

Administrator’s Guide of Topics to Consider before Deployment

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Summary:

In this concise paper we will guide new administrators of Microsoft® Office SharePoint® Server 2007 or Windows® SharePoint® Services to many of the touch points they will need to concern themselves with prior to deploying SharePoint in their environment. The goal is to cut down on the “I didn’t even know SharePoint Server had that” reactions. This paper will guide them through the most common issue areas when getting started with SharePoint, including server administration, governance, branding, and development.

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Getting started with SharePoint installations can often times be overwhelming. With all the different aspects to consider, it is often hard to know where to start. This paper will serve as a guide to get you started and will cover the most common areas that should be addressed at the onset of the project. This paper is designed to cover at high level specific areas that should be addressed and to provide links to more in depth material that can be referenced and used for detailed project planning.

Installing & Configuring the Environment

Installation Types

When installing Office SharePoint Server 2007 there are several options for the installation type. It is important to pay careful attention to these options while navigating through the installation menus. Depending on the installation type chosen, additional options will be made available or set to default values. It is necessary to understand what these values are so that future management of the servers can be maintained.

Basic Installs

When the Basic installation option is selected, several items are automatically provisioned for you, including:

* All app pools will use the LocalSystem account.
* SQL Server® components will be installed and configured in the environment. Windows SharePoint Services installs Windows Internal Database (WID) and Office SharePoint Server installs SQL Server 2005 Express.

These configuration elements can cause several issues in the future, including:

* Additional servers can’t be added to the farm, if you find it necessary to scale out.
* If permissions are changed for the LocalSystem account, it is likely that SharePoint will be affected.

One of the strongest arguments for using the Basic installation is the ability to test SharePoint for free without having to incur the SQL Server licensing costs. If there is a need for you to test SharePoint, and you don’t want to incur the cost of SQL Server, then it would be best to download and install a free version of SQL Server and then complete an Advanced installation of SharePoint. This will provide a way to take advantage of the benefits of the basic install while avoiding the pitfalls.

Advanced Installs

When the Advanced installation option is selected, additional options for installation are displayed, including:

* Complete
* Web Front End
* Stand Alone

The main thing to note on this screen is that the option for Stand Alone installation is the same option as a basic install. When choosing one of the advanced installation options you will be prompted to provide additional information for configuration including the user accounts created to run SharePoint and the database information. The Complete option will install all of the Office SharePoint Server binaries, which include the WFE, Index, Query and Excel Services. The Web Front End option will install only the binaries needed to configure the WFE. The Complete option provides the most flexibility for future use and can be selected in most cases.

Information for all the steps required to install and configure SharePoint are detailed in the TechNet article: Deploy Office SharePoint Server 2007 in a server farm environment: [http://technet.microsoft.com/en-us/library/cc303428.aspx](http://go.microsoft.com/fwlink/?LinkId=139018&clcid=0x409).

User Accounts

When determining the strategy to be used with account management in SharePoint there are several options. The minimalist approach involves creating two accounts, one to run and manage SharePoint and the other to manage Search. On the other end of the spectrum, the most secure option is to run in least privileged mode by creating user accounts for each SharePoint process. Most likely, organizations will run in a mixed environment using a hybrid of both solutions. Unique accounts will be created, but where overlap exists, one account will be used for multiple processes. An example of a hybrid solution would be to create the following accounts:

* SharePoint Admin Account
* Account used to login to the server and install and configure SharePoint.
* SharePoint Farm Account
* Account provided when completing the initial farm configuration.
* SharePoint Application Pool Accounts
* Create unique accounts to manage each of the application pools created.
* SSP Service Account
* Responsible for running the SSP Application Pool and SSP Service
* Search Service Account
* Responsible for running SharePoint Server Search, Windows SharePoint Services Search, and Windows SharePoint Services Crawl

Information for all the different accounts required to configure SharePoint are detailed in the TechNet article: Plan for administrative and service accounts (Office SharePoint Server): [http://technet.microsoft.com/en-us/library/cc263445.aspx](http://go.microsoft.com/fwlink/?LinkID=92931&clcid=0x409).

Account Used During Installation

One common mistake made when installing SharePoint for the first time, is using a personal administrator account when installing. The reason for not wanting to use a personal administrator account is the account used when installing SharePoint is given special rights on the server. It has been found in extreme instances of troubleshooting that the only account able to complete the configuration wizard to detach from a corrupted farm is the account initially used to install SharePoint. To avoid this issue, a SharePoint Admin account can be created and used for installations, upgrades and service packs. Prior to installation, this account should be given administrator rights on all SharePoint servers and should be given the SQL Server dbcreator and securityadmin roles.

Local Storage

When installing and configuring SharePoint, many logs by default are configured to be stored in the c: drive. They can be configured to be moved to a new location, however, by default they will be stored in c:. This should be taken into consideration when planning for the amount of storage space allocated for the c: drive or alternately, during configuration the settings can be updated to point to alternate storage locations. Below is a table of the common log items and the access point to update the default storage location.

Common Local Storage Locations

|  |  |
| --- | --- |
| Storage Type | Where to Update |
| Usage Logs | Central Administration > Operations > Usage Analysis Processing |
| IIS Logs | IIS Administration |
| Diagnostic / ULS Logs | Central Administration > Operations > Diagnostic Logging |
| Index Files | Set location when create a new SSP |
| Temp DB Files | SQL Management Studio |
| 12 Hive | These files should not be moved. |

In addition to the storage considerations mentioned above, it is also necessary to consider the storage required for the SQL Server content. The following whitepaper provides information and recommendations for planning for SQL Server storage: Planning and Monitoring SQL Server Storage for Office SharePoint Server: Performance Recommendations and Best Practices (white paper): [http://technet.microsoft.com/en-us/library/cc263261.aspx](http://go.microsoft.com/fwlink/?LinkID=119398&clcid=0x409).

