

## Scalable, Connected, and Programmable Platform

# Scalable, Connected, and Programmable Platform

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When vetting project and portfolio Management (PPM) solutions, evaluation committees assess competing products from a business perspective, and through an IT lens. PPM solutions must score well in both categories to be successful, to help ensure that the product's functionality meets business requirements, aligns with the organization's IT requirements, and integrates seamlessly with line-of-business applications.

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When choosing a comprehensive PPM solution, organizations look for the following:

- **Simplified administration and flexibility.** Organizations need PPM platforms to be flexible to help ensure that they can easily be configured to automate the organization's unique processes and meet custom reporting requirements.
- **A connected work management platform.** Depending on their roles and preferences, employees and teams will use a variety of productivity tools to receive and complete work. Organizations require a PPM solution that can connect with common productivity tools so that users can continue working in their preferred environment, and so they can easily provide updates to facilitate enterprise resource management and reporting.
- **Enterprise scalability and performance.** Organizations require a PPM solution that can scale and support deployments at the departmental and enterprise level; meet peak use scenarios; handle large volumes of data; perform across wide area networks (WANs); and support and empower the mobile workforce.
- **An extensible and programmable platform.** Often organizations customize their PPM solution to automate their unique requirements or to effectively integrate with third-party or homegrown systems to maintain data integrity. Leading PPM solutions need to provide an open application programming interface (API) in addition to developer tools and resources to support custom development activities.

The Microsoft® Enterprise Project Management (EPM) Solution provides a scalable, connected, and extensible platform that has the flexibility to meet most business requirements and align with the organization's enterprise architecture standards. With the familiar Microsoft® SharePoint® user interface in Microsoft® Project Server 2010 and the Ribbon interface in Microsoft® Project Professional 2010, it is even easier for users to get started, and thereby reduce training requirements, and drive adoption and satisfaction. The EPM Solution connects with related Microsoft technologies to provide a familiar and unified work management platform, helping to ensure that organizations gain additional value from their Microsoft platform investments.

Project Server 2010 simplifies administration through an improved console that provides one-stop-shopping for both project and portfolio management capabilities. Improved administration helps ensure that (project management offices (PMOs) can spend less time managing the PPM system and instead

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focus on monitoring the PPM process. The enhanced Project Server 2010 application programming interface (API), Project Server Interface (PSI), and connection with Microsoft® SharePoint® Server 2010 and Visual Studio® 2010 provide developers with the required tools and resources to integrate with third-party systems and successfully build and deploy custom solutions. The EPM Solution builds on the scalability and performance improvements of Project 2007 to continue to meet the needs of large, distributed organizations.

### Familiar User Interface Improves Adoption and Satisfaction

The Microsoft EPM Solution provides users with a familiar and consistent interface across Project Server 2010 and Project Professional 2010 to help enhance productivity, reduce training costs, and drive adoption and satisfaction.

Because Project Server 2010 is built on SharePoint Server 2010, the portfolio selection and analytical modules in Project Server 2010 have a consistent SharePoint user interface, helping to ensure a uniform experience across bottom-up and top-down PPM capabilities (see Figure 1). Like SharePoint, the Project Server user interface supports the following languages:

- English
- Arabic
- Brazilian
- Chinese (Simplified)
- Chinese (Traditional)
- Czech
- Danish
- Dutch
- Finnish
- French
- German
- Greek
- Hebrew (Enabled)
- Hungarian
- Italian
- Japanese
- Korean
- Norwegian (Bokmal)
- Polish
- Portuguese (European)
- Russian
- Spanish
- Swedish
- Turkish

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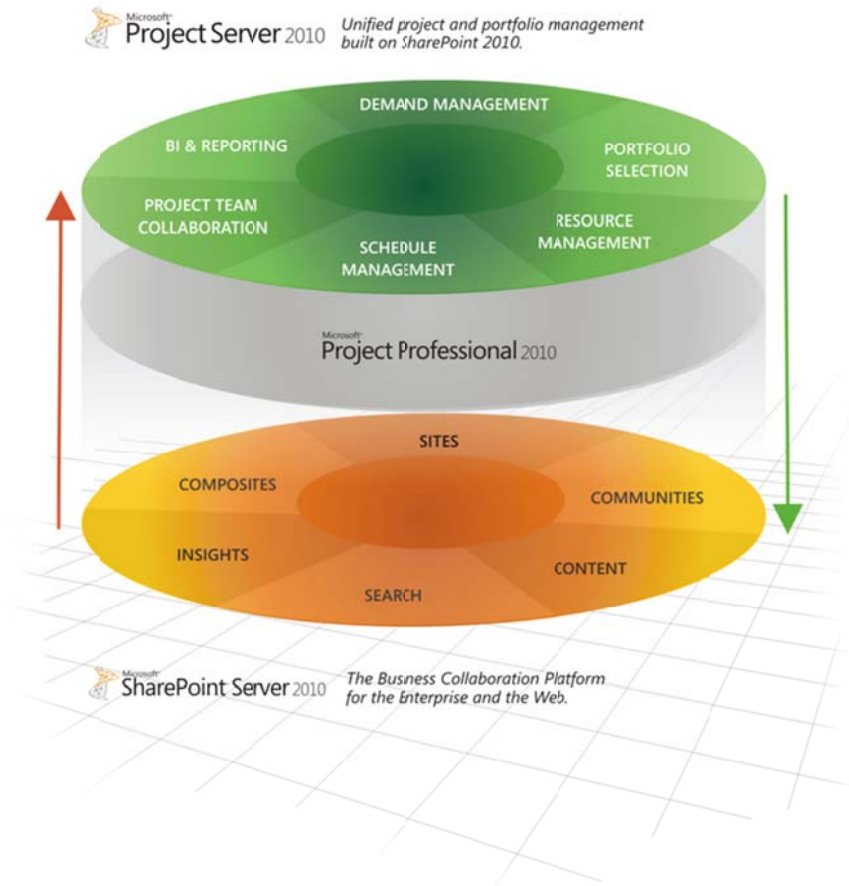


Figure 1. Project Server 2010 – Built on SharePoint Server 2010

The Ribbon interface in both Project Server 2010 and Project Professional 2010 provides users with a familiar experience, whether they access Project capabilities through the browser (see Figure 2) or by using the powerful desktop scheduling tool.

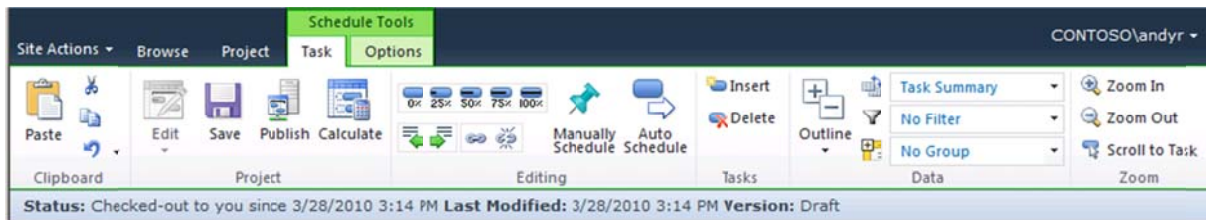


Figure 2. Project Professional 2010 – The Ribbon interface for Web-based editing

The simple and intuitive Ribbon helps users quickly realize results and work more efficiently; the tools that they need to plan and manage their projects are always at their fingertips. Contextual menu groups reveal powerful features, so it is easier to get started and to reduce training costs (see Figure 3).

