virtual hard O Create a new virtual hard O Pass through to physical d [VFT-SCVMM.VSPEX.com/M File name:	n import settings from a hardware
-	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default - or Save as Venture Cond Capability Fr Cond Capabi	the virtual machine. You ca offie based on your settings eate new hardware configuration settin de new hardware configuration settin de new hardware configuration settin de new settings and the setting de new settings and the setting Disk: © General Configuration setting Disk: © Use an existing virtual hard © Create a new virtual hard	n import settings from a hardware  pai pai v dx dak ak k se on hoat SSCVMALIbray\VHDa\Base8at) Browse v
*	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default or Save as Neutocome Save as Neutocome Configure hardware Cloud Capability Pr Cloud Capability Pr	the virtual machine. You ca ofile based on your settings este new hardware configuration settin the new hardware configuration settin file and the setting of the setting o	n import settings from a hardware  pai pai v dx dak ak k se on hoat SSCVMALIbray\VHDa\Base8at) Browse v
•	hardware profile created in Table 17 for the	Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Operating System Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: Default - or Save as Venture Cond Capability Fr Cond Capabi	the virtual machine. You ca ofile based on your settings este new hardware configuration settin the new hardware configuration settin file and the setting of the setting o	n import settings from a hardware  pai pai v dx dak ak k se on hoat SSCVMALIbray\VHDa\Base8at) Browse v

Step	Configuration	Details	
5	In the Configure Operating System section, select the <b>guest OS profile</b> created in Table 16. Click <b>Next</b> to continue.	Configure Opu Select Source VM Template Identity Configure Mardware Configure Operating System Configure Operating System Configure SQL Server Summary	Create VM Template Wizard      erating System      Configure identity, network settings, and scripts for the new virtual machine. You can import settings from a guest OS profile or save a new profile based on your settings.      Guest OS profile: Detail - create new Windows operating system customization settings]     V     Server at: Receive for the receive of the setting of the same of the setting of
			Previous Next Carnod
6	On the Configure Applications tab, select the application profile that was created in Table 15. Click <b>Next</b> to continue.	Configure Applications Select Source VM Template Identity Configure Hardware Configure Applications Configure Applications	Configure application deployments in the virtual machine. Deployment and servicing may be customized with scripts. You can import settings from an application profile or save a new profile based on your settings.  Application profile  Default - create new application settings  For an application profile  Os Compart  Approfile  Please select the qued correction systems which are compatible with this
		Summary	* Applications       application profile       (Note: the guest operating system of the current template is bolded below?         * Scripts       Compatible operating systems:       64-bit edition of Windows Server 2008 Datacenter         64-bit edition of Windows Server 2008 R2 Datacenter       64-bit edition of Windows Server 2008 R2 Datacenter         64-bit edition of Windows Server 2008 R2 Datacenter       64-bit edition of Windows Server 2008 R2 Standard         64-bit edition of Windows Server 2008 R2 Standard       E         64-bit edition of Windows Server 2002 Batacenter       64-bit edition of Windows Server 2012 Datacenter         64-bit edition of Windows Server 2012 Datacenter       64-bit edition of Windows Server 2012 Datacenter         64-bit edition of Windows Server 2012 Datacenter       64-bit edition of Windows Server 2012 Datacenter         64-bit edition of Windows Server 2012 Datacenter       64-bit edition of Windows Server 2012 Datacenter         64-bit edition of Windows Server 2012 Datacenter       64-bit edition of Windows Server 2012 Datacenter         64-bit edition of Windows Server 2013 Datacenter K45       64-bit edition of Windows Server 2013 Datacenter K45         96-bit edition of Windows Server 2013 Datacenter K45       64-bit edition of Windows Server 2013 Datacenter K45         97       Windows Server 2013 Datacenter K45       64-bit edition of Windows Server 2014         96       Windows Server 2013 Datacenter K45       64-bit edition Windows Server



Similarly, follow the steps in the previous table to create an application server profile.

# Create SQL Server Templates

Table 20 contains information about how to create virtual machine templates for SQL 2012.