Enabling Usage Reports

By default, usage reports are not configured when SharePoint is installed. These reports can be used to provide valuable information about the environment usage. There are two steps involved in activating the reports. First, the Windows SharePoint Services usage logging must be enabled; second the Usage Reporting must be enabled in the SSP. Once usage reports have been enabled, it will take 24 hours for the reports to be displayed.

Information for all the steps required to enable the usage reports are detailed in the TechNet article: Enable usage reporting: [http://technet.microsoft.com/en-us/library/cc262537.aspx](http://go.microsoft.com/fwlink/?LinkId=139021&clcid=0x409).

STSADM

STSADM is the command-line tool provided with SharePoint. This command-line tool allows you to interact with the SharePoint object model to complete common administrative tasks. Several STSADM commands are available via the command line but not in the Central Admin user interface. STSADM is beneficial to system administrators who want to create scripts to efficiently manage common tasks. STSADM is also extendible, allowing the creating of custom commands.

Information for all available STSADM commands can be found in the TechNet Article: Stsadm command-line tool (Office SharePoint Server) : [http://technet.microsoft.com/en-us/library/cc261956.aspx](http://go.microsoft.com/fwlink/?LinkID=116078&clcid=0x409).

Samples of some custom STSADM commands can be found in the following Blog Post: STSADM Custom Extensions - Automating SharePoint 2007 Configurations via STSADM Custom Extensions: [http://stsadm.blogspot.com/2007/08/stsadm-commands\_09.html](http://go.microsoft.com/fwlink/?LinkId=139022&clcid=0x409).

SQL Server Management

When configuring SharePoint, administrators need to consider the SQL Server management. This is often an area that is overlooked and there are several different aspects that should be taken into consideration. The following list represents some of the key articles pertaining to SQL Server management in your SharePoint environment:

* Information about the Maintenance Plan Wizard in SQL Server 2005 and about tasks that administrators can perform against SharePoint databases : [http://support.microsoft.com/kb/932744](http://go.microsoft.com/fwlink/?LinkID=110813&clcid=0x409).
* Support for changes to the databases that are used by Office server products and by Windows SharePoint Services: [http://support.microsoft.com/kb/841057](http://go.microsoft.com/fwlink/?LinkID=110812&clcid=0x409).
* Database maintenance for Office SharePoint Server 2007 (white paper): [http://technet.microsoft.com/en-us/library/cc262731.aspx](http://go.microsoft.com/fwlink/?LinkID=117910&clcid=0x409).

Backup & Restore

When initially configuring your SharePoint environment, the following things should be considered:

* Out of the box, no backup is configured.
* Backups can be configured via the Central Admin site (nice UI, but no scheduling capabilities) or through STSADM commands (command line, ability to schedule via batch files).
* Files located on the file system, such as customizations to the 12 hive, need to be accounted for.
* The index databases are not included in the out-of-the-box SharePoint backups but should be included in the overall backup strategy.
* Many Partner Solutions have been developed to enhance and improve upon the backup and restore tools provided with Office SharePoint Server.

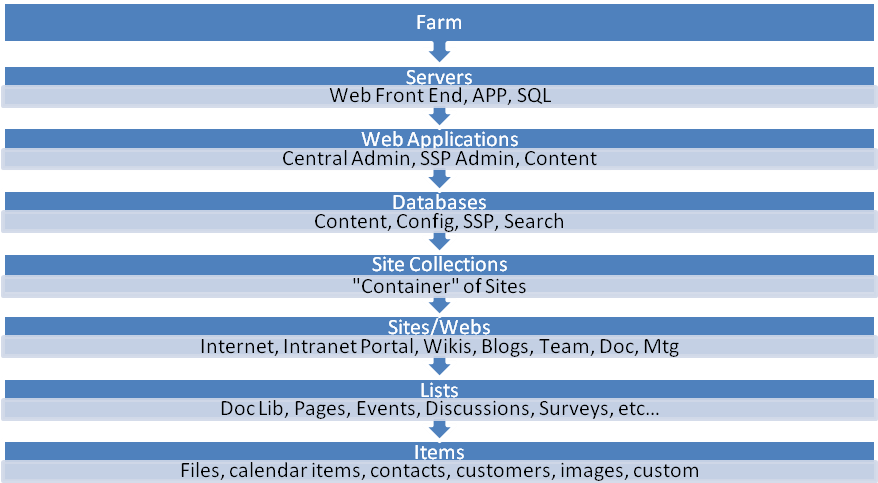
For more information on backup and restore options, refer to the SharePoint Backup and Restore Overview: [http://msdn.microsoft.com/library/bb447526.aspx](http://go.microsoft.com/fwlink/?LinkId=139024&clcid=0x409) and Plan for backup and recovery (Office SharePoint Server): [http://technet.microsoft.com/library/cc261687.aspx](http://go.microsoft.com/fwlink/?LinkId=139025&clcid=0x409).

Understanding the Environment

It is important to understand the hierarchy in place in your SharePoint environment. Without a proper understanding of these elements, it will be hard to support them at the different levels required.

Farm Hierarchy

The image below describes the different aspects of the SharePoint hierarchy. Links at the end of the section provide information on each level of the hierarchy. It is a wise idea to have a solid understanding of this image prior to deploying SharePoint in your environment.



Farm

A farm is a group of SharePoint servers that share a configuration database. This configuration database stores all of the information required to connect your farm and make it run. Each farm is then administered through a single instance of Central Administration whether it has one or many servers.

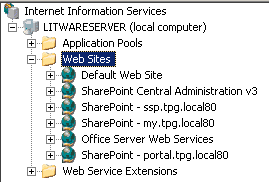
Servers

Servers can be added to the SharePoint farm. Each server in the farm can be configured for specific roles, such as, web front end, query, index or application.

For more information on planning for your SharePoint farm and sever roles, refer to the following: Planning and architecture for Office SharePoint Server 2007: [http://technet.microsoft.com/en-us/library/cc261834.aspx](http://go.microsoft.com/fwlink/?LinkID=105576&clcid=0x409).

