

# Topologies for SharePoint Server 2010

## Physical servers, service applications and components, and services on server

### Overview

The traditional three-tier roles of a Microsoft® SharePoint® Server 2010 farm can be deployed on a *single server* or *many servers*. The three-tier roles include:

- Web server role
- Application server role
- Database server role

In a small farm, server roles can be combined onto one or two servers. For example, the Web server and application server roles can be combined on a single server or onto two or more servers to achieve redundancy.

### Service applications

*Service applications* are services that are shared across sites within a farm (for example, Search and Excel Calculation Services). Some service applications can be shared across multiple farms.

Service applications are deployed to the application server tier. Some services include multiple components and deployment of these components require planning. For example:

- The Search service application includes multiple application components and multiple databases.
- The People service application includes multiple databases.

Each service application is associated with at least one service on the Services on Server page in Central Administration.

### Services on server

The Services on Server page in Central Administration lists services that are started or stopped on specific servers in the farm:

- Some of these services are associated with service applications. You deploy service applications by starting the associated services on the desired server computers.
- Some of these services are not associated with service applications.

This model lists these services and indicates which server roles the services are recommended for.

**Note:** Search components for the query and crawl roles are deployed to servers using the Search service application pages in Central Administration, not the Services on Server page.

### Scaling out a farm with server groups

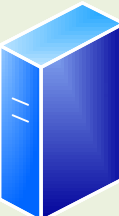
In SharePoint Server 2010, the number of services and corresponding databases is greater than previous releases. The recommendation for scaling out a farm is to group services or databases with similar performance characteristics onto dedicated servers and then scale out the servers as a group.

For example, group all client-related services onto one or two servers and then add servers to this group as needed to satisfy user demand for these services. In some cases, you might need to create a dedicated server group for a single service, such as Excel Calculation Services or Search.

This model groups service applications and related components (for example, databases) into several different logical groupings that can be used as a starting point. In large environments, the specific groups that evolve for a farm depends on the specific demands for each service.

**Note:** *Server groups* is a planning concept. This term and concept is not found in Central Administration.

### Server roles



**Web server**

- Host Web pages, Web services, and Web Parts that are necessary to process requests served by the farm.
- Direct requests to the appropriate application servers.
- This role is necessary for farms that include other SharePoint Server 2010 capabilities. In dedicated search service farms, this role is not necessary because Web servers at remote farms contact query servers directly.
- In small farms, this role can be shared on a server with the query role.

None.

### Components for service applications

**Search roles (cross-farm)**

Query

Includes index partitions and query components.

Crawl

Includes the search administration component and crawlers.

**Other cross-farm services**

User Profile

Business Data Connectivity

Web Analytics

Managed Metadata

Secure Store Service

**Client-related services (single farm)**

Excel Calculation Services

Access Service

Word Services

PowerPoint

Visio Graphics Service

Word Viewing

**Other single-farm services**

Usage and Health Data Collection

State Service

Microsoft SharePoint Foundation Subscription Settings

Performance Point

Cross-farm services can be shared across multiple farms.

Single-farm services can be used only within a single farm.

### Services on server

Services listed in this row are recommended for Web servers.

**Services associated with service applications**

Access Database Services

Managed Metadata Web Service

Secure Store Service

Visio Graphics Service

Business Data Connectivity

Microsoft SharePoint Foundation Subscription Settings Service

SharePoint Server Search

Web Analytics Data Processing Service

Excel Calculation Services

PerformancePoint Service

User Profile Service

Web Analytics Web service

Lotus Notes Connector

Search Query and Site Settings Service

User Profile Synchronization Service

Word Automation Services

**Other services**

Application Registry Service

Microsoft SharePoint Foundation Incoming E-Mail

Central Administration


\* Microsoft SharePoint Foundation User Code Service

Document Conversions Launcher Service

SharePoint Foundation Search

Document Conversions Load Balancer Service

\* Can also be deployed to application servers.



**Database server**

In a small-farm environment, all databases can be deployed to a single server. In larger environments, group databases by roles and deploy these to multiple database servers.