Table 20. Creating SQL Server Templates

Step	Configuration	Details
1	Open the Library workspace. Right-click <b>Create</b> , and then click <b>Create</b> <b>VM Templates.</b>	Administrator /T. SUMMUSPEXcom - Vitrual Machine Manager Evaluation Version - 170 days remaining     Poet of the second sec

	Configuration	Details					
2	On the Select Source tab, click Browse.		Create	e VM Temp	late Wizard		×
-	The <b>SCVMM</b> library opens.	Select Source					
		Select Source	e				
	Select the VHDX library.	Select Source			and they a		
	Select the SysPrep SQL2012 VHDX	VM Template Identity	Select a source for the				
	file, which has been copied to the	Configure Hardware	<ul> <li>Use an existing VM template</li> </ul>		d disk stored in the library elect VM Template S	Fource	X
	SCVMM library.	Configure Operating System		3	elect vivi remplate a	source	-
	Click Next to continue.	Configure Applications	Select a virtual hard disk	or an existing	VM template as the sour	rce for the new VM template.	
		Configure SQL Server					P
		Summary	Name	Туре	Operatin Release	Family Na Virtualiza	Path
		1	SP2013-App1 SP2013-WFE1	VM Templ	64-bit edit 64-bit edit		
			SQL		64-bit edit		
			Blank Disk - Large.vhd	VHD	None	Microsoft	\\FT-SCV
			Blank Disk - Small.vhdx		None		\\FT-SCV
			SQLLOG.vhdx IPL.vhdx	VHDX VHDX	Unknown Unknown	Unknown Unknown	\\FT-SCV
			SQL2012.vhdx	VHDX	Unknown	Unknown	\\FT-SCV
			IndexPartition.vhdx	VHDX	Unknown	Unknown	\\FT-SCV
			GoldenCopy2012.vhdx		Unknown	Unknown	\\FT-SCV
			SQLDB.vhdx Blank Disk - Large.vhdx	VHDX	Unknown None	Unknown Microsoft	\\FT-SCV
			Blank Disk - Small.vhd	VHD	None		WEE-SEVate
			SP2013-App1.vhdx	VHDX	Unknown	Unknown	NET-SCV.ct
			SP2013-WFE1.vhdx	VHDX	Unknown	Unknown	\\FT-SCV
	Name the VM template		Creat	e VM Temr	late Wizard		2
	Application Server. Click <b>Next</b> to continue.	Select Source VM Template Identity Configure Hardware Configure Operating System	VM Template name: SQL2012 Server Description:				
		Configure Applications Configure SQL Server Summary					
4	On the <b>Configure Hardware</b> tab, select the <b>hardware profile</b> created in Table 17 for the	Configure SQL Server Summary		e VM Temp	late Wizard		×
1		Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware	ardware	the virtual i	machine. You can im	nport settings from a har	dware
4	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Hat Select Source VM Template Identity Configure Hardware Configure Operating System	Configure hardware for profile or save a new pr Hardware profile. [SPHardware Bave as New: @Dis	the virtual i ofile based Profile	machine. You can in on your settings.		dware
ı	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Applications	Configure hardware for profile or save a new pr Hardware profile: SPHardware Ind Save as New:	the virtual i ofile based Profile k 🔶 SCSI Ad	machine. You can in on your settings.		dware
L	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile. SPHardware in Save as   New: bit A Compatibility Compatibility Compatibility Compatibility Compare compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility Compatibility	the virtual i ofile based Profile k	machine. You can im on your settings. lapter JDV W Netw work Adapter 1 ctivity		dware
1	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Applications	Configure hardware for profile or save a new pr Hardware profile SPHardware and Save as   New: ap Dis Compatibility Condocapability Pr	the virtual i ofile based Profile k	machine. You can in on your settings. Iapter JDVD Min Netw work Adapter 1		dware
	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save as New:	the virtual i ofile based Profile k  SCSI Ad	machine. You can im on your settings. lapter @DVD @Netw work Adapter 1 ctivity connected	work Adapter	dware
l	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile (SPHardware Save as New: Dis Compatibility Could Capability Pr Could Capability Pr Could Capability Pr Could Capability Pr Memory Tocosor	the virtual i ofile based Profile k	machine. You can im on your settings. lapter @DVD @Network vork Adapter 1 connected connected nected to a VM network: metwork: Managemert_ amic IP	work Adapter	dware
	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save as New:	the virtual I ofile based Profile k & SCSI Ad Methods Nat Conne O Con VM O Dyr Stat	machine. You can im on your settings. lapter @DVD @(Netw work Adapter 1 ctivity connected nected to a VM network: metwork: Managemert_ amic IP bic IP from a static IP Pool)	work Adapter	dware
l	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile. SPHardware Save ss   New:	the virtual a ofile based Profile k & SCSI Ad Meter One Net One One One One One One One One One One	machine. You can im on your settings. lapter @DVD @Network vork Adapter 1 connected connected nected to a VM network: metwork: Managemert_ amic IP	work Adapter	dware