Web Applications

A SharePoint Web application is equivalent to an IIS Web Site or IIS Virtual Server. The image below is an example of a SharePoint Web application as seen in IIS. When looking at SharePoint Web applications, it is crucial to identify the change in terminology. Whenever a new Web application is created, a new content database will be created. By default (unless specified during creation) site collections created in the Web application will be placed in the Web application database.



For more information on planning Web applications, refer to the Web applications section in the following article: Logical Architecture Components: [http://technet.microsoft.com/library/cc263121.aspx](http://go.microsoft.com/fwlink/?LinkId=139027&clcid=0x409).

Databases

SharePoint uses SQL Server databases to store content and configuration information. The configuration database is used to manage the farm settings. There is only one configuration database per farm. The content databases are used to store content. There can be many different content databases within your farm. Also with your Office SharePoint Server farm for each Shared Services Provider (SSP) you create there will be two databases, one for storage and configuration of the SSP and one for search properties. This search database should be planned for both storage and performance needs.

For more information on the databases used by SharePoint Server, refer to the following: Database types and descriptions (Office SharePoint Server): [http://technet.microsoft.com/library/cc678868.aspx](http://go.microsoft.com/fwlink/?LinkId=139028&clcid=0x409).

Site Collections

SharePoint site collections should be considered a “container” that holds sites. This is important to understand because of the many attributes and features that can be configured for a site collection. The following list identifies some of the key things to note about site collections:

* Smallest unit for controlling storage database
* Sites are backed up at the site collection level
* By default, security is managed at the site collection level
* Quotas can be configured for site collections
* Sites are confined to share content within their own site collection
* Level of ownership is defined at the site collection level

Site collections, because they are the unit of scale in SharePoint, are critical to understand. When architecting your data, plan site collections carefully. One giant site collection seems easiest at first but it has to be stored in one content database. If that database becomes an unmanageable size you can’t span a site collection across multiple databases so you will then have to break your site collection up into multiple site collections which can be a very challenging task. Performance can be severely impacted by a content database that is too large. The Local Storage section of this paper has additional details on site collection and database sizing.

For more information on Site Collections, refer to the following: About SharePoint Site Collections: [http://technet.microsoft.com/library/cc742548.aspx](http://go.microsoft.com/fwlink/?LinkId=121649&clcid=0x409) and Manage SharePoint Site Collections: [http://technet.microsoft.com/library/cc835712.aspx](http://go.microsoft.com/fwlink/?LinkId=139029&clcid=0x409).

Sites

A site is a collection of lists, libraries, and pages. Whenever you create a new site, a template for the site must be chosen. The templates available out of the box will differ depending on the SharePoint version that is installed. Sites are created within a site collection and can sometimes be confused with a site collection. This confusion mostly comes because part of the Site Collection creation process involves creating a top level site. This can be avoided when thinking of the site collection as a container and the sites as items within the container. Sites are sometimes referred to as webs also.

For more information on Sites, refer to the Web applications section of the following article: Logical Architecture Components: [http://technet.microsoft.com/library/cc263121.aspx](http://go.microsoft.com/fwlink/?LinkID=139027&clcid=0x409).

Lists & Items

Lists are the different groups of information within a site. When a list is created, a template is associated with the list that determines what information will be collected. Through the UI, the list can be customized even farther to build unique groupings of data for your organization. Once a list is created, items can be created within the list. The list is a shell that defines how the data will be stored, the list items are the data defined within the list.

For more information on planning for and working with lists, refer to the following: Plan lists (Windows SharePoint Services): [http://technet.microsoft.com/en-us/library/cc287823.aspx](http://go.microsoft.com/fwlink/?LinkId=139030&clcid=0x409) and White paper: Working with large lists in Office SharePoint Server 2007: [http://technet.microsoft.com/library/cc262813.aspx](http://go.microsoft.com/fwlink/?LinkID=105580&clcid=0x409).

Managing Environment Customizations

After getting the environment installed and configured, it is likely that the next request will include requests for customization, including items like custom branding and custom code. But before looking at the making specific customizations, it is good to understand the tools supported by Microsoft for making changes to the SharePoint environment.

For detailed information on making customizations, including what customizations can be supported within different environments, refer to the Customization Whitepaper: [http://technet.microsoft.com/library/Cc263010.aspx](http://go.microsoft.com/fwlink/?LinkID=105947&clcid=0x409).

“Customized” & “Un-customized” Files

By default, all SharePoint pages are considered "uncustomized". This term refers to the fact that SharePoint Server has a reference in its content database that points to a specific location on the server's file system. Uncustomized files live on the file system as they do when they are first installed with SharePoint or by a Feature or Solution. In contrast, "customized" files are those whose source lives in the SharePoint content database. Files typically become customized when they are edited from SharePoint Designer. While editing files in SharePoint Designer can be ideal from a speed and utility perspective there are some disadvantages to customizing them this way from an administrative perspective. A major disadvantage of this approach is that pages become more challenging to manage across separate servers and environments. Customization of branding files can be avoided by designers working closely with developers and administrators to properly package their SharePoint Designer changes into Features and Solutions.

For more information on customized and uncustomized SharePoint content, refer to the following: Understanding and Creating Customized and Uncustomized Files in Windows SharePoint Services 3.0: [http://msdn.microsoft.com/library/cc406685.aspx](http://go.microsoft.com/fwlink/?LinkId=139031&clcid=0x409).

Features and Solution Files (.wsp files)

Features and Solutions are an important concept for administrators to understand. They can make the management and maintenance of a farm much easier when used together. Features provide the ability to define a piece of functionality that can be turned on and off at a given scope, such as the site collection, site, or Web application. Solutions provide the ability to package and install a feature much like a Windows .msi file, and have one installation and deployment point for all servers in the farm. The deployments can be scheduled and whenever new servers are added to the farm, the existing solutions are automatically deployed to the new server. Developing functionality as Features and deploying them as Solutions is the recommend deployment strategy for SharePoint customizations.