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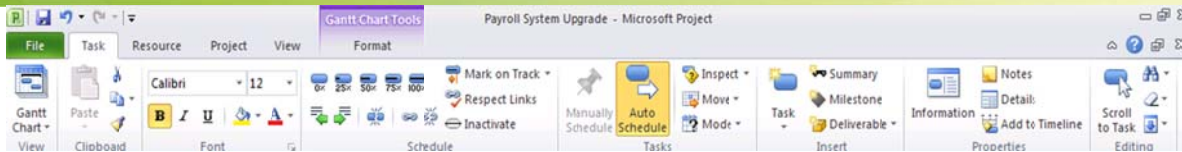


Figure 3. Project Professional 2010 – The Ribbon interface

The Project Server 2010 left menu bar has been redesigned to better group related capabilities, for an enhanced user experience (see Figure 4).

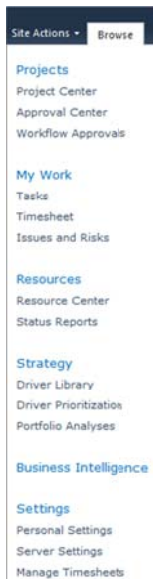


Figure 4. Project Server 2010 – New left menu bar

## Connected Work Management Solution

Microsoft recognizes that user preferences and roles within the organization will directly affect the productivity tools they choose to use to complete tasks. We know that there is no such thing as a one-size-fits-all PPM solution. The Microsoft EPM Solution connects with related Microsoft technologies to provide a familiar work management platform. This ensures that teams can choose their preferred productivity tools, and easily receive tasks and provide status updates to project stakeholders, with minimal effort and administrative overhead. This flexibility helps drive team productivity and ensure that project managers and PMOs can effectively gather the required data to drive enterprise reporting and resource management. Connecting with the following related Microsoft technologies ensures that customers can connect disparate teams and gain additional value from the Microsoft platform.

### SharePoint Server 2010

As mentioned throughout this guide, Project Server 2010 is built on SharePoint Server 2010, and brings together powerful business collaboration platform services and structured execution capabilities to provide flexible work management solutions. This connection provides organizations with all the tools

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and services they need to fully automate their PPM processes (see Figure 5). The connection between the products also provides additional benefits for small teams that run lightweight projects. Occasional project managers can use SharePoint Server 2010 task lists to manage simple projects and tasks, without calling on the full rigor of Project Server 2010. However, a SharePoint task list can easily be imported into Project Server 2010 at any time if the team requires additional capabilities, or the manager can continue to execute the project in SharePoint Server 2010 and sync status updates (with Project Server 2010) to facilitate enterprise resource management and reporting.

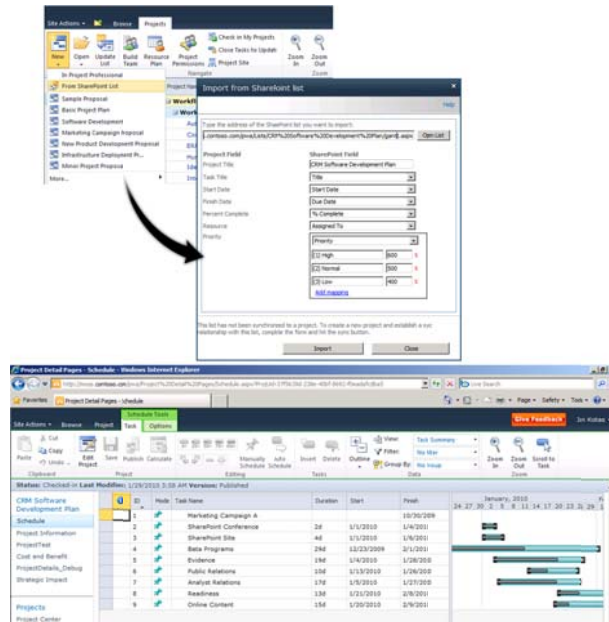


Figure 5. Project Server 2010 – Lightweight project visibility and tracking using a SharePoint task list

## Sync Project Professional 2010 with SharePoint 2010

Project 2010 facilitates synchronization between Project Professional 2010 and SharePoint® Foundation 2010 (formerly Windows® SharePoint Services) or SharePoint Server 2010 so that project schedules can be centrally managed for enterprise visibility at the program, project, and resource level.

Project teams can improve productivity by automating bidirectional status updates between Project Professional 2010 and SharePoint products. Managers can save projects to a SharePoint Foundation 2010 task list, and then map resource assignments on project tasks to SharePoint users on their project team. Team members can choose to receive e-mail notifications of assignments, or see their assignments when they visit the SharePoint Foundation 2010 task list.

Team members can directly update their progress and other task information in SharePoint Foundation 2010 to sync with Project Professional 2010. Project managers choose when to sync updates from team members into their project plans—on demand or at regularly scheduled intervals. Project 2010 helps resolve any conflicts in task information that are identified during synchronization.

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You can now open any SharePoint task list in Project Professional 2010 (see Figures 6 and 7), and a bidirectional synchronization is automatically created between the client and the SharePoint task list.

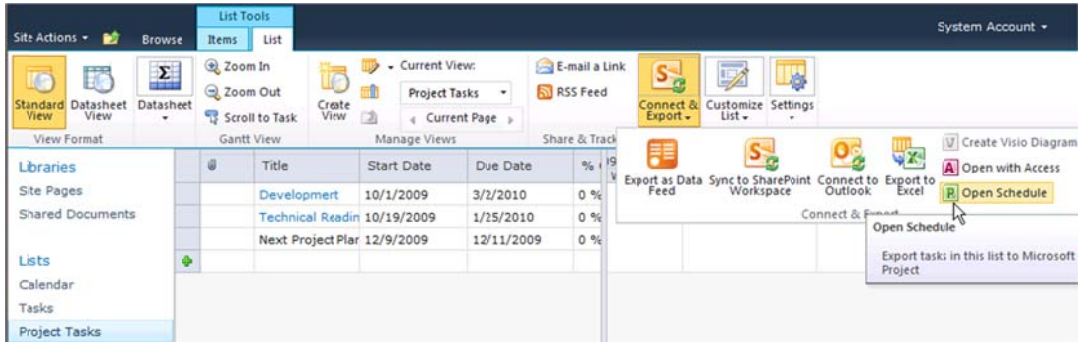


Figure 6. SharePoint Foundation Server 2010 – Open task list in Microsoft Project