l	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Martine Save as New: Dis Cond Capability Pr Cond Capability Pr Cond Capability Pr Cond Capability Pr Cond Capability Pr Processor Processor No Media Capture No Media Capture No Media Capture No Media Capture No Media Capture No No	the virtual I ofile based Profile k $\diamondsuit$ SCSI Ad Meter Connec Conn	machine. You can im on your settings. lapter @DVD @ Netw work Adapter 1 ctivity connected network: [Managemert_] network: [Managemert_] amic IP is IP from a static IP Pool) protocol version:	work Adapter	dware
4	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save as New:	the virtual offic based Profile k © SCSI Ad © Corne © Not © Stat IP [FP [FP [FP [FP [FP [FP [FP [F	machine. You can im on your settings. apter @ DVD @ Netw work Adapter 1 ctivity connected network: [Managemert_] network: [Managemert_] amic IP setted satus IP Pool) protocol version: v4 only ktdress network:	work Adapter	dware
ł	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile. SPHardware Compatibility Compatibi	the virtual a folie based Profie k $<2$ SCSI Ad Net Conne Net Conne Net Conne Net Conne Net Conne Net Conne Net Conne Net Conne Stat Profie Stat Stat Stat Stat Stat Stat Stat	machine. You can im on your settings. lapter DVD Netw work Adapter 1 ctivity connected network: Managemert amic IP isc IP from a static IP Pool) protocol version: v4 only. ktdrass namicio stic:	work Adapter	dware
4	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save as New:	the virtual office based Profile Profile Profile (Net Conne O Dyr (Profile (Net Conne (Net (N	machine. You can im on your settings. lapter JDVD W Network work Adapter 1 ctivity connected metced to a VM network: network: Managemert_ amic IP is IP from a static IP Pool) protocol version: v4 only vtdress namic itic: rofile	vork Adapter Remove	dware
1	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save as New:	the virtual I offie based Profile k & SCSI Ad Mathematical Corner O Nat © Corner O Nat © Dyr O Stat © Dyr O Stat © Dyr O Stat Port P Cas	machine. You can im on your settings. lapter DVD Netw work Adapter 1 ctivity connected network: Managemert amic IP isc IP from a static IP Pool) protocol version: v4 only. ktdrass namicio stic:	work Adapter Remove	dware
1	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Martine Save as New: So Court Capability Pr Court Capability Pr Processors Memory Foogroups No Media Captured No Media Captured No Media Captured No Media Captured Court None No Media Captured Court None No Media Captured None No Media Captured None No Media Captured None No Media Captured None None No Media Captured None None None No Media Captured None None None None No Media Captured None None None None None None None None	the virtual a Profile Profile	machine. You can im on your settings. apter DD N Network: connected connected to a VM network: network: Managemert_ amic IP ici IP from static IP Pool) protocol version: v4 only <b>kdrcsss</b> namic dic: folic selication: Managemert I	vork Adapter Remove	dware
ı	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save as New:	the virtual a Profile Profile	machine. You can im on your settings. lapter DVD Netw work Adapter 1 ctivity connected metced to a VM network: metwork: metced to a VM network:  metced to a VM network:  to i P form a table i P form  vd only:  vd only:  del i e i P form  seficient :  Management I i i e i P form  seficient :  Management I i i e i vitual a vetch optimizatio	vork Adapter Remove	dware
ı	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save Save New - Save Save Compatibility Con Could Capability Pr Con Could Capability Pr Could Capability Pr	the virtual a Profile Profile	machine. You can im on your settings. lapter DVD Netw work Adapter 1 ctivity connected metced to a VM network: metwork: metced to a VM network:  metced to a VM network:  to i P form a table i P form  vd only:  vd only:  del i e i P form  seficient :  Management I i i e i P form  seficient :  Management I i i e i vitual a vetch optimizatio	vork Adapter Remove	dware
	hardware profile created in Table 17 for the SQL2012 VM.	Configure SQL Server Summary Configure Ha Select Source VM Template Identity Configure Hardware Configure Operating System Configure Operating System Configure Applications Configure SQL Server	Configure hardware for profile or save a new pr Hardware profile: SPHardware Save Save New - Save Save Compatibility Con Could Capability Pr Con Could Capability Pr Could Capability Pr	the virtual a Profile Profile	machine. You can im on your settings. lapter DVD Netw work Adapter 1 ctivity connected metced to a VM network: metwork: metced to a VM network:  metced to a VM network:  to i P form a table i P form  vd only:  vd only:  del i e i P form  seficient :  Management I i i e i P form  seficient :  Management I i i e i vitual a vetch optimizatio	vork Adapter Remove	dware





After creating the VM templates, create service templates to automate installation.