For more information on the benefits of using solutions and features, refer to the following:

* Solutions Overview: [http://msdn.microsoft.com/en-us/library/aa543214.aspx](http://go.microsoft.com/fwlink/?LinkId=128154&clcid=0x409)
* Solution package components: [http://technet.microsoft.com/library/cc263289.aspx](http://go.microsoft.com/fwlink/?LinkId=139032&clcid=0x409)
* SharePoint Features: [http://msdn.microsoft.com/library/bb861828.aspx](http://go.microsoft.com/fwlink/?LinkID=126657&clcid=0x409)
* SharePoint Solutions: [http://msdn.microsoft.com/library/bb862721.aspx](http://go.microsoft.com/fwlink/?LinkId=139033&clcid=0x409)

A System Administrators Role in Branding

While system administrators are not typically responsible for building a branding strategy, it is important they understand the concepts being implemented and the overall effect that the different approaches will have on the environment. Understanding these concepts and approaches will allow for an interactive approach to managing SharePoint where developers and system administrators are able to work together to determine the best approach to implementing solutions that meet the needs of the organization, while maintaining supportability of the underlying infrastructure.

Branding

When it comes to administering a SharePoint site, there are some branding concepts that are important to understand. This section is designed to highlight those concepts at a high level and point to more specific information available from Microsoft.

What is branding

Branding is the process of creating a specific image or identity that people recognize in relation to a company. When it comes to Web sites, branding usually involves creating logos, colors, fonts, images, layouts, CSS, JavaScript, Flash, and anything that makes up the visual look and feel. Because SharePoint shares common elements with a Web site, it also contains these same branding elements; however there are also some SharePoint specific concepts that relate to branding. These include master pages, page layouts, and themes. The next section will introduce these concepts and discuss how they impact administrators.

Office SharePoint Server Branding Methods

Master Pages

Master pages in SharePoint work the same as they do in traditional ASP.NET applications. They allow designers to control almost all aspects of the overall layout of a SharePoint site. Master pages can be thought of as the glue that holds all of the SharePoint functionality together. In fact every SharePoint site will have a master page, whether it is custom or one of the out-of-the-box master pages. When a designer creates a custom master page, they are typically trying to make a SharePoint site look less like it does out of the box and more like a company’s specific brand.

Master pages are stored in the master page gallery of a SharePoint site. They can be added to the master page gallery either directly from either SharePoint Designer or the SharePoint Web interface, or they can be deployed via a Feature.

Master pages are applied to an Office SharePoint Server site via the Master Page settings menu located from the Site Settings of the SharePoint Web interface. One really nice thing about this menu is that it allows the administrator to apply a master page not only to the current site, but to all sub sites below it. Along with this manual method, master pages can also be applied to SharePoint sites via custom Features.

Master pages can also be applied to Windows SharePoint Services sites. Like Office SharePoint Server sites, the master page is stored in the master page gallery. Unlike Office SharePoint Server, changing the master page can only be done through a custom solution.

For more information on branding, refer to the following: Customizing and Branding Web Content Management-Enabled SharePoint Sites: [http://msdn.microsoft.com/library/aa830818.aspx](http://go.microsoft.com/fwlink/?LinkID=128715&clcid=0x409).

SharePoint Themes

SharePoint themes are different from ASP.NET themes; they are used specifically to change the colors, fonts, and some of the images that are used in SharePoint sites. Unlike master pages though, they cannot be used to move SharePoint elements or change the layout of the page. They are created entirely with CSS and images and cannot use any custom ASP.NET code.

SharePoint themes are typically added by manually logging into the physical server and copying the various files (images, CSS, and XML) to several folders in the 12 directory. They are applied from the Site Settings menu in the SharePoint Web interface.

For more information on creating SharePoint themes, refer to the following articles:

* How to: Create New SharePoint Themes: [http://msdn.microsoft.com/library/aa867986.aspx](http://go.microsoft.com/fwlink/?LinkId=139035&clcid=0x409)
* How to: Apply a SharePoint Theme: [http://msdn.microsoft.com/library/cc621346.aspx](http://go.microsoft.com/fwlink/?LinkId=139036&clcid=0x409)

Master Pages vs. Themes

While both master pages and SharePoint themes can apply branding to a SharePoint site, they differ in a few key ways. The following table highlights these differences.

|  |  |  |
| --- | --- | --- |
|  | **Master Page** | **Theme** |
| **Primary language / limitations** | ASP.NET code – can control many aspects of the look and feel of the page including placement of elements. | CSS – can only change colors, fonts, background images, and can hide elements. Cannot make big changes to the positioning of elements. |
| **Apply branding to SharePoint application pages (identified by “/\_layouts” in the URL)** | Typically cannot apply branding to application pages | Can apply branding to all aspects of a SharePoint site including application pages |
| **Propagate branding to subs-sites** | In Office SharePoint Server Publishing sites can easily apply the same branding to all sub-sites | By default themes are applied only one site at a time |
| **Storage location** | Live in the master page gallery of the SharePoint site which is stored in the SharePoint Content Database | Live on the file system of the SharePoint server in the 12 folder (12\TEMPLATE\THEMES) |

Page Layouts

Only available in Office SharePoint Server sites, page layouts provide yet another means for designers to style the content of a SharePoint site. While master pages provide a unified outer shell design for a SharePoint site, page layouts define the specific look and the editable data for various types of pages. They allow another level of granularity by allowing the same type of data to be shown in different ways, like an article page or a welcome page, while still utilizing the same master page. Page layouts are created in SharePoint Designer and are based on SharePoint content types and site columns. From an administrative standpoint they are added to Office SharePoint Server sites in a similar fashion to master pages. They are also stored in the Master Page Gallery and can, like master pages, can be added from SharePoint Designer, the SharePoint Web interface, or deployed via SharePoint Features.