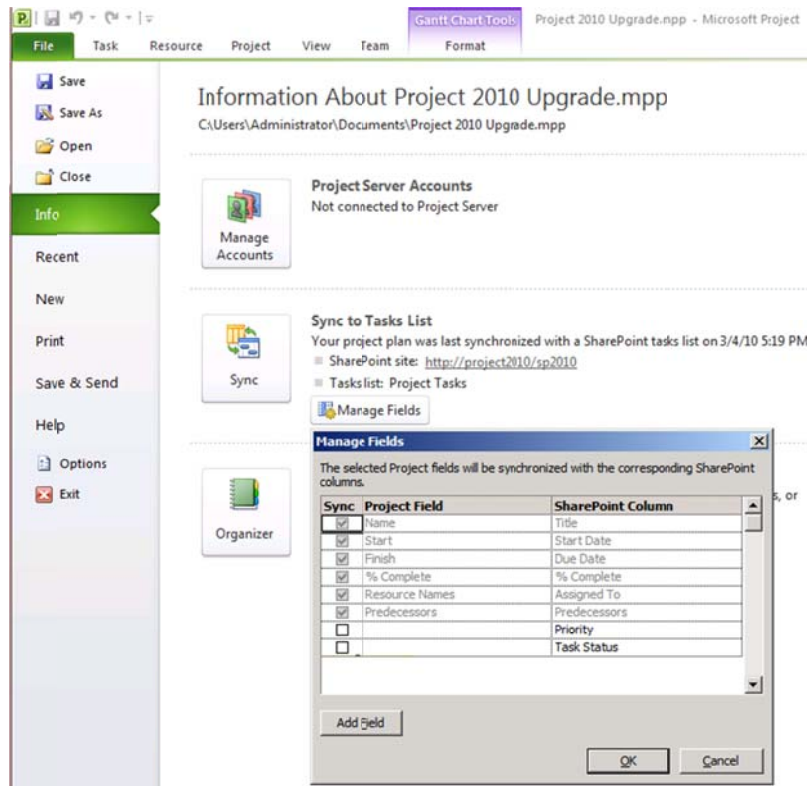


Figure 7. Project Professional 2010 – Sync to task list

Syncing team task status updates through SharePoint Foundation 2010 saves organizations money, time, and effort—some of their most valuable resources. It enhances communication between managers and team members, and makes that communication flexible and as frequent as the project manager needs it to be.

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### Exchange Server

Project Server 2010 includes native interoperability with Exchange Server (Microsoft Exchange 2010 or Microsoft Exchange 2007 with Service Pack 2) to help ensure that team members can choose to receive and update their tasks in Microsoft Outlook® (see Figure 8). Project Server 2010 tasks are displayed in Outlook as tasks and are conveniently grouped by project name. Team members can easily receive notifications and quickly update percent complete, work done, and remaining work values for tasks, and automatically sync the updates with Project Server 2010. Exchange Server connection means that organizations no longer have to install an Outlook add-in; this helps ensure that team members stay connected and can receive tasks in Outlook or Outlook Web App.

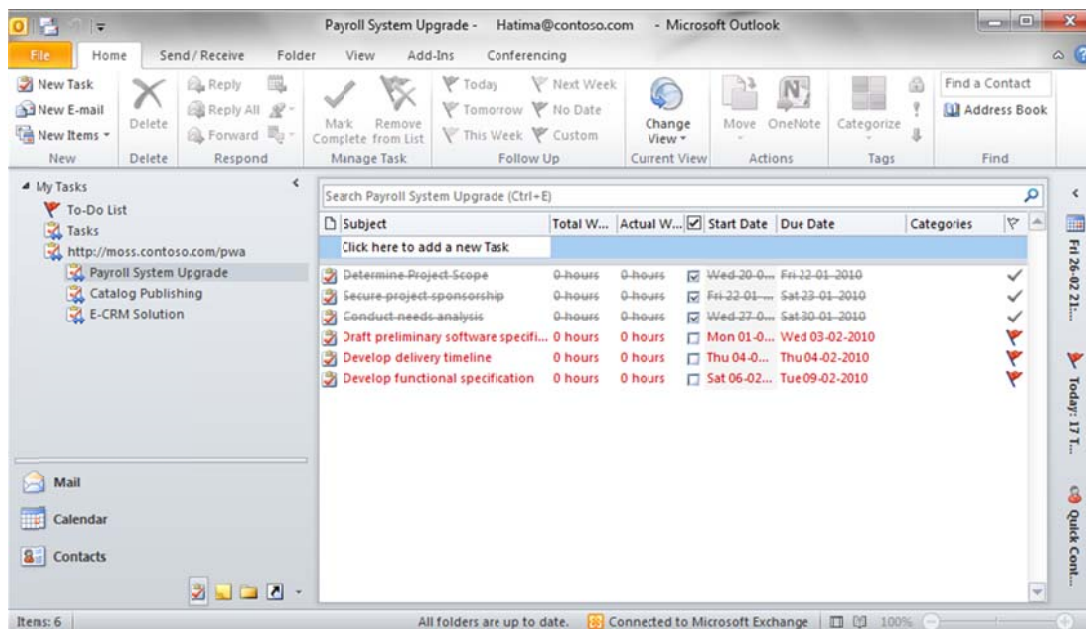


Figure 8. Project Server 2010 – Users can conveniently receive tasks and update their task status in Outlook

### Visual Studio Team System 2010 Team Foundation Server

Unifying Project Server 2010 and Project Professional 2010 with Microsoft Visual Studio Team System 2010 Team Foundation Server helps to better connect the worlds of PPM and application development. Connecting these disparate worlds empowers project managers and development teams to follow their own methodologies (for example, agile versus waterfall) and to select optimal productivity tools, and yet remain seamlessly connected throughout the development life cycle.

Project Professional 2010 provides native connectivity with Team Foundation Server 2010, and helps to ensure that development managers can take advantage of the new user-controlled scheduling and Team Planner features to help plan development sprints and better visualize and amend resource assignments. Managers can simply extract and view all development activities as tasks in Project Professional 2010, and then amend and sync updates back to Team Foundation Server 2010. Managers

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control the data exchange through the intuitive Team menu option in the Project Professional 2010 Ribbon (see Figure 9).

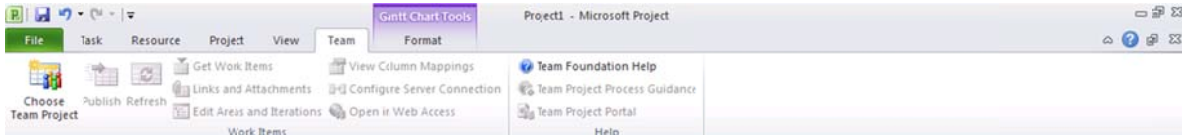


Figure 9. Project Professional 2010 – Team menu

For all development activities captured in Project Professional 2010, a project manager can simply sync with Project Server 2010 to better connect the worlds of project and portfolio management and application development (see Figure 10).