# **Create Service Templates**

A service template defines the configuration of a service. In the VMM console, you use the Service Template Designer to create a service template. The service template includes information about the virtual machines that are deployed as part of the service, which applications to install on the virtual machines, and the networking configuration needed for the service. Table 21 contains the steps for this process.

 Table 21.
 Creating a Service Template

Step	Configuration	Details				
1				Resource	PowerShell     Jobs Library Settings Window	
		Templates     Service Deployment Configurations     Service Templates     VM Templates     VM Templates     Application Profiles     Gapability Profiles     Guest OS Profiles     Hardware Profiles     Host Profiles     SQL Server Profiles	Name	Release No	Type results matching your search	v were fo

Step	Configuration	Details
2	The New Service Template dialog box opens. On the Name tab, in the <b>Name</b> box, enter a Name and Release version. For example, SP2013, Release New. We are deploying five VMs serving in different roles. Choose the <b>Blank template</b> . Click <b>OK</b> .	Image: SP2013-PrivateCloud       Release: new         Patterns (4)       Image: Sp2013-PrivateCloud         Image: Sp2013-PrivateCloud       Image: Sp2013-PrivateCloud         Image: Sp2013-PrivateCloud         Image: Sp2013-PrivateClou
3	VM templates are displayed. Drag and drop the VM templates onto the tiers. The most common properties that you can change appear in the details pane in the Service Template Designer. To display all of the settings that you can configure, click View All Properties in the details pane.	Proc         Were formed         Were formed <t< th=""></t<>
4	Click <b>Configure Deployment.</b> Enter the Name and Destination for the service instance. For example, Name: SP2013-PrivateCloud Destination: SP host group	Select name and destination       X         Select a name and destination for the new service instance       A Service Deployment Configuration object with this name will also be created in the library.         Name:       SP2013-PrivateCloud         Destination:       SP host group         OK       Cancel



p Configuration	Details	
On the canvas, select the VM location, OS Settings, Machine Resources, and		ServiceVM00003.VSPEX.com Properties
<ol> <li>networking object that you want to configure.</li> <li>Map the Virtual Machine location C:\ClusterStorage\Volume4 (provisioned to store VM).</li> <li>In the Identity Information section, rename to SP2013-WFE1.</li> <li>For a network adapter, you can configure the settings shown here: For example, for a Nexus 1000V switch, assign a static IP address.</li> </ol>	Locations     Virtual Machine Locat     C: ClusterStorage Volu     Operating System Setting     Identity Information     SP2013-WFE1.VSPEX     NetworkAdapter 0     n1kv_vm_network_603     Machine Network Adapter     Virtua n1kv_vm_network_603     SP2013-WFE1.vhac	VM network:     n1kv_vm_network_603_VSM-N1K       VM subnet:     n1kv_vmaccess_603_VSM-N1K       IPv4 address:     Static       IPv6 address:     Dynamic       MAC address:     Static       IPv4 address:     IPv4 address       0     10.65,122.0/24
	Locations     Virtual Machine Locat     C:\     Operating System Settings	ViceVM-WFE1.VSPEX.com Properties
	ServiceVM-WFE1.VSP	Method to deploy the virtual hard disk to the host: Transfer the virtual hard disk by using the network  Select Destination Folder  Browsing F3-HyperV4.VSPEX.com  F3-HyperV4.VSPEX.com  C:\[22.30 GB free of 299.66 GB]  Secycle Bin  CusterStorage  DusterStorage  DusterStorage

