

Hosting Environments in SharePoint 2010 Products

Overview of hosting features and concepts

Multitenancy

Multitenancy refers to the ability to partition data of otherwise shared services or software in order to accommodate multiple tenants. This is in contrast to setting up separate hardware or even running multiple instances of a service. In Microsoft products and technologies, multitenancy of services creates a service hosting environment wherein server farm resources are maximized. Many of the multitenant features are deployed and managed using Windows PowerShell.

Before learning about hosting environments, it is important to understand the services architecture. The following models are prerequisite to this model:

- Services in SharePoint 2010 Products
- Cross-Farm Services in SharePoint 2010 Products

Site subscriptions

Multitenancy is tied to site subscriptions. A *site subscription* is a logical group of site collections that can share settings, features, and service data. Site collections for each tenant are brought together with a subscription ID. The subscription ID is used to map features, services, and sites to tenants and also to partition service data according to tenant. The Subscription Settings service keeps track of multitenant services and subscription IDs.

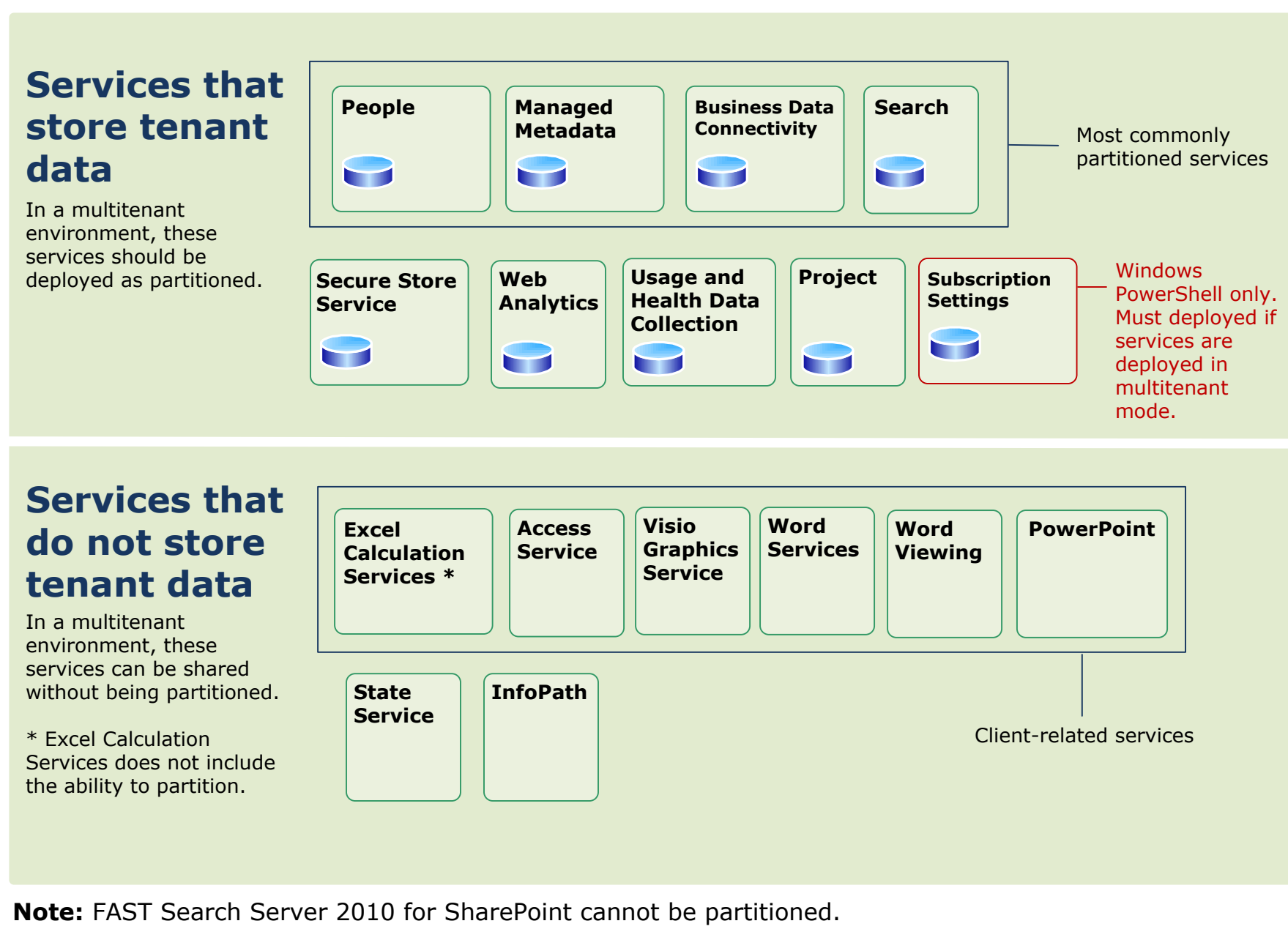
Here's how it works:

- Farm administrators deploy services to the farm, including the Subscription Settings service. Service applications can either be deployed as partitioned (data is isolated for each tenant) or unpartitioned (data is shared across all tenants). Some services do not store tenant data and can be shared across all tenants without being partitioned.
- Farm administrators deploy a Tenant Administration site for each tenant (using Windows PowerShell). The Tenant Administration site is associated with a subscription ID. Administrators deploy additional site collections for each tenant that is tied to the subscription ID.
- All service applications that are connected at the Web application level are available for site collections within the Web application. Administrators choose which services to offer and activate for each tenant. The subscription ID for a tenant is used to map services to the site collections.
- Tenant administrators manage their own site collections using their assigned Tenant Administration site.
- Site collections for multiple site subscriptions can be hosted in a single Web application.
- Multiple site subscriptions can share a content database, or a site subscription can include content across multiple content databases.
- All site collections for a single site subscription must reside on the same farm, but can be spread across Web applications.

Service partitioning

Services can be configured to share data across all tenants or to partition data for each tenant (that is, data isolation). Each service can be set up differently. Services can be created in partitioned mode by using Windows PowerShell or unpartitioned mode by using Windows PowerShell or Central Administration. They cannot be changed later. To achieve partitioning, both the service and the service connection must be deployed in partitioned mode. The service connection is called a proxy in Windows PowerShell.

Not all services need to be partitioned. Services that do not store tenant data, such as PowerPoint, do not need to be partitioned. These services can be shared across multiple tenants without risk of exposing tenant-specific data. However, the recommendation for out-hosting environments is to deploy all services as partitioned to ensure that reporting and diagnostic information is reported correctly.

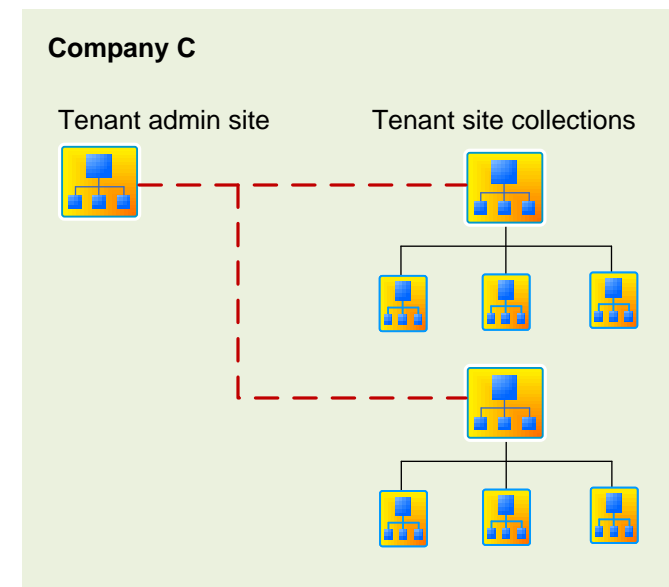


Hosting and tenant administration

Farm administrators can host multiple tenants on the same farm and centrally manage the deployment of services and features. Tenant administrators can manage the configuration of administrator-delegated features and control the functionality of their sites.