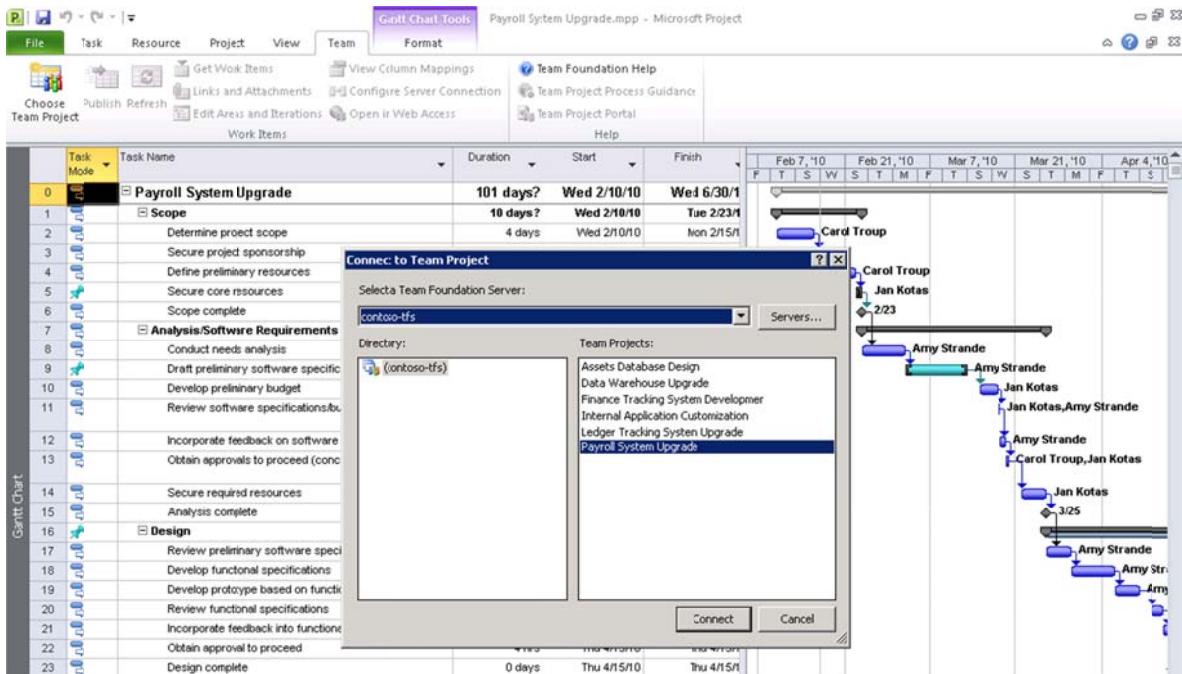


Figure 10. Project Professional 2010 and Visual Studio Team Foundation Server 2010 connectivity

Microsoft is currently working on providing direct connectivity between Project Server 2010 and Visual Studio Team Foundation Server 2010. More information about this integration will be available shortly after the Microsoft Office 2010 launch.

## Simplified Administration and Ease of Use

Project Server 2010 helps PMOs and IT pros more effectively configure, deploy, and manage the EPM Solution with simplified and streamlined administration capabilities. These enhancements help ensure that administrators can better meet their organization’s business requirements and spend less time managing the PPM system, and instead focus on the successful delivery of projects and portfolios.

Project Server 2010 enhancements include the following:

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- **Centralized administration:** Project Server 2010 unifies top-down portfolio management and bottom-up project management capabilities within a single server. The improved one-stop-shopping administration console helps ensure that administrators can effectively manage both top-down and bottom-up capabilities through one intuitive interface (see Figure 11).

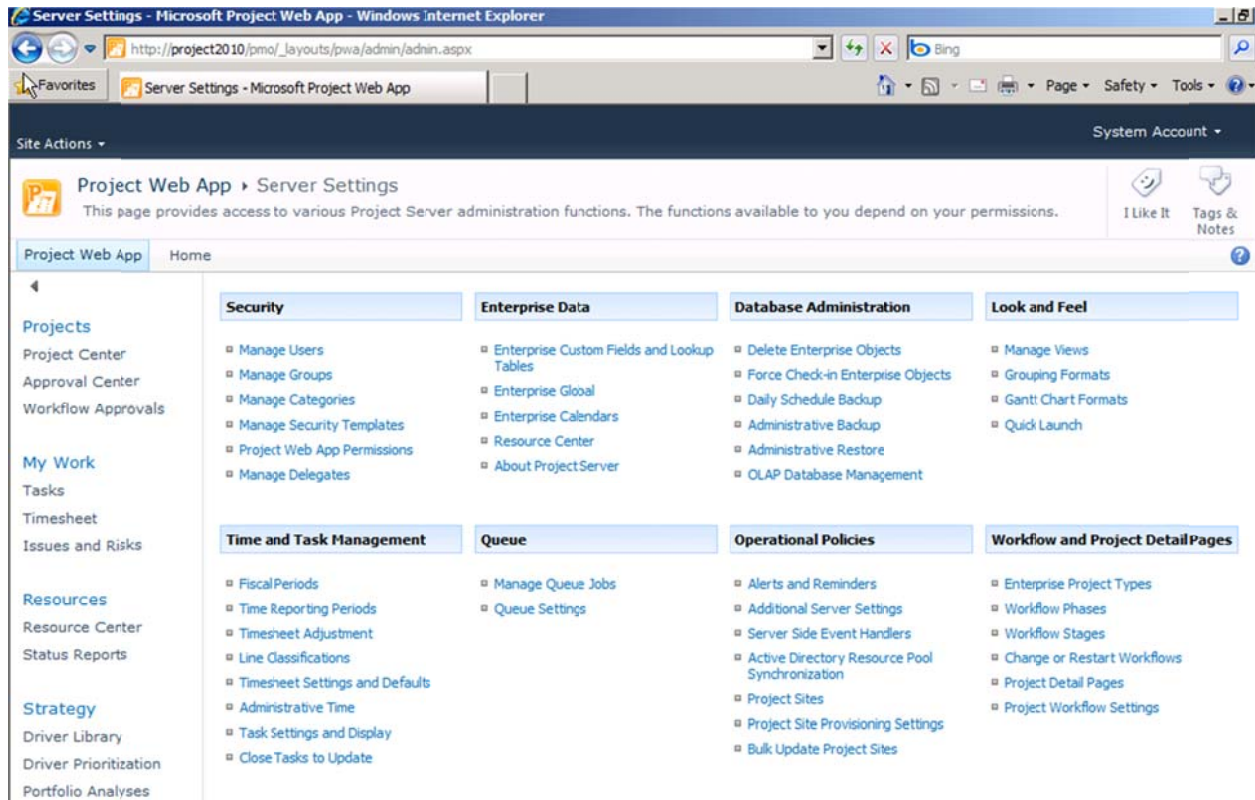


Figure 11. Project Server 2010 – Server Settings

- **Departmental fields:** The new departmental fields in Project Server 2010 help ensure that administrators can associate and filter Enterprise Project Types (EPTs), business drivers, resources, and custom fields with specific departments within the organization. This new feature helps administrators provide business units with a substantial level of autonomy, eliminates unnecessary clutter so that departments can focus on their own data, and simplifies the creation of reporting cubes while ensuring that PMOs maintain enterprise standardization and control. Each department can use its own set of enterprise project, task, and resource custom fields; departments can also share specified custom fields. In Project Server 2010 administrators can filter out custom fields that are not assigned to a department, so that users see only custom fields that are relevant to them.

Using Project Server 2010, administrators can restrict users who have permission to edit custom fields in one department from using Project Web App to edit the custom fields of other departments where they do not have permission. In Project Professional 2010, administrators can enable access to all custom fields, although they can filter lists for a project based on the department. If you are

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not a member of a department, you can fill in only globally required fields, and not specific departmental fields.

- **Administer reporting cubes:** Project Server 2010 includes an enhanced administration interface for displaying the status of and managing available cubes (see Figure 12). It is now easier than ever for administrators to manage all cube settings and data, including adding, copying, deleting, and refreshing cubes. Organizations can take advantage of improved performance and cube build times by building smaller, independent cubes.