Step	Configuration	Details
8	Select the destination server based on the VM requirements and on the default placement options. For example, F3-HyperV4.vspex.com.	Select host         Destinations are rated based on the virtual machine requirements and on the default placement options.         Expected Utilization
		Search P v in All Hosts\SP host group v
		Rating Destination Warnin Transfer Type Networ
		😭 😭 🚖 🊖 🦹 F3-HyperV4.VSPEX.com Yes 🎿 Network 🧹
		🚖 숯 숯 숯 숯 👔 F3-HyperV3.VSPEX.com Yes 🔔 Network 🧹
		Oetails      Details      Details      Description
		Status OK
		Operating system Microsoft Windows Server 2012 Standard
		Virtualization software Microsoft Hyper-V
		Virtualization software status Up-to-date
		Virtual machines T1, T2
		Go to Action Cen QK to Active Concellin
9	Similarly follow the above steps to configure the WFE-2 server.	



Step	Configuration	Details			
11	For a network adapter, you can configure the	ServiceVM-App1.VSPEX.com Properties			
	settings shown here. For the Nexus 1000V switch, we have assigned a static IP address.	<ul> <li>★ Locations</li> <li>✓ Virtual Machine Locat C:ClosterStrange Vkdu ★ Operating System Settings</li> <li>✓ Identity Information Service/Wh-App1-VSPE ★ Network Adapter 0 ntkv_vm_network_603</li> <li>✓ Network Adapter 0 ntkv_vm_network_603</li> <li>✓ Network Adapter 0 ntkv_vm_network_603</li> <li>✓ Network Adapter 0 ntkv_vm_network_603</li> <li>✓ Network Adapter 0 Network Adapter 0 Network Adapter 0 Network Adapter 0 VM network: n1kv_vm_network_603VSM-N1K</li> <li>✓ Vistual Hard Disk Base Batartup-App1-vs</li> <li>✓ Virtual Hard Disk Base Batartup-App1-vs</li> <li>✓ Virtual Hard Disk Context Static</li> <li>✓ Virtual Hard Disk Context St</li></ul>			
12	Click OK.				
13	Select the destination server based on the VM requirements and on the default placement options. For example, F3-HyperV4.vspex.com is selected.	Select host      Select host      Destinations are rated based on the virtual machine requirements and on the default placement options.      Expected Utilization			
		Search P v in All Hosts\SP host group v			
		Rating         Destination         Warnin         Transfer Type         Networ           ☆☆☆☆☆☆         IF F3-HyperV4.VSPEX.com         Yes         ▲ Network         √			
		🚖 🚖 🚖 🚔 📱 F3-HyperV3.VSPEX.com Yes 🗻 Network 🚽			
		Placement has finished calculating ratings for each potential destination of this virtual machine.			
		Details <u>A</u> Rating Explanation Storage Area Network (SAN) Explanation			
		Description          Status       OK         Operating system       Microsoft Windows Server 2012 Standard         Virtualization software       Microsoft Hyper-V         Virtualization software status       Up-to-date         Virtual machines       T1, T2			
		Go to Action Cen 9K to AttivGancel inde			

Step	Configuration	Details
14	Similarly, follow the above steps to configure the Application-2 server.	
15	<ul> <li>SQL server configuration</li> <li>On the canvas, select the location, identity, machine resources, and networking object that you want to configure.</li> <li>1. Map the Virtual Machine location: C:\ClusterStorage\Volume4 (provisioned to store VM).</li> <li>2. Map the VHDX drive for the SQL database, which has been provisioned on RAID 5.</li> <li>3. In the Identity Information section, rename to, for example, SP2013.vspex.com.</li> </ul>	ServiceVM-SQL1.VSPEX.com Properties       Image: Comparing System Settings         Virtual Machine Locat       Library resource: SQLLOG.vhdx         ServiceVM-SQL1.VSP       Library resource: SQLLOG.vhdx         ServiceVM-SQL1.VSP       Library resource: SQLLOG.vhdx         File size:       4.00 M8         Deployment options       Deployment options         Network Adapter 0       nfkrum_network, 603         Yirtual Hard Disk       Soll.col.vhdx         Virtual Hard Disk       Soll.col.vhdx         Virtual Hard Disk       Soll.LOG.vhdx         Virtual Hard Disk       Soll.LOG.whdx         Virtual Hard Disk       Soll.LOG.whdx         Virtual Hard Disk       Soll.LOG.whdx         Virtual Hard Disk       Soll.LOG.whdx         Virtual Program Files       CusterStorage         Wirtual Mard Disk       Soll.LOG.whdx         Virtual Program Files       CusterStorage         Wirtual Mard Disk       Soll.LOG.whdx         Virtual Program Files       Program Files         Wirtual Mard Disk       Soll.LOG.whdx         Wirtual Mard Disk       Soll.LOG.whdx         Wirtual Mard Disk       Soll.LOG.whdx         Wirtual Mard Disk       Soll.Dog.whdx         Wirtual Mard Disk       Soll.
16	Map the VHDX for SQL log files, which have been provisioned on RAID 10.	ServiceVM-SQL1.VSPEX.com Properties       Image: Comparison of the service of the serv