SharePoint Server 2010 aligns administrative functionality with common hosting roles, as summarized in the following table.

Role	Description
Hosting company (Farm administrator)	<ul style="list-style-type: none">Manages the farm-level settings and hardware.Controls database configurations.Installs all new approved features and solutions.Can brand the Tenant Administrator pages.
Hosting company administrator (Tenant administrator)	<ul style="list-style-type: none">Purchases space, features, and bandwidth from hosting company.Controls the architecture of customer sites but not the content.Configures per-tenant settings.Reviews usage statistics.
Hosting company (Site administrator)	<ul style="list-style-type: none">Owns site collections.Configures site settings that are exposed by features and services.Reviews usage statistics.

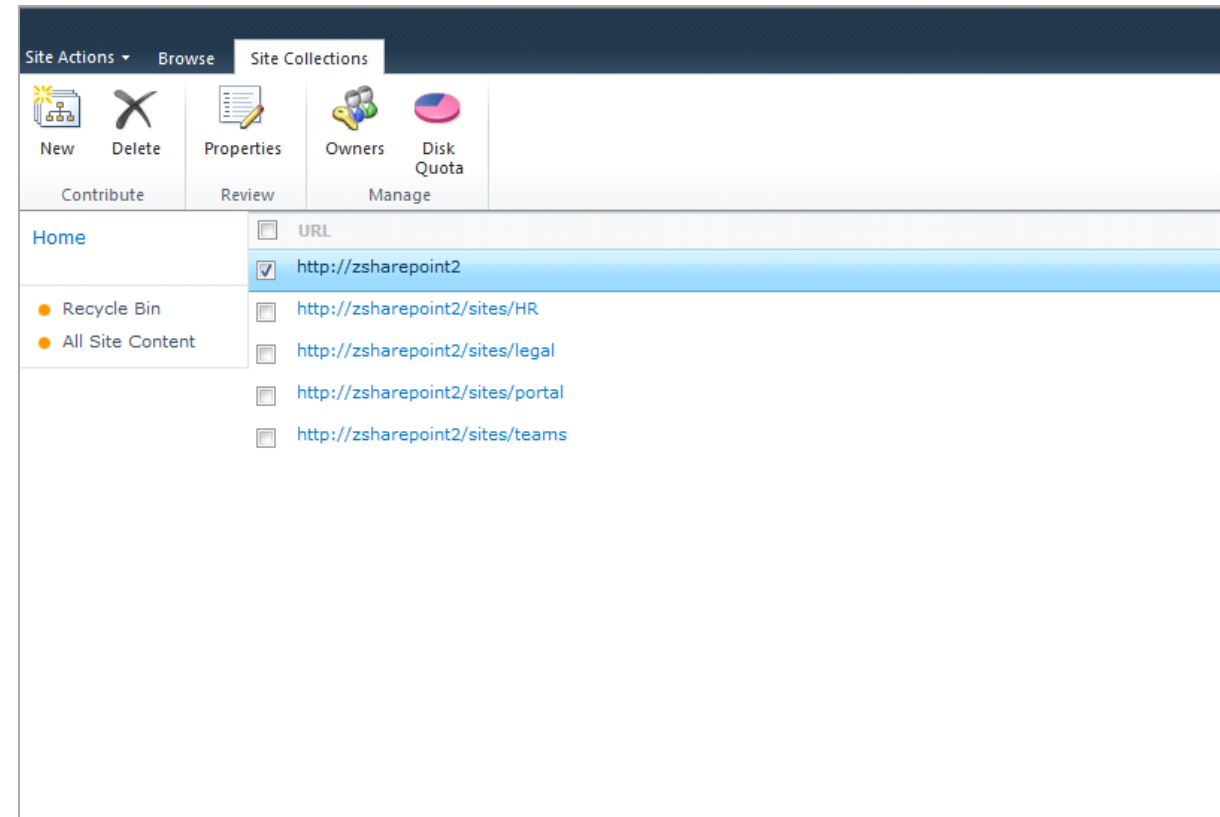


Deploying feature sets

Feature sets are groups of features that are enabled by farm administrators for tenants to activate and use. The site collection (SPSite) and subsite (SPWeb) features that are exposed to tenants through the tenant administration site depends on which feature set is enabled for the tenant administrator by the farm administrator. The following list describes how feature sets work in a hosting environment:

- Feature sets are applied by using Windows PowerShell.
- Feature sets that correspond to the available licensing options will be available, allowing you to host multiple licensing standards on the same farm.
- You can create custom feature sets.
- By default, site templates that depend on features that are not activated for a tenant are not exposed. For example, the Enterprise Search Center template is not available to tenants that do not have the enterprise search feature. However, if site templates are manually deployed for tenants using Windows PowerShell, the templates will not work without the dependent features.
- Site templates filter non-dependent features that are not activated. For example, if My Sites are not activated for a tenant, the site templates used by the tenant will not show the My Site link.
- If third-party features are added to a farm, the use of these features with feature sets should be tested to ensure that these do not add additional feature activation dependencies that are not honored within the feature set.

Tenant administrators can manage all site collections for their subscription from one place.



Enterprise hosting environments

In an enterprise environment, some data is shared across the organization while other data can be partitioned. This example provides a practical implementation in which each team or department can manage their own metadata while sharing all other services.

Mapping of Web applications to services

In this example, all services are offered through the default group.

There are two instances of the Enterprise Metadata service:

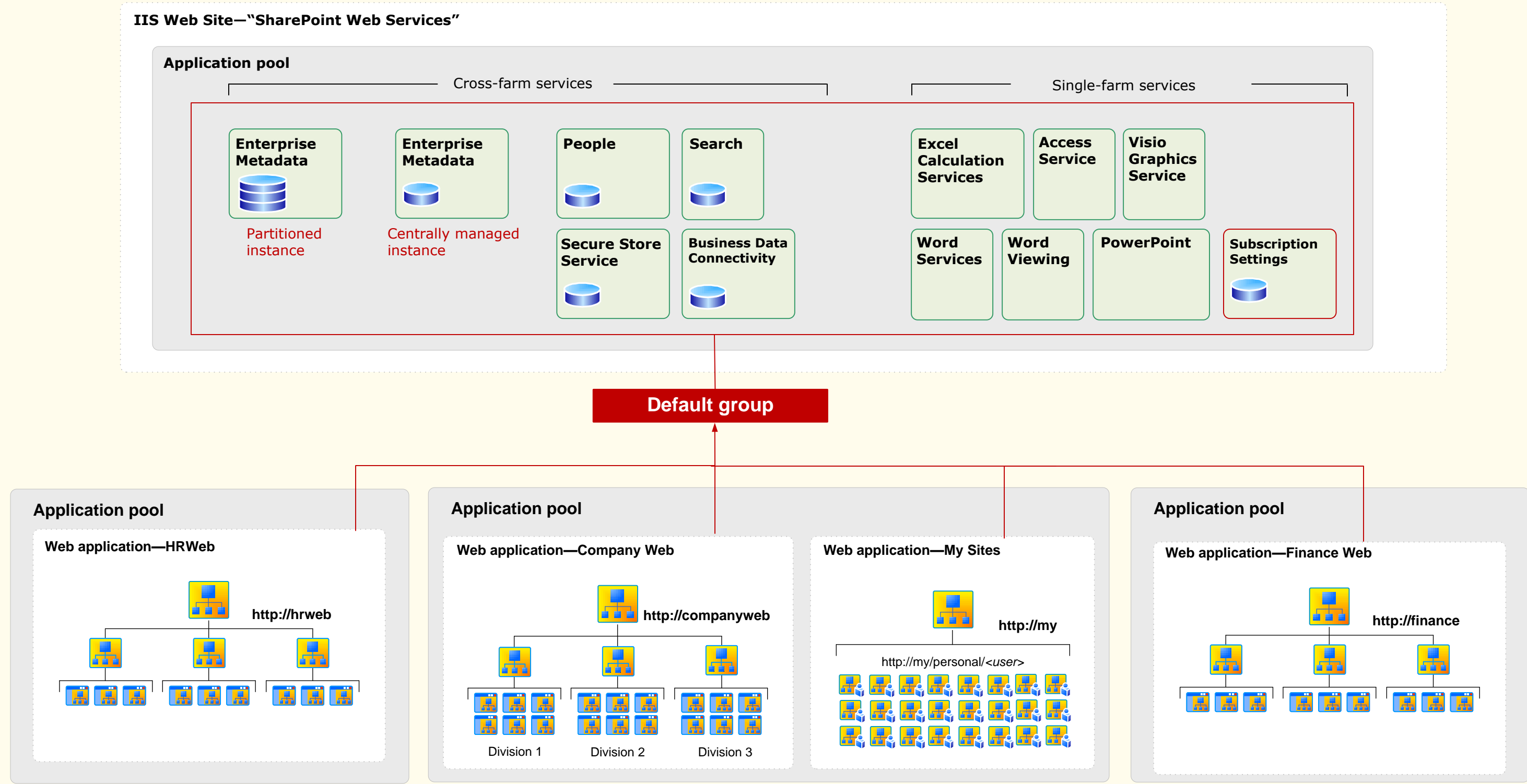
- Centrally managed instance— All data is shared and centrally managed.
- Partitioned instance — Data is partitioned based on site subscriptions for individual departments or teams.

This approach allows autonomy for individual departments to manage and consume their own data while at the same time providing a central store for organization-wide terms, keywords, content types, and other data.

The data for all other services is shared across the organization (the services are unpartitioned).

In this example, services are hosted on the same farm as the content. Optionally, the services can be hosted on a dedicated services farm or on different farms. Cross-farm and single-farm services are delineated.