For information on page layouts, refer to the following: Create a publishing page layout: [http://office.microsoft.com/en-us/sharepointdesigner/HA101741281033.aspx](http://go.microsoft.com/fwlink/?LinkID=107638&clcid=0x409).

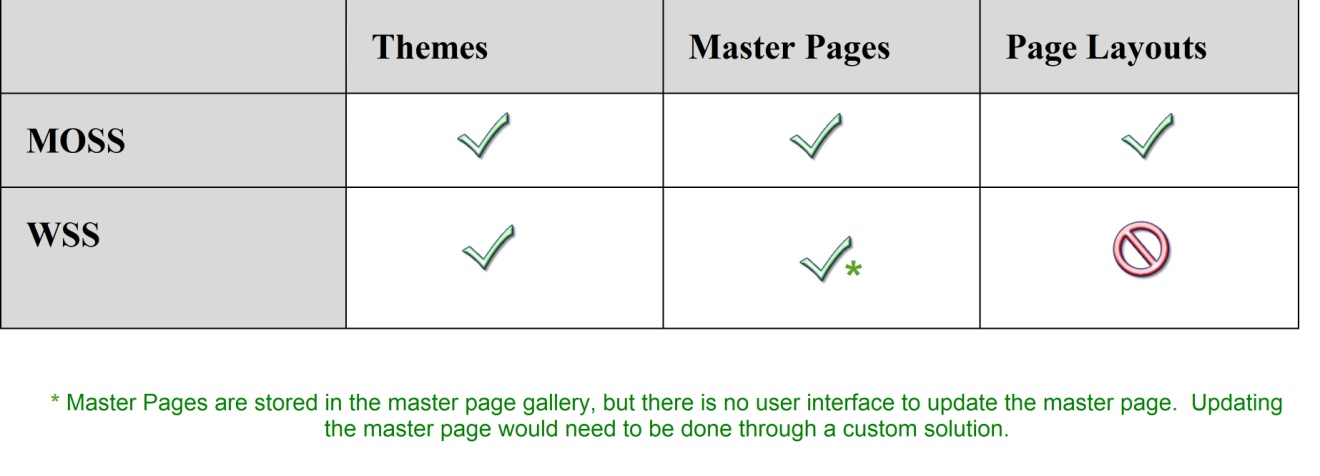
All the other branding assets

Along with the branding methods listed above there are typically many referenced images, JavaScript, CSS, and other branding asset associated with branding. While themes will always have CSS and images located in the 12 folder, master pages and page layouts can refer to these assets from a couple different locations. Administrators need to be aware of the pros and cons related to where these assets are located. The following article describes these differences.

For more information on branding assets, refer to the following: Implementing a Brand in a SharePoint Server 2007 Publishing Site: [http://msdn.microsoft.com/library/dd221375.aspx](http://go.microsoft.com/fwlink/?LinkId=139047&clcid=0x409).

MOSS vs. WSS

When it comes to branding there are many similarities and many difference between what is available in Windows SharePoint Services (WSS) and what is available in Microsoft Office SharePoint Server (MOSS). The table below has been created to highlight those differences.



For more information on working with master pages in a Windows SharePoint Services environment, refer to the following: Customizing Master Pages in Windows SharePoint Services: [http://msdn.microsoft.com/library/ms476046.aspx](http://go.microsoft.com/fwlink/?LinkId=139038&clcid=0x409).

### Customization with SharePoint Designer

Whether it is decided to simply customize branding files or actually deploy them to the server via Features, SharePoint Designer is still a critical tool for working with SharePoint sites. There is no other tool available that can interact with a SharePoint site as quickly and efficiently as SharePoint Designer. It allows designers to utilize either a code view or a visual WYSIWYG design view, when working with master pages, page layouts, and CSS.

For information on the use of SharePoint Designer, refer to the following content:

* Introducing Microsoft Office SharePoint Designer 2007: [http://office.microsoft.com/en-us/sharepointdesigner/HA100740831033.aspx](http://go.microsoft.com/fwlink/?LinkId=139039&clcid=0x409)
* Help for SharePoint Designer 2007: [http://office.microsoft.com/en-us/sharepointdesigner/FX100646991033.aspx](http://go.microsoft.com/fwlink/?LinkId=105367&clcid=0x409)

Controlling the Use of SharePoint Designer

Administrators need to be aware that the ability for designers and content authors to work with a SharePoint site from SharePoint Designer can be controlled via Contributor Settings. Contributor Settings allow administrators to decide what roles are allowed to interact with which specific features of SharePoint Designer.

For more information, refer to the following: Introduction to Contributor Settings: [http://office.microsoft.com/en-us/sharepointdesigner/HA101174691033.aspx](http://go.microsoft.com/fwlink/?LinkId=139040&clcid=0x409).

### Deploying branding with Features and Solutions

Features and Solutions provide administrators the ability to properly deploy and activate custom functionality on a SharePoint server and a across an entire farm. This functionality can include all of the branding concepts discussed above. By using this method to deploy branding files to a SharePoint environment, administrators can achieve a much more controlled process for managing changes.

It is important to understand that the process of properly deploying a brand in this fashion will require designers and administrator to work together to ensure that all parties understand what is being deployed, where is being deployed, and what it changes.

For links and information on developing and deploying features and solutions, refer to the “Managing Environment Customizations” section above.

A System Administrators Role in Custom Code

While it is not likely that a system administrator will be responsible for developing custom code solutions for SharePoint deployments, it is likely that they will be responsible for helping developers create a test environment as well as deploying content to the QA and production environments. In this section of the paper, different types of development will be highlighted and different development techniques will be discussed.