With multiple cubes, you can accomplish the following:

- Slice the data in cubes by picking groups of data and adding fields from each group.
- Constrain access to cubes by department.

Project Server 2010 also supports localized data in cubes, by using translators. All data can have localized field name aliases, so you can build Project Detail Pages (PDPs) that show field names in the language of the locale where they are deployed. Cubes support Manually Scheduled task data, in which tasks are shown as properties instead of as a task dimension. Task mode is a new feature in Project Professional and Microsoft® Project Standard 2010; you can use it to set a task as Automatically Scheduled (the default mode) or as Manually Scheduled. Cubes exclude inactive tasks by default, but you can include a dimension for task assignments and show active or inactive tasks.

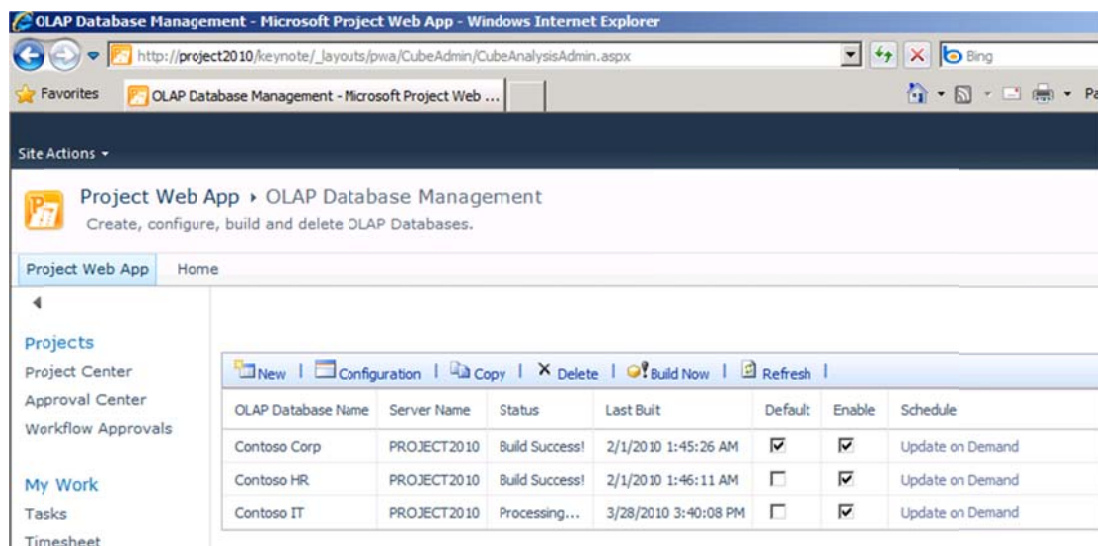


Figure 12. Project Server 2010 – Improved reporting administration

- **Elimination of ActiveX controls:** Project Server 2010 simplifies deployment by eliminating ActiveX requirements across the project, portfolio, and reporting capabilities of the solution. The removal of ActiveX controls helps improve security and overcomes deployment complexities for organizations that block client-side controls in their environments. The elimination of ActiveX also facilitates

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platform maintenance by removing the need to deploy desktop components every time a new software update—whether it is a hotfix, a cumulative update, or a service pack—to Project Web App.

- **Project Permissions:** The new Project Permissions view empowers project managers to control who can view or edit their projects (see Figure 13). Project managers no longer need to rely on an IT administrator to establish access rights to their projects.

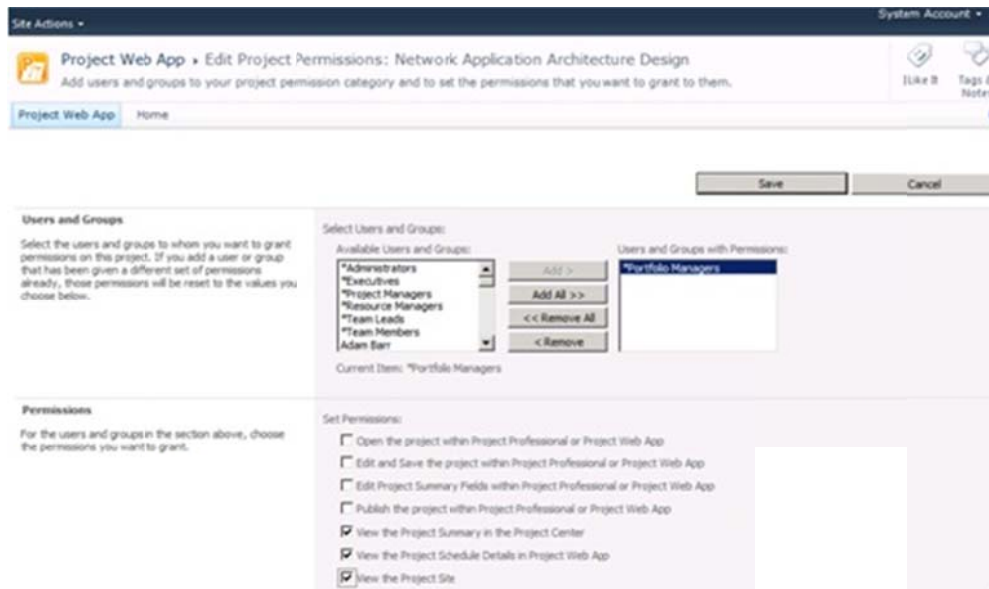


Figure 13. Project Server 2010 – Project Permissions

- **User Delegation:** Project Server 2010 enhanced delegation capabilities empower users to easily name colleagues to act as their delegate when on vacation, for instance, without assistance from a PMO officer or system administrator (see Figures 14 and 15). Delegation works across all features of Project Web App, so it can be used for timesheets, or to drive a project through its governance workflow, for instance.

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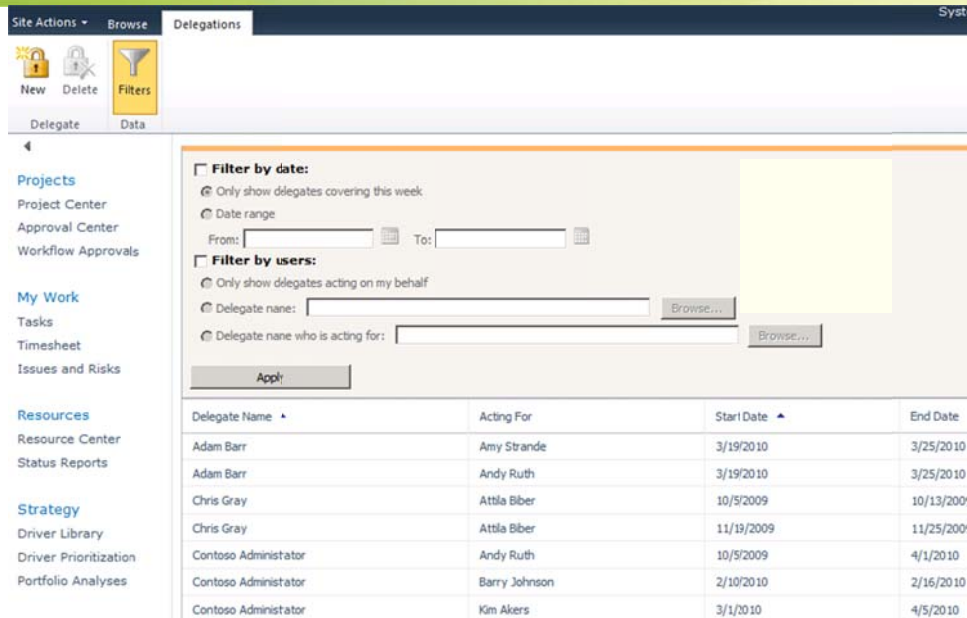