Enterprise hosting farm



Mapping of site collections to the partitioned service

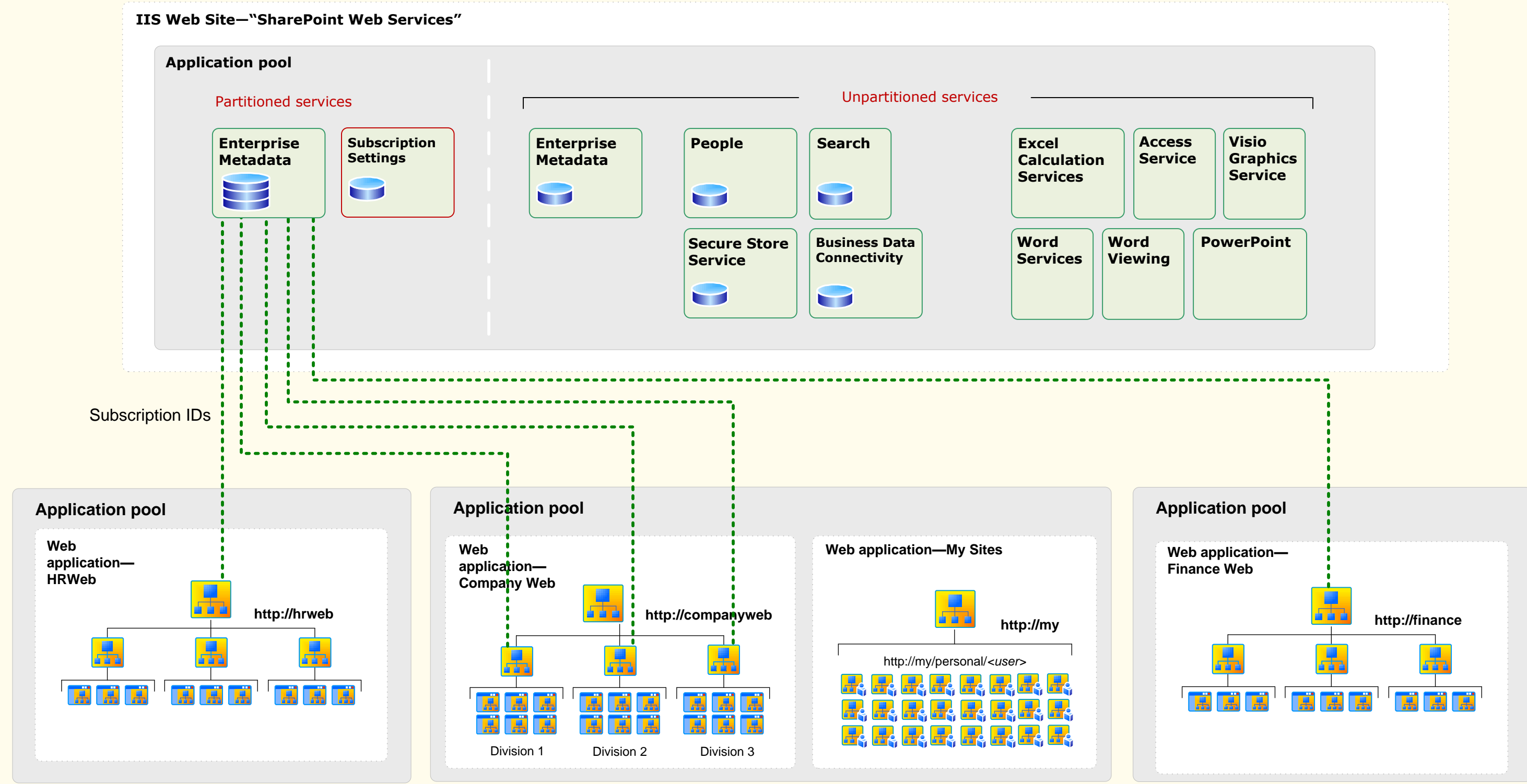
While the service connection is configured at the Web application level, subscription IDs map services for specific site collections.

This illustration shows how site collections are mapped to the partitioned instance of the Enterprise Metadata service. The dotted lines represent different subscription IDs.

- HRWeb — A single site subscription for all sites beneath the root site collection.
- CompanyWeb — A different site subscription for each division site collection. No site subscription for the top-level site collection.
- MySites — Not mapped to the partitioned instance.
- FinanceWeb — A single site subscription.

Subsites that are created in the Tenant Administration site are included in the tenant subscription.

Enterprise hosting farm



Mapping of Web applications to services

In this example:

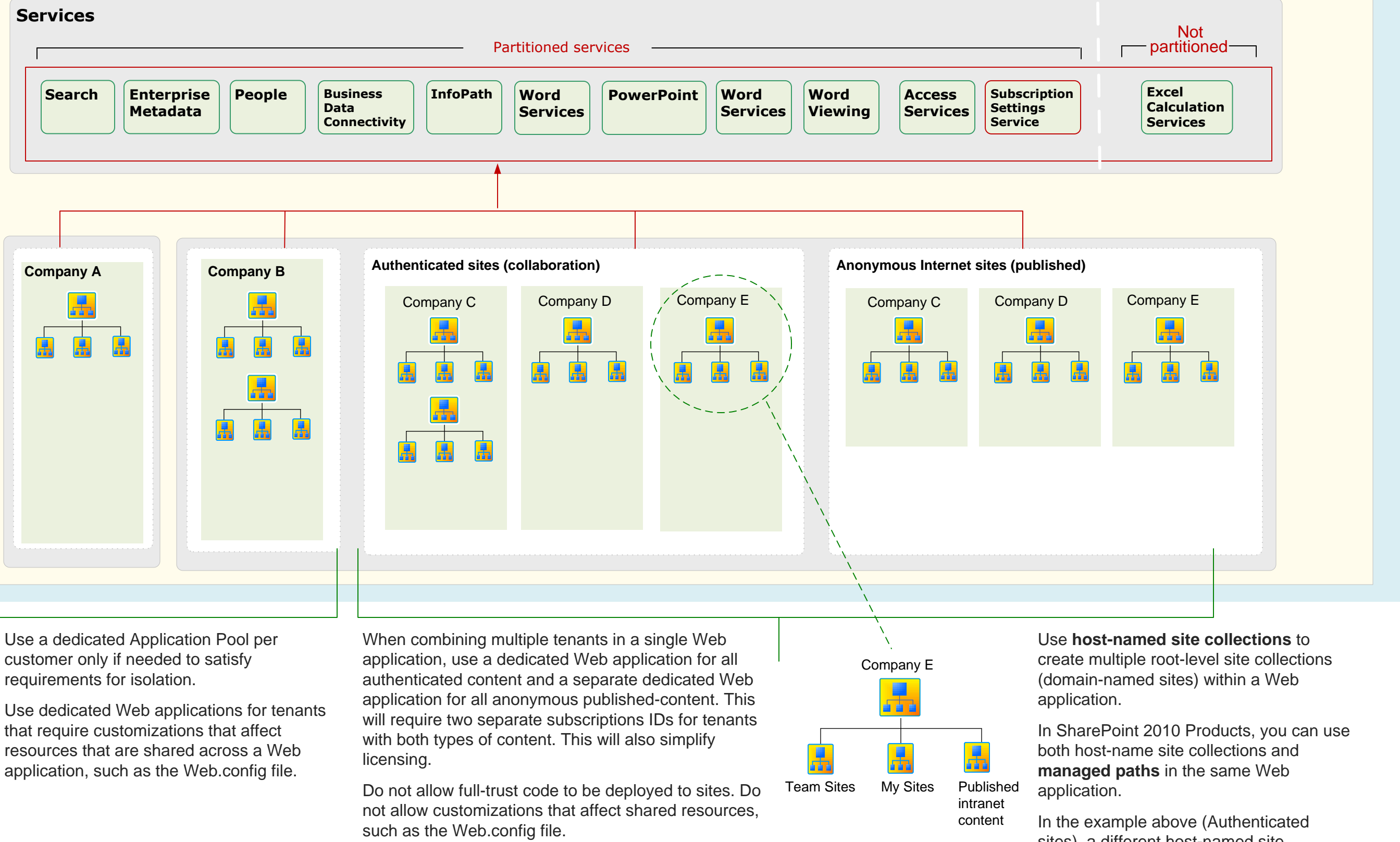
- All services are offered through the default group.
- All services that can be partitioned are deployed in partitioned mode. This ensures that usage and diagnostic information reports tenant data correctly.
- Excel Calculation Services is the only service that is not partitioned. If you choose to partition other services, be aware that some diagnostic information might not report tenant activity correctly.