Types of Development

SharePoint offers a great deal of out-of-the-box functionality that enables administrators, developers, and site owners to create custom sites and solutions by configuring functionality in different ways. Sometimes the out-of-the-box functionality does not provide everything that an organization may need for its implementation. For these cases, SharePoint provides the ability to easily create custom pages, Web Parts, lists, content types, workflows, site definitions and more that can help fill any gaps. Items can be developed by using Visual Studio and in some cases SharePoint Designer and can be deployed as a Solution or published directly to a site. The following list represents some of the custom content that can be created for use in SharePoint deployments:

* Web Parts
* BDC Application Files
* Reusable Site Content
  + Content Types
  + List Templates
  + Workflows
* Event Receivers
* Feature Events
* Custom Administrative Tools
  + STSADM Extensions
  + Site Management Tools

For more information on SharePoint development, refer to the following: SharePoint Server Developer Portal: [http://msdn.microsoft.com/en-us/office/aa905503.aspx](http://go.microsoft.com/fwlink/?LinkID=119449&clcid=0x409) and Windows SharePoint Server Developer Center: [http://msdn.microsoft.com/sharepoint/default.aspx](http://go.microsoft.com/fwlink/?LinkID=123428&clcid=0x409).

Creating a Development Environment

To begin developing custom content, one of the first steps will be building a development environment. Some of the first decisions that need to be made are around using a shared or isolated development environment and using physical or virtual hardware. Both scenarios are described below.

Isolated or Shared Model

An isolated development environment is one where each developer has his or her own instance of both server and client resources (i.e. Server operating system, SharePoint, SQL Server, and Visual Studio). A shared development environment is often one where developers share server resources like a SharePoint server and/or a SQL Server but maintain their own instance of client tools like Visual Studio or SharePoint Designer. A shared development environment still requires that a SharePoint installation is installed on the local developer machine (even though the services can be shutdown) so that the SharePoint assemblies are available to develop and compile against.

The isolated model offers several key advantages when compared to the shared model. In an isolated environment a developer is free to perform operations like restarting services or the operating system and deploying, removing, or debugging solutions without worrying about whether or not it will interfere with what another team member is doing. It also gives developers the peace of mind to know that other team members cannot disturb the items that they are working on in their environment. An isolated environment is also often impervious to most network issues or downtime because everything is run locally and it also better lends itself to being portable (this is dependent on the physical or virtual hardware it is installed on also being portable). However, depending on the situation and the exact setup, a shared model can potentially have lower initial hardware and licensing costs but these savings are often significantly outweighed by the benefits of the isolated model.

Virtual Machine or Physical Hardware

When determining whether to have a development environment based on a virtual machine or physical hardware, there are a few things to consider. The first thing to consider is: Is it acceptable to have server operating systems as the base for developer workstations? If the answer to this question is no, you must head down the virtual machine path because SharePoint is currently only supported on Windows Server® 2003 and Windows Server® 2008.

Another thing to consider if you choose to use a virtual machine is: Where will it be located? A virtual machine can be located on a remote server or on the developer’s workstation. In order for the virtual machine to run locally on the developer’s workstation, the workstation may need to have some of its components upgraded or in some cases the workstation may need to be replaced altogether in order for the virtual machine to run in an efficient manner. Adding an additional hard drive to place the virtual machine and virtual disks on and/or adding additional RAM are usually the only upgrades needed. Having a multi-core processor and/or a processor that directly supports virtualization will also help performance and if the virtual machines are placed on remote servers the servers will need to be sized appropriately to handle the load.

Using a virtual machine offers several advantages over developing directly on physical hardware. When using a virtual machine there is no need to install a server operating system on a developer’s workstation. It also allows developers to take advantage of commonly supported virtualization technology such as snapshots, differencing disks, and rollbacks during the development life cycle. It also can reduce the burden on administrators by allowing them to maintain and distribute a single development image for the entire organization. Virtual machines can also be easily shared between developers and if stored on a portable drive become portable themselves. Using physical hardware can offer some performance advantages and can provide functionality that is not yet available on all virtualization platforms like sound and multiple monitor support.

For more information on building a development environment, refer to the following links:

* Review of Environments: [http://technet.microsoft.com/library/cc263209.aspx](http://go.microsoft.com/fwlink/?LinkId=139042&clcid=0x409)
* Team-Based Development in Microsoft Office SharePoint Server 2007: [http://msdn.microsoft.com/library/bb428899.aspx](http://go.microsoft.com/fwlink/?LinkId=139043&clcid=0x409)
* Hyper-V and Virtualization on Microsoft TechNet: [http://technet.microsoft.com/en-us/virtualization/](http://go.microsoft.com/fwlink/?LinkID=126643&clcid=0x409)
* Setting up the Dev Environment: [http://technet.microsoft.com/library/cc262741.aspx](http://go.microsoft.com/fwlink/?LinkId=139044&clcid=0x409)

Code Access Security (CAS)

Code Access Security (CAS) provides a way for administrators and developers to restrict how code executes within the common language runtime of the .NET Framework by using permissions and defining policies. In many ways it is analogous to setting permissions on the file system or creating group policies for the domain. A CAS policy is often referred to as a trust level because that is how it is referred to within the .NET configuration infrastructure. SharePoint comes with two custom trust levels, WSS\_Minimal and WSS\_Medium, that have been created specifically for its use. WSS\_Minimal is the most restrictive policy a SharePoint deployment can effectively run under and WSS\_Medium provides a slightly less restrictive environment that can allows for a reasonable balance between WSS\_Minimal and Full Trust. Full Trust is basically an anti-policy; items that run with Full Trust have no restrictions because CAS is not enforced in any way. Allowing the Web application or assemblies (.dlls) to run with Full Trust should be avoided. Any assembly that is installed to the Global Assembly Cache (GAC) or is placed inside the \_app\_bin folder of the SharePoint Web application will be granted Full Trust. SharePoint provides a way for developers to define policies as part of a solution package that will essentially extend the CAS policy that is in use by the Web application to cover the additional permissions needed by the solution. If or when artifacts are developed that require Full Trust (like Feature Receivers) they should be isolated into their own assembly to minimize the footprint of code that has Full Trust.