Figure 14. Project Server 2010 – User Delegation

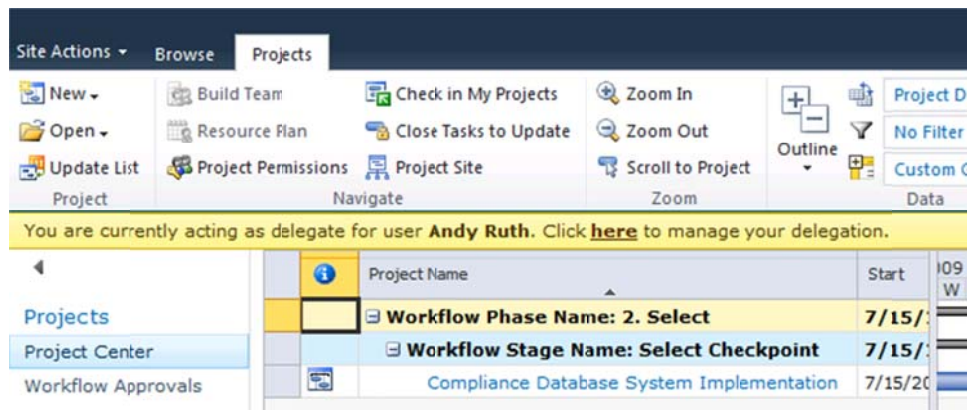


Figure 15. Project Server 2010 – Delegate session

## Scalable Platform

The EPM Solution takes advantage of and extends the architectural and performance enhancements, such as Active Cache and the Queuing Service, delivered in Project 2007 to scale to meet enterprise requirements. Project Server 2010 is built on SharePoint Server 2010, and the Shared Service Provider (SSP) design (from Project Server 2007) has been updated to a Service Application model that helps to increase scalability by allowing more services to run on the application tier. Project Server 2010 architecture now requires 64-bit capability across all servers in the farm, which inherently provides additional scalability and throughput for project data profiles. Project Professional 2010 is available in 64-bit and 32-bit options. The 64-bit option ensures that project managers can more easily work with larger project plans and master projects that exceed the 2-gigabyte (GB) memory limit on earlier 32-bit options.

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### Architecture

Project Server 2010 is built on Microsoft .NET Framework 3.5 to provide true multi-tier architecture. Client applications can access the server business layer through Web service calls to the PSI (see Figure 16). The PSI is the API to Project Server that enables efficient remote access by using datasets. External applications can define handlers for server-side events. Business objects access multiple Project Server databases through the data access layer.

Project Server 2010 extends the architecture introduced in Project Server 2007. The Project Server 2010 architecture includes Project Professional 2010 and Project Web App clients in the front-end tier. The front-end applications communicate with the middle tier only through PSI Web services, which in turn communicate with the business object layer. Business objects use the databases through the Data Access Layer (DAL). Client applications do not directly access the primary databases; Project Server hides business objects and the DAL from clients.

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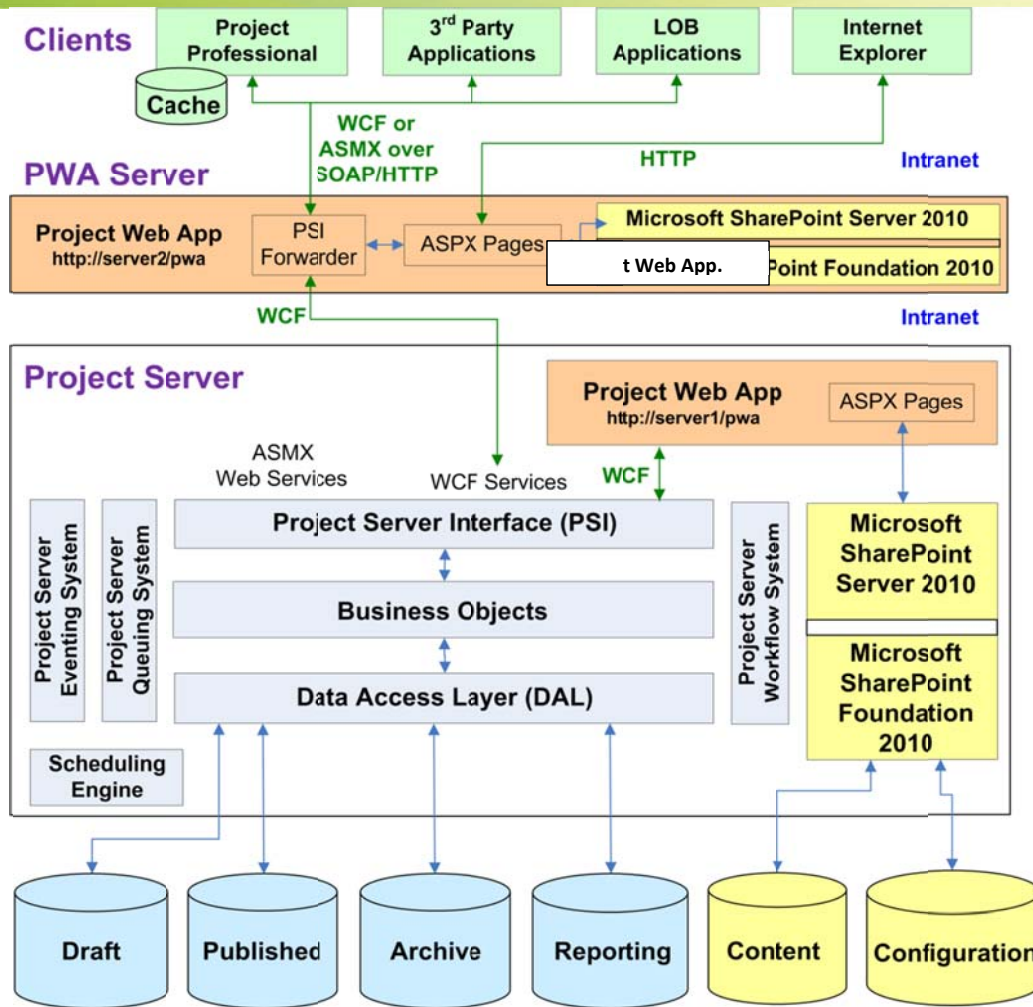


Figure 16. Project Server 2010 – General Project Server architecture

## Deployment

Similar to SharePoint Server 2010, a Project Server 2010 farm deployment can vary in complexity and size, depending on your business requirements. As a three-tier application, Project Server 2010 supports all farm topologies—small, medium, and large (see figure 17). As with Project Server 2007, Project Server 2010 can be deployed on physical servers or on virtual servers (using Hyper-V™ technology) depending on your IT requirements. In addition, organizations can configure Project Server 2010 for extranet access if resources outside of your organization need to collaborate on projects. For more information about setting up extranet access, see the [EPM Solution System Requirements](#) on TechNet.