Step	Configuration	Details
17	Configuration For a network adapter, you can configure the settings shown here: For example, for a Nexus 1000V switch, assign a static IP address.	Details         Image: ServiceVM-SQL1.VSPEX.com Properties         Image: ServiceVM-SQL1.VSPEX.com Properties         Image: ServiceVM-SQL1.VSPEX.com Properties         Image: ServiceVM-SQL1.VSP         Image: ServiceVM-SQL1.VSP </th

Step	Configuration	Details
Step 19	Configuration Select the destination server based on the VM requirements and on the default placement options. For example, F3-HyperV3.vspex.com.	Select host     X       Destinations are rated based on the virtual machine requirements and on the default placement options.     Expected Utilization       Search     Image: Search     Image: Search       Rating     Destination     Warnin       Transfer Type     Network       Image: Search     Image: Search
		Details   Details   Description   Status   OK   Operating system   Microsoft Windows Server 2012 Standard   Virtualization software   Microsoft Hyper-V   Virtualization software status   Up-to-date   Virtual machines   SP2013-App1.VSPEX.com     OK     CK
20	Once all the VM and destination placement servers are configured, the star indicates that the VMs are ready to be deployed.	Statistical Mark Lact Statistical Mark Lact
21	Click Deploy.	Deploy service       Deploy service       Are you sure you want to deploy this service?       View Script     Deploy

Step	Configuration	Details	
22	Deployment starts.	Deploying Service	x
		Starting the service deployment task.	
23	Once the deployment kicks off, you can	Cancel	
	monitor the status of deployment.	Sterets:         10/21/031 123/265 5PM           Duration:         000017           Owner:         VSPEX/Dadministrator           Image: State 13/2         Execuste highly available V Completed         10/21/2013 123/202 PM         10/21/2013           Image: State 13/2         Image: State 13/2         Image: State 13/2         14 % 10/21/2013         123/202 PM           Image: State 13/2         Image: State 13/2         Image: State 13/2         14 % 10/21/2013         123/202 PM           Image: State 13/2         Image: State 13/2         Image: State 13/2         14 % 10/21/2013         123/202 PM           Image: State 13/2         Image: State 13/2         Image: State 13/2         11/2         11/2         11/2         11/2           Image: State 13/2         Image: State 13/2         Image: State 13/2         Image: State 13/2         10/21/2013         123/202 PM         10/21/2013         123/202 PM         10/21/2013         10/21/2013         123/202 PM         1	
24	On the SCVMM, click <b>Jobs</b> to view running jobs in this deployment	None           Recent List 20 Days         Restart Cancel         Debs           Other         Date Filter         Dob         Window           Job         Window         Status         Status         Status         Status         Owner           Job         Recent List 20 Days         Contom         Dob         Window         Status	/2013 12: /2013 12: /2013 12: /2013 12:



# Post-Deployment Tasks

AutoSPInstaller gives you the flexibility to choose the location for the index files at the time of installation. However, you can also refer link <u>Microsoft Manage the index component in SharePoint Server 2013</u>.

After the deployment of SQL Server, change the Database and Database log location.

WFE servers are configured with multiple NIC adapters with a specific Nexus 1000V port profile with VLAN network properties to provide network-level multitenancy for multiple tenants in the cloud to access SharePoint services. Tenants share the same web front-end server and web application.

### Configure VMs with the Appropriate Multitenant Network

VMs are deployed through the service template. Configure the tenant networks as shown in Table 22.



#### Table 22. Configuring the Tenant Networks



Similarly add tenant networks for multiple tenants in the Private Cloud.

# SharePoint 2013 Multitenancy Configuration

SharePoint 2013 provides the ability to host unique deployments for multiple tenants on the same farm by Isolating the data, operational services, and management of a tenant from other tenants using the same farm.