For more information on Code Access Security, refer to the following: Code Access Security: [http://msdn.microsoft.com/library/930b76w0.aspx](http://go.microsoft.com/fwlink/?LinkId=139045&clcid=0x409).

Governance

No white paper that covers how to get started with a SharePoint installation would be complete without a section dedicated to governance. Governance is one of the key components of your implementation that will be used to help ensure long term success. It is likely that system administrators will not be responsible for developing and maintaining the governance plan, however they should have a significant role in developing the governance policies.

What exactly is governance? According to Microsoft, “Governance is the set of policies, roles, responsibilities, and processes that you establish in your enterprise to guide, direct, and control how it uses technologies to accomplish business goals.” In short, governance is an organization’s operations manual for its SharePoint environment. Unique for every organization, this set policy will define how your IT department manages your SharePoint environment, and, in the end, how effective a SharePoint deployment will be as an enterprise solution. The key to a successful governance plan is to carefully balance user access with IT restrictions and enterprise compliance policies, as well as including well-defined procedures for growth and change.

Do not make the mistake of leaving governance out of the conversation when planning and developing a new SharePoint environment. Although there is a substantial cost in time, the cost of not planning properly will be greater.

Microsoft provides a wide range of tools that you can use as a reference when setting up your governance plan. These resources will serve as a reference for you as you move forward with your SharePoint project. They will cover a wide range of governance topics, such as, who should be involved, what and how information will be managed, and how to get started.

Information pertaining to SharePoint governance can be found in the TechNet Governance Resource Center for SharePoint Server 2007: [http://technet.microsoft.com/en-us/office/sharepointserver/bb507202.aspx](http://go.microsoft.com/fwlink/?LinkID=92729&clcid=0x409)

Some of the key articles included in the resource center include the following:

* Index of Governance Content: [http://technet.microsoft.com/library/cc263341.aspx](http://go.microsoft.com/fwlink/?LinkId=139046&clcid=0x409)
* Steps for building governance into SharePoint Server 2007 (white paper): <http://go.microsoft.com/fwlink/?LinkId=92602&clcid=0x409>
* Sample governance plan: <http://go.microsoft.com/fwlink/?LinkID=92333&clcid=0x409>
* Governance checklist guide: <http://go.microsoft.com/fwlink/?LinkId=91896&clcid=0x409>

Attachment A: Summary of Links

The following attachment has been created to be used as a reference for all links within this document. The links below are referenced throughout the content above.

Installing & Configuring the Environment

|  |  |
| --- | --- |
| Title | URL |
| Deploy Office SharePoint Server 2007 in a server farm environment | [http://technet.microsoft.com/en-us/library/cc303428.aspx](http://go.microsoft.com/fwlink/?LinkId=139018&clcid=0x409) |
| Plan for administrative and service accounts (Office SharePoint Server) | [http://technet.microsoft.com/en-us/library/cc263445.aspx](http://go.microsoft.com/fwlink/?LinkID=92931&clcid=0x409) |
| Planning and Monitoring SQL Server Storage for Office SharePoint Server: Performance Recommendations and Best Practices (white paper) | [http://technet.microsoft.com/en-us/library/cc263261.aspx](http://go.microsoft.com/fwlink/?LinkID=119398&clcid=0x409) |
| Enable usage reporting | [http://technet.microsoft.com/en-us/library/cc262537.aspx](http://go.microsoft.com/fwlink/?LinkId=139021&clcid=0x409) |
| Stsadm command-line tool (Office SharePoint Server) | [http://technet.microsoft.com/en-us/library/cc261956.aspx](http://go.microsoft.com/fwlink/?LinkID=116078&clcid=0x409) |
| STSADM Custom Extensions - Automating SharePoint 2007 Configurations via STSADM Custom Extensions | [http://stsadm.blogspot.com/2007/08/stsadm-commands\_09.html](http://go.microsoft.com/fwlink/?LinkId=139022&clcid=0x409) |
| Information about the Maintenance Plan Wizard in SQL Server 2005 and about tasks that administrators can perform against SharePoint databases | [http://support.microsoft.com/kb/932744](http://go.microsoft.com/fwlink/?LinkID=110813&clcid=0x409) |
| Support for changes to the databases that are used by Office server products and by Windows SharePoint Services | [http://support.microsoft.com/kb/841057](http://go.microsoft.com/fwlink/?LinkID=110812&clcid=0x409) |
| Database maintenance for Office SharePoint Server 2007 (white paper) | [http://technet.microsoft.com/en-us/library/cc262731.aspx](http://go.microsoft.com/fwlink/?LinkID=117910&clcid=0x409) |
| SharePoint Backup and Restore Overview | [http://msdn.microsoft.com/library/bb447526.aspx](http://go.microsoft.com/fwlink/?LinkId=139024&clcid=0x409) |
| Plan for backup and recovery (Office SharePoint Server) | [http://technet.microsoft.com/library/cc261687.aspx](http://go.microsoft.com/fwlink/?LinkId=139025&clcid=0x409) |

Understanding the Environment

|  |  |
| --- | --- |
| Title | URL |
| Planning and architecture for Office SharePoint Server 2007 | [http://technet.microsoft.com/en-us/library/cc261834.aspx](http://go.microsoft.com/fwlink/?LinkID=105576&clcid=0x409) |
| Logical Architecture Components: | [http://technet.microsoft.com/library/cc263121.aspx](http://go.microsoft.com/fwlink/?LinkId=139027&clcid=0x409) |
| Database types and descriptions (Office SharePoint Server): | [http://technet.microsoft.com/library/cc678868.aspx](http://go.microsoft.com/fwlink/?LinkId=139028&clcid=0x409) |
| About SharePoint Site Collections | [http://technet.microsoft.com/library/cc742548.aspx](http://go.microsoft.com/fwlink/?LinkId=121649&clcid=0x409) |
| Manage SharePoint Site Collections: | [http://technet.microsoft.com/library/cc835712.aspx](http://go.microsoft.com/fwlink/?LinkId=139029&clcid=0x409) |
| Plan lists (Windows SharePoint Services) | [http://technet.microsoft.com/en-us/library/cc287823.aspx](http://go.microsoft.com/fwlink/?LinkId=139030&clcid=0x409) |
| White paper: Working with large lists in Office SharePoint Server 2007: | [http://technet.microsoft.com/library/cc262813.aspx](http://go.microsoft.com/fwlink/?LinkID=105580&clcid=0x409) |