**Search databases**

Search Admin db

Property db

Property db

Crawl db

Crawl db

Multiple property and crawl databases for medium- and large-sized farms.

**Other service databases**

Business Data Connectivity

Secure Store Service

Profile

Social Tagging

Windows SharePoint Services Subscription Settings

Managed Metadata

Usage and Health Data Collection

Profile Synchronization

User Profile databases

State Service

**Content databases**

Content

Content

Content

Content

Content

Multiple content databases, depending on the volume of content and sizing goals for an environment.

### Detailed service guidance

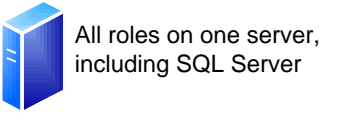
Service	Is this service associated with a service application?	Server recommendation	Additional information
Access Database Services	Yes	Application server	
Application Registry Service	No	Application server	Backward compatibility version of the Business Data Catalog service.
Business Data Connectivity	Yes	Application server	
Central Administration	No	Application server	This service runs the Central Administration site.
Document Conversions Launcher Service	No	Application server	Schedules and initiates the document conversions on a server.
Document Conversions Load Balancer Service	No	Application server	Balances document conversion requests from across the server farm. Each Web application can only have one load balancer registered with it at a time.
Excel Calculation Services	Yes	Application server	
Lotus Notes Connector	Yes — Search	Application server — Start this service on the index server.	This service is required to crawl content from Lotus Notes Domino Servers.
Managed Metadata Web Service	Yes	Application server	
Microsoft SharePoint Foundation Incoming E-Mail	No	Web server or application server	Typically, this service runs on a Web server. If you need to isolate this service, you can start it on an application server.
Microsoft SharePoint Foundation Subscription Settings Service	Yes <small>Note: This service application is deployed only by using Windows PowerShell.</small>	Web server or application server — In hosting environments, this service is typically started on one or more application servers.	Start this service if you have deployed service applications in multitenant mode or if the farm includes sites using site subscriptions. This service stores settings and configuration data for tenants in a multitenant environment. After it is started, Web applications consume this service automatically.
Microsoft SharePoint Foundation User Code Service	No	Web server or application server — Start this service on computers in the farm that run sandboxed code. This can include Web servers and application servers.	This service runs code deployed as part of a sandboxed solution in a remote, rights-restricted process and measures the server resources used during execution against a site collection-scoped, daily quota.
Microsoft SharePoint Foundation Web Application	No	Web server — Ensure that this service is started on all Web servers in a farm. Stop this service on application servers.	This service provides Web server functionality. It is started by default on Web servers.
Microsoft SharePoint Foundation Workflow Timer Service	No	Web server	This service is automatically configured to run on all Web servers in a farm.
PerformancePoint Service	Yes	Application server	
Search Query and Site Settings Service	Yes — Search	Application server — Start this service on all query servers in a farm. However, if it becomes memory intensive, consider moving this service to a dedicated computer to free up memory for query processing.	Load balances queries across query servers. Also detects farm-level changes to the search service and puts these in the Search Admin database.
Secure Store Service	Yes	Application server	
SharePoint Foundation Search	No	In a SharePoint Foundation farm, start this service on the search server. In a SharePoint Server farm, this service is only needed to search online Help. Start the service on any server in the farm.	This service provides search in a SharePoint Foundation farm. For SharePoint Server farms, this service is only used to search online Help. Start this service only on one computer.
SharePoint Server Search	Yes — Search	Automatically configured to run on the appropriate computers.	This service cannot be stopped or started from the Services on Server page.
User Profile Service	Yes	Application server	
User Profile Synchronization Service	Yes	Application server	
Visio Graphics Service	Yes	Application server	
Web Analytics Data Processing Service	Yes — Web Analytics	Application server	
Web Analytics Web service	Yes — Web Analytics	Application server	
Word Automation Services	Yes	Application server	Performs automated bulk document conversions. When actively converting, this service will fully utilize one CPU for each worker process (configured in Central Administration). If the service is started on multiple servers, a job will be shared across all the servers.