From a design standpoint, tenants are grouped together in one web application by their respective subscription ID. Whenever a new site collection is created, it is assigned the same ID as the other site collections in the tenancy. In addition to site collections for collaboration, a given tenant will also have a site collection used for tenant administration. The tenant uses its tenant administration site to configure settings such as service application settings, site collection creation and deletion, etc.

In general, site collection data is maintained in a content database. Whenever site collections are associated with a subscription ID, they will be stored in a partition of the database that is separate from other tenants in the farm.

This assures that any SQL query performed from within the context of that tenant will never return data from another tenant.

Service application databases also are partitioned in a similar way. When a web application is associated with two service applications, since those service applications are created in partitioned mode, the data is stored in tenant partitions and is isolated from other tenant data. With this approach, you need only one service application for all your tenants. So rather than having, say, three managed metadata service applications, you could have just one that is partitioned. This brings a great advantage to your infrastructure, from a scaling angle.

Tenant administration sites maintain most of the settings for the service application. This lets the tenants configure the settings as they realize suitable, and it assures that the settings for one tenant will not adversely affect the settings of another tenant.

# SharePoint 2013 Service Application Portioning

Not all service applications can be portioned. Partitioned service applications can be used with multitenancy. Refer to Table 23.

 Table 23.
 Partitioning Capabilities of Service Applications

Can be Partitioned	Cannot be Partitioned
User profiles (using profile synchronization)	User profiles (using Active Directory Import)
Managed metadata	Excel services
Business data connectivity	Access services
SharePoint search	Visio service
Search	State service
Machine translation service	Work management service
Word automation service	Performance point
	Usage and health
	App management service
	Subscription settings

# **Configure Multitenancy**

Figure 14 provides an overview of the process for configuring multitenancy.

Figure 14. Multitenancy Configuration Process



Table 24 provides a step-by-step approach for configuring multitenancy.

 Table 24.
 Configuring Multitenancy

Step	Configurations	Details
1	Create the subscription settings SA and Proxy.	Get-SPServiceInstance   where{\$GetType().Name -eq "SPSubscriptionSettingsServiceInstance"}   Start-SPServiceInstance
		<pre>\$acc = Get-SPManagedAccount "sharepoint\spservices"</pre>
		<pre>\$appPool = New-SPServiceApplicationPool -Name SettingsServiceAppPool -Account \$acc</pre>
		<pre>\$app = New-SPSubscriptionSettingsServiceApplication -ApplicationPool \$appPool -Name SettingsServiceApp -DatabaseName SettingsServiceDB</pre>
		<pre>\$proxy = New-SPSubscriptionSettingsServiceApplicationProxy - ServiceApplication \$app</pre>

Step	Configurations	Details
2	Create new site subscriptions.	\$sub = New-SPSiteSubscription
		Administrator: SharePoint 2013 Management Shell
		PS C:\Users\Administrator> \$sub = Nev-SPSiteSubscription PS C:\Users\Administrator> \$Sub Id Sites 
3	CUVC 3545 MCU module for TelePresence, 48 audio ports	New-SPSite -url http://sp2013-Appl/Sitest/Privatetenantadminl - owneralias vspex0\administrator -owneremail Abrar@cisco.com - template tenantadmin#0 -SiteSubscription \$sub - AdministrationSiteType TenantAdministration
		Administrator: SharePoint 2013 Management Shell Administrator: USPEX0> New-SPSite -url http://sp2013-Appl/Sitest/Pri vatetenantadmini -ownerslias uspex0vadninistrator -ownerenail Abrarecisco.com -t emplate tenantadmin#0 -SiteSubscription \$sub -AdministrationSiteType TenantAdmin istration_ v
		SharePoint Newsfeed SkyOne Sites Administrator ? ? ? BROWSE PAGE Q SHARE & FOLLOW IT Search this site p Home Home Site Contents (SparePoint Sites Site Contents (SparePoint Sites)
		Site Contents           Site Contents         Manage Site Collections         Configure Indepth Forms Services           Manage App Catalog         Manage Indepth Forms Services         Configure Indepth Forms Services           Manage App Catalog         Term store management         Manage Search           Manage App Licenses         Configure Indepth Forms Stores         Manage Search           App Permissions         Manage User Profile Application         Manage Search
4	CUVC 3545 EMP module for TelePresence Switching, 12 TP ports	New-SPSite -url http://sp2013-App1/Sitest/TenantPT1-owneralias sharepoint\administrator -owneremail Abrar@cisco.com -template sts#0 -SiteSubscription \$sub
		Administrator: SharePoint 2013 Management Shell  PS C:\Users\administrator.USPEX0> New-SPSite -url http://sp2013-Appi/Sitest/I2-o wneralias sharepoint\administrator -owneremail Abrar@Cisco.com -template sts#0 -SiteSubscription \$sub
		SharePoint         Newsfeed         SkyOrive         Sites         Administrator +         Ø           BROWSE         STE COLLECTIONS         Q         SHARE         & COLLECTIONS         & COLLECTIONS
		New         Delete         Properties         Owners         Dirk           Contribute         Review         Marage
		Home URL Manage Site Contents http://sp2012app/sites/Tenant9T1 d