Managing Environment Customizations

|  |  |
| --- | --- |
| Title | URL |
| Customization Whitepaper | [http://technet.microsoft.com/library/Cc263010.aspx](http://go.microsoft.com/fwlink/?LinkID=105947&clcid=0x409) |
| Understanding and Creating Customized and Uncustomized Files in Windows SharePoint Services 3.0 | [http://msdn.microsoft.com/library/cc406685.aspx](http://go.microsoft.com/fwlink/?LinkId=139031&clcid=0x409) |
| Solutions Overview | [http://msdn.microsoft.com/en-us/library/aa543214.aspx](http://go.microsoft.com/fwlink/?LinkId=128154&clcid=0x409) |
| Solution package components | [http://technet.microsoft.com/library/cc263289.aspx](http://go.microsoft.com/fwlink/?LinkId=139032&clcid=0x409) |
| SharePoint Features | [http://msdn.microsoft.com/library/bb861828.aspx](http://go.microsoft.com/fwlink/?LinkID=126657&clcid=0x409) |
| SharePoint Solutions | [http://msdn.microsoft.com/library/bb862721.aspx](http://go.microsoft.com/fwlink/?LinkId=139033&clcid=0x409) |

A System Administrators Role in Branding

|  |  |
| --- | --- |
| Title | URL |
| Customizing and Branding Web Content Management-Enabled SharePoint Sites | [http://msdn.microsoft.com/library/aa830818.aspx](http://go.microsoft.com/fwlink/?LinkID=128715&clcid=0x409) |
| How to: Create New SharePoint Themes | [http://msdn.microsoft.com/library/aa867986.aspx](http://go.microsoft.com/fwlink/?LinkId=139035&clcid=0x409) |
| How to: Apply a SharePoint Theme | [http://msdn.microsoft.com/library/cc621346.aspx](http://go.microsoft.com/fwlink/?LinkId=139036&clcid=0x409) |
| Create a publishing page layout | [http://office.microsoft.com/en-us/sharepointdesigner/HA101741281033.aspx](http://go.microsoft.com/fwlink/?LinkID=107638&clcid=0x409) |
| Implementing a Brand in a SharePoint Server 2007 Publishing Site | [http://msdn.microsoft.com/library/dd221375.aspx](http://go.microsoft.com/fwlink/?LinkId=139047&clcid=0x409) |
| Understanding and Creating Customized and Uncustomized Files in Windows SharePoint Services 3.0 | [http://msdn.microsoft.com/library/cc406685.aspx](http://go.microsoft.com/fwlink/?LinkId=139031&clcid=0x409) |
| Introducing Microsoft Office SharePoint Designer 2007 | [http://office.microsoft.com/en-us/sharepointdesigner/HA100740831033.aspx](http://go.microsoft.com/fwlink/?LinkId=139039&clcid=0x409) |
| Help for SharePoint Designer 2007 | [http://office.microsoft.com/en-us/sharepointdesigner/FX100646991033.aspx](http://go.microsoft.com/fwlink/?LinkId=105367&clcid=0x409) |
| Introduction to Contributor Settings | [http://office.microsoft.com/en-us/sharepointdesigner/HA101174691033.aspx](http://go.microsoft.com/fwlink/?LinkId=139040&clcid=0x409) |

A System Administrators Role in Development

|  |  |
| --- | --- |
| Title | URL |
| SharePoint Server Developer Portal | [http://msdn.microsoft.com/en-us/office/aa905503.aspx](http://go.microsoft.com/fwlink/?LinkID=119449&clcid=0x409) |
| WSS Developer Center | [http://msdn.microsoft.com/sharepoint/default.aspx](http://go.microsoft.com/fwlink/?LinkID=123428&clcid=0x409) |
| Review of Environments | [http://technet.microsoft.com/library/cc263209.aspx](http://go.microsoft.com/fwlink/?LinkId=139042&clcid=0x409) |
| Team-Based Development in Microsoft Office SharePoint Server 2007 | [http://msdn.microsoft.com/library/bb428899.aspx](http://go.microsoft.com/fwlink/?LinkId=139043&clcid=0x409) |
| Hyper-V and Virtualization on Microsoft TechNet | [http://technet.microsoft.com/en-us/virtualization/](http://go.microsoft.com/fwlink/?LinkID=126643&clcid=0x409) |
| Setting up the Dev Environment | [http://technet.microsoft.com/library/cc262741.aspx](http://go.microsoft.com/fwlink/?LinkId=139044&clcid=0x409) |
| Code Access Security | [http://msdn.microsoft.com/library/930b76w0.aspx](http://go.microsoft.com/fwlink/?LinkId=139045&clcid=0x409) |

Governance

|  |  |
| --- | --- |
| Title | URL |
| Governance Resource Center | [http://technet.microsoft.com/en-us/office/sharepointserver/bb507202.aspx](http://go.microsoft.com/fwlink/?LinkID=92729&clcid=0x409) |
| Index of Governance Content | [http://technet.microsoft.com/library/cc263341.aspx](http://go.microsoft.com/fwlink/?LinkId=139046&clcid=0x409) |
| Steps for building governance into SharePoint Server 2007 (white paper) | <http://go.microsoft.com/fwlink/?LinkId=92602&clcid=0x409> |
| Sample governance plan | <http://go.microsoft.com/fwlink/?LinkID=92333&clcid=0x409> |
| Governance checklist guide | <http://go.microsoft.com/fwlink/?LinkId=91896&clcid=0x409> |