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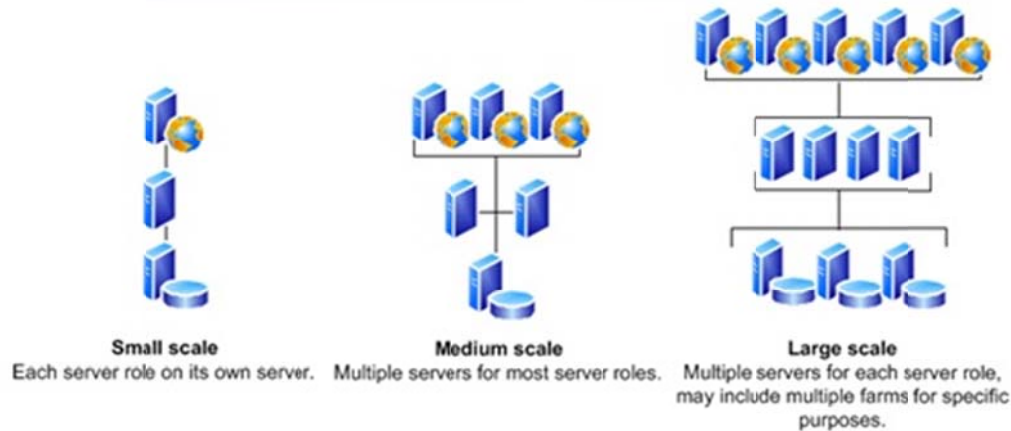


Figure 17. Project Server 2010 – Topologies

## High Availability

Several feature improvements in Project Server 2010 that are targeted at the database level and at the Project Server service help achieve high-availability architecture. Project Server 2010 leverages underlying SQL Server® high-availability technologies such as log shipping, clustering, and database mirroring.

## SharePoint 2010 Administration

Because Project Server 2010 is built on SharePoint 2010, it's important to describe key SharePoint 2010 enhancements that all Project Server 2010 administrators benefit from.

The SharePoint Server 2010 Central Administration Web site is redesigned to provide a more familiar experience and to make it easier for users to find what they are looking for. The Central Administration Web site groups major functional areas together and lists many of the most common tasks. Each one of the major areas—Application Management, Monitoring, and so on—is represented on the start page and is accessible by clicking its name or by clicking the corresponding link in the left nav menu (see Figure 18).

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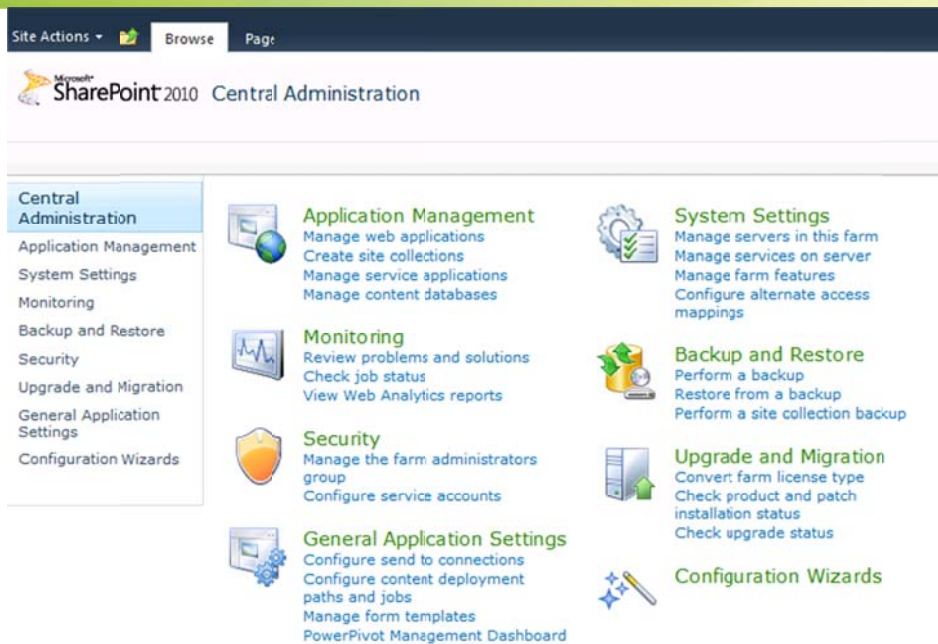


Figure 18. SharePoint Server 2010 – Central Administration

Although the user interface has changed somewhat, users will find many of the menus familiar, with some new options and functionality. One of the places where this is more obvious is in managing Web applications. Web applications are still created with the same process, but the experience is now managed through a Ribbon interface on the Manage Web Applications page. Using the Ribbon, users can more easily view or change details about a Web application because all options are just a click away. In SharePoint Server 2007, many of these tasks required the user to click a different menu and reselect the Web application each time. Now, you simply click the Web application, and all options are laid out on a single menu.

SharePoint Server 2010 provides additional maintainability capabilities, including a number of features that provide the administrator with tools for monitoring the health and performance of the SharePoint farm. These features are categorized in the following groups: diagnostics, reliability and monitoring, and reporting. The following table shows the various categories and their corresponding features.

Category	Functionality
Diagnostics	Unified Logging Service (ULS) Usage database Developer dashboard
Reliability and Monitoring	SharePoint Maintenance Engine (SPME) rules System Center Operations Manager monitoring
Reporting	Out-of-box usage reports System Center Operations Manager reports

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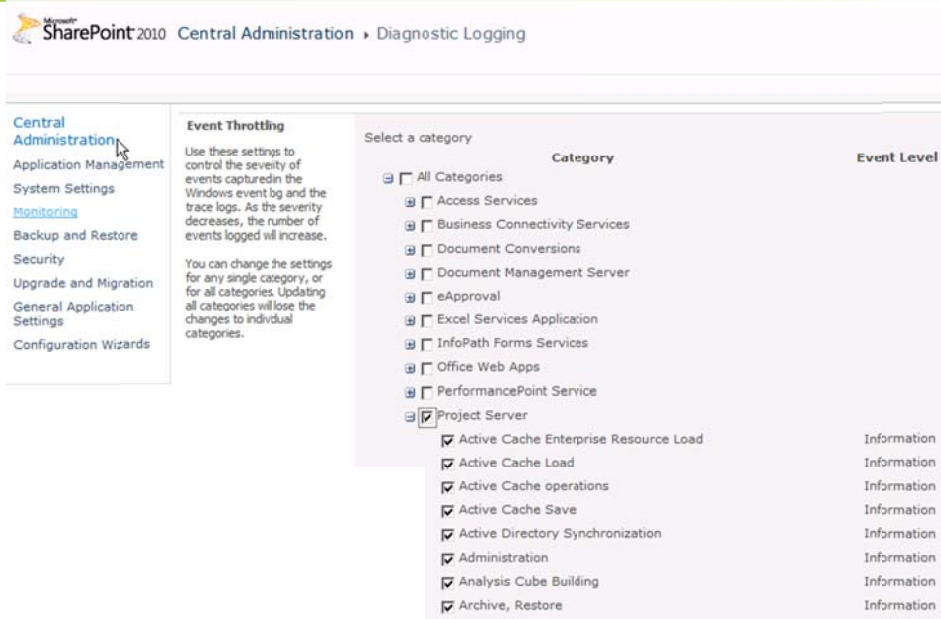