The multitenancy environment is now configured for tenants.

Multitenancy provides a platform for sharing resources and managing services that are scalable, flexible, and robust. This enables the SharePoint administrator to easily scale from a small farm to a multiserver farm.

There are numerous ways to configure a SharePoint farm. This paper shows a fairly simple way of doing so.

# Conclusion

The VSPEX solutions integrate computing, networking, and storage resources to provide a unified data center framework that delivers outstanding performance for virtualized business applications. VSPEX infrastructures accelerate IT transformation by enabling faster deployments, greater flexibility of choice, efficiency, and lower risk.

Cisco UCS meets server virtualization, private cloud and multitenancy challenges with the next-generation data center platform that unifies computing, networking, storage access, and virtualization support in a cohesive system managed centrally and coordinated with virtualization software such as Microsoft Hyper-V server and Nexus 1000V integration with SCVMM. The system integrates enterprise-class servers in a 10 Gigabit Ethernet unified network fabric that provides the I/O bandwidth and functions that virtual machines and the virtualization software require. Finally, Cisco UCS integrates the network access layer into a single easily managed entity in which links to virtual machines can be configured, managed, and moved as readily as physical links. Cisco UCS continues Cisco's long history of innovation and delivers innovation in architecture, technology, partnerships, and services.

Microsoft SharePoint 2013 is an extensible and scalable web-based platform consisting of tools and technologies that support collaboration, multitenancy, and sharing of information within teams and throughout the web.

Microsoft SharePoint 2013 is both performance and storage intensive. Not all storage-intensive workloads are alike, and the EMC VX5500 storage configuration delivers balanced performance and expandability to best meet workload requirements ranging from large data to collaboration.

The three-tier architecture provisions an ideal SharePoint topology. Several servers at individual tiers render various SharePoint components together to make up a SharePoint 2013 farm. Servers at the web tier render web and search query functions, servers on the application tier are responsible for search indexing and various service application functions, and the server at the database tier hosts SQL Server databases for the farm.

The paper provides ample guidelines for creating a virtual SharePoint 2013 farm using Microsoft Hyper-V in a private cloud with multitenancy.

### References :

Cisco Microsoft Private Cloud Fast Track 3.0 Solution for EMC VSPEX with System Center 2012 SP1 for 250 VMS System Center 2012 Virtual Machine Manager Using Services Templates in System Center Virtual Machine Manager 2012 How to Create and Deploy a Virtual Machine from a Blank Virtual Hard Disk Install SQL Server 2012 Using SysPrep Prepare Image SQL 2012 Add Web or Application Servers to Farms in SharePoint 2013 Manage Search Components in SharePoint Server 2013 Manage the Index Component in SharePoint Server 2013 Change the Default Search Topology in SharePoint 2013 Attach or Detach Content Databases in SharePoint 2013 Create and Configure a Search Service Application in SharePoint Server 2013

- Create a Search Center Site in SharePoint Server 2013
- Manage Databases in SharePoint 2013
- Database Properties (Files Page)
- Capacity Management and Sizing for SharePoint Server 2013
- Attach or Detach Content Databases in SharePoint 2013
- Initial Deployment Administrative and Service Accounts in SharePoint 2013
- Install the Hyper-V Role and Configure a Virtual Machine
- Install Guest Operating System
- Install SharePoint 2013 Across Multiple Servers for a Three-Tier Farm
- Manage crawling in SharePoint 2013
- View Diagnostic Logs in SharePoint 2013
- Configure an Environment for Apps for SharePoint (SharePoint 2013)
- Optimizing tempdb Performance
- **AutoSPInstaller**
- Provision Tenants



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