### Small to medium topology examples

#### Limited deployments

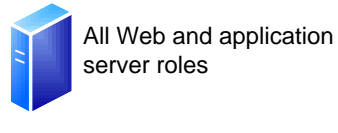
Description: Evaluation environments and production environments for limited numbers of users.

**One-server farm**  
Evaluation or <100 users



All roles on one server, including SQL Server

**Two-tier farm**  
Up to 10,000 users



All Web and application server roles


Databases

High availability — For environments above 1,000, two clustered or mirrored database servers are recommended.

#### Small farm topologies

**Small multi-purpose SharePoint Server 2010 topologies**  
Description: Small farm architectures serve a larger number of users and scale out based on how heavily services are used. Due to the greater number of services, including client Web applications, more requests per user are expected in the new version compared with the old version.

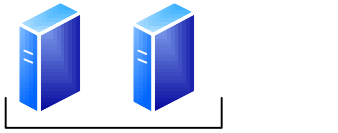
**Two-tier small farm**  
Two Web servers are predicted to serve 10,000-20,000 users



Web server  
Query server  
All other app roles

All SharePoint databases

**Three-tier small farm**  
Add a dedicated application server for environments with moderate service usage.

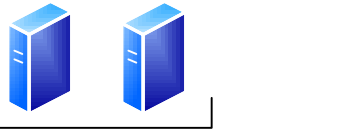


Web/Query server

Application server

All SharePoint databases

**Three-tier small farm optimized for search**  
With hardware dedicated to search databases, this topology is optimized for search to work well in environments with up to 10 million items.



Web/Query server

Application server

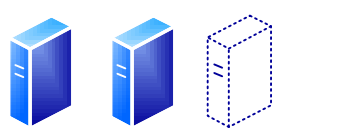
Search databases

All other SharePoint databases

### Medium farm architectures


**Medium topologies**  
The medium server farm illustrated is scaled for search to serve approximately 40 million items. Beyond this search scale, the recommendation is to deploy a dedicated search farm. Scale out all other servers based on the utilization of other services within the farm and the volume of content the farm will host.

**Web servers**



The number of users will affect the requirement for Web servers. Factor 10,000 users per Web server as a starting point. Adjust the number based on how heavily the servers are utilized. Heavy use of client services will increase the load on Web servers.

**Application servers**




Combined query and crawl server

All other application server roles and services

Start with all application server roles installed on one server (except search roles). Based on utilization, consider either adding additional servers with all the non-search roles installed, or add additional servers to dedicate resources to specific services. For example, if performance data indicates that Excel Services is using a disproportionate amount of resources, offload this service to a dedicated server.

**Database servers**



Search databases

All other SharePoint databases

Add additional database servers based on the volume of content in your environment and sizing targets for your organization.


### Large farm examples

#### Topologies with server groups

The recommendation for scaling out a large farm is to group services or databases with similar performance characteristics onto dedicated servers and then scale out the servers as a group. The following topology illustrates a practical example of this concept. The red text lists one possible way to build server groups.

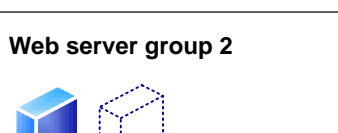
**Web servers**

Web server group 1



Web servers for all incoming requests

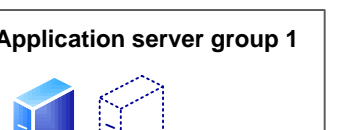
Web server group 2



Dedicated Web server(s) for crawling and administration

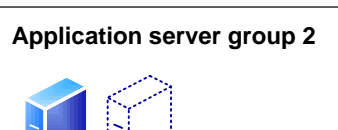
**Application servers**

Application server group 1




Crawl servers

Application server group 2




Query servers

Application server group 3



All other services (use on of these servers for the Central Admin site)


Application server group 4



Servers for running sandboxed code


**Database servers**

Database group 1




Search databases

Database group 2



Content databases

Database group 3



All other SharePoint databases

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