Figure 19. SharePoint Server 2010 – Diagnostic logging

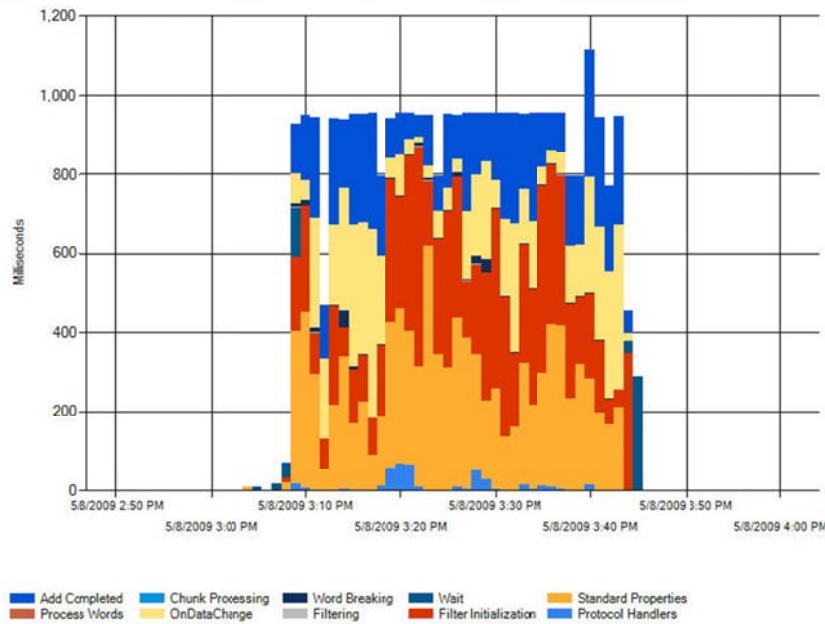


Figure 20. SharePoint Server 2010 – Crawl Activity Report

## Diagnostics

The Unified Logging Service (ULS) in SharePoint Server 2010 includes manageability improvements, log file improvements, correlation ID tracing, and Windows PowerShell™ scripting. Event throttling is one of the manageability enhancements in Project Server 2010. The ULS is configured on the Diagnostics Logging page (see Figure 18). Event throttling controls the severity of events that are captured in the

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Windows event log and trace logs. As the severity decreases, the number of events logged will increase. Events are categorized, and administrators can change the settings for any single category or for all categories. Updating all categories will lose changes to individual categories. Event Log Flood Protection (EVFP) can also be enabled on the same Web page. When EVFP is enabled, repeating events are detected and suppressed until conditions return to normal. The ULS then contains all application log events, and third-party logging software can be integrated into the ULS. The logs have been reduced in size by more than 50 percent by using NTFS file system compression. Trace logs can also be located in a specified location, and administrators can also configure the storage duration and amount of storage. Correlation IDs that are associated with each request can help troubleshoot errors related to the request. SQL Profiler traces also show correlation IDs, to further assist with troubleshooting. SharePoint Server 2010 includes several Windows PowerShell cmdlets administrators can use to retrieve information and configure the ULS.

SharePoint Server 2010 logs feature usage and performance information that is entered into the usage database. This logging is carried out by the usage service application, and is enabled by default. Administrators can read, query, and build reports directly from the usage database because the schema is public. Because of this, third-party applications can also write their data to the usage database. The types of events that are logged are shown in Figure 21 and include page requests, feature usage, search query usage, site inventory usage, timer jobs, and rating usage. Because the usage database tracks feature usage and licensing information, an administrator can track the use of enterprise features against the number of enterprise client access licenses (CALs) purchased, to help ensure compliance.

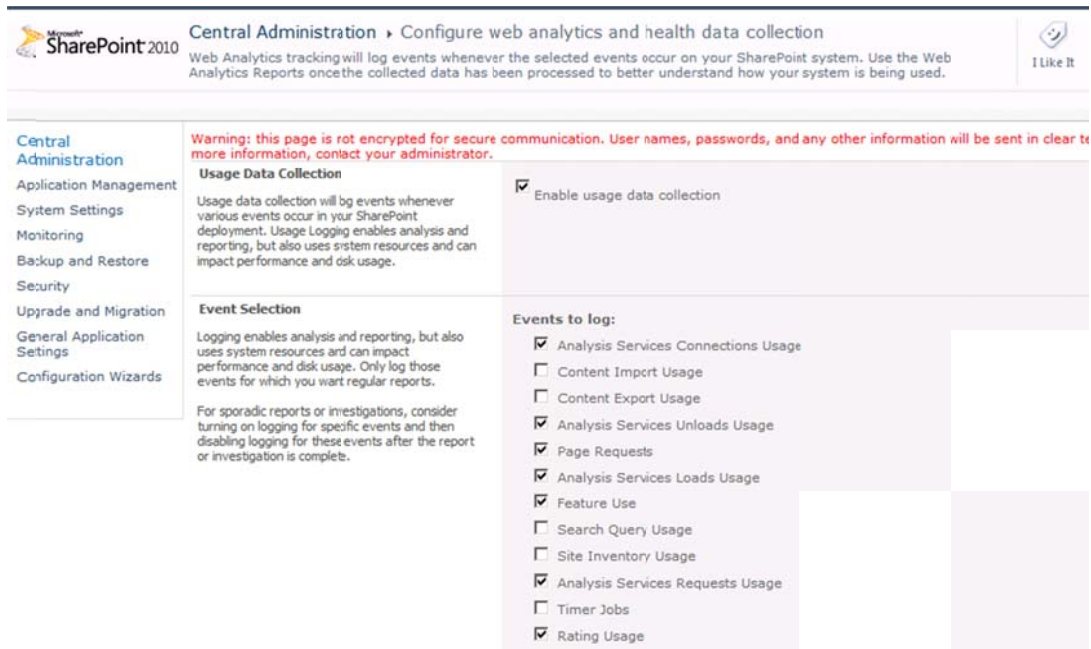


Figure 21. SharePoint Server 2010 – Usage logging

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A new addition to server diagnostics is the developer dashboard. This dashboard displays detailed information for each page load and in this way helps troubleshoot performance issues. This dashboard is disabled by default and can be independently enabled for each Web application by using Windows PowerShell.

### Reliability and Monitoring

A new addition to SharePoint Server 2010 includes the SharePoint Maintenance Engine (SPME). The SPME is a new and improved version of the Best Practices Analyzer. It periodically, or on an on-demand basis, checks the administrative configuration, performance, best practices, and security issues, and makes recommendations to resolve potential issues.

Available only to users who have farm administrator credentials, the results are accessible through Central Administration through the Review Problems and Solutions link in the Monitoring section and the Health Status section, and they are available in System Center Operations Manager (see Figure 22). The SPME maintains a list of rules called Health Rule Definitions. The list is created by the system to help ensure that the SharePoint environment is properly configured and healthy.