Deploying customer site collections

This example provides the following ways in which customer sites can be deployed to a farm:

- Dedicated application pool and Web application
- Shared application pool and dedicated Web application
- Shared Web application
 - Authenticated sites
 - Unauthenticated sites

Multi-tenant hosting farm



Scaling out a multitenant environment

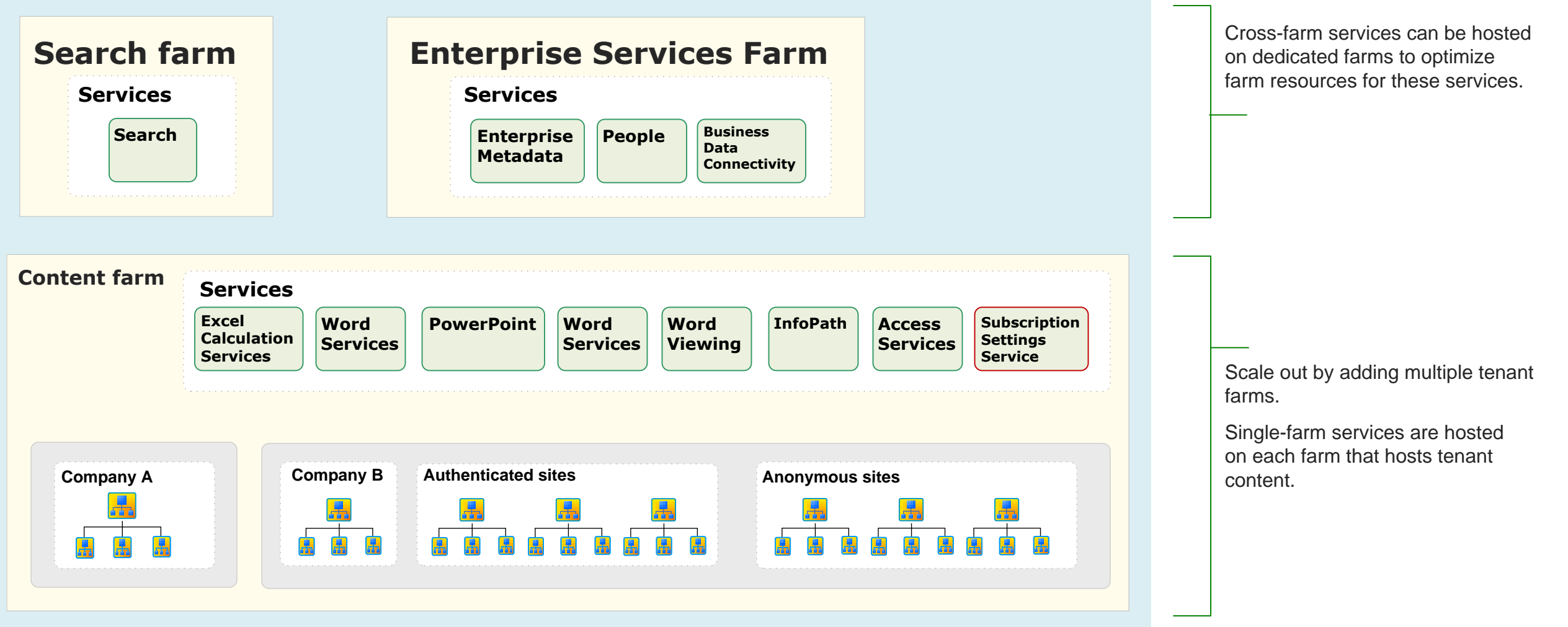
You can optimize resources by scaling out with specialized farms. Consider deploying multiple farms to:

- Divide administrative responsibilities.
- Implement different service level agreements for services versus content.

Scale out a hosted environment in the following ways:

- Services farm** — The first scale-out action for a hosting environment is to create a dedicated services farm for all services that can be shared across farms.
- Search farm** — Search is a resource-intensive service that may warrant a dedicated farm (in addition to a farm to host all other services).
- Tenant content farms** — Tenant content farms can be scaled out in a similar way as the services. When a single farm approaches capacity, deploy an additional farm and connect it to the cross-farm services farm(s).

Multi-farm hosting environment



Cross-farm services can be hosted on dedicated farms to optimize farm resources for these services.

Scale out by adding multiple tenant farms. Single-farm services are hosted on each farm that hosts tenant content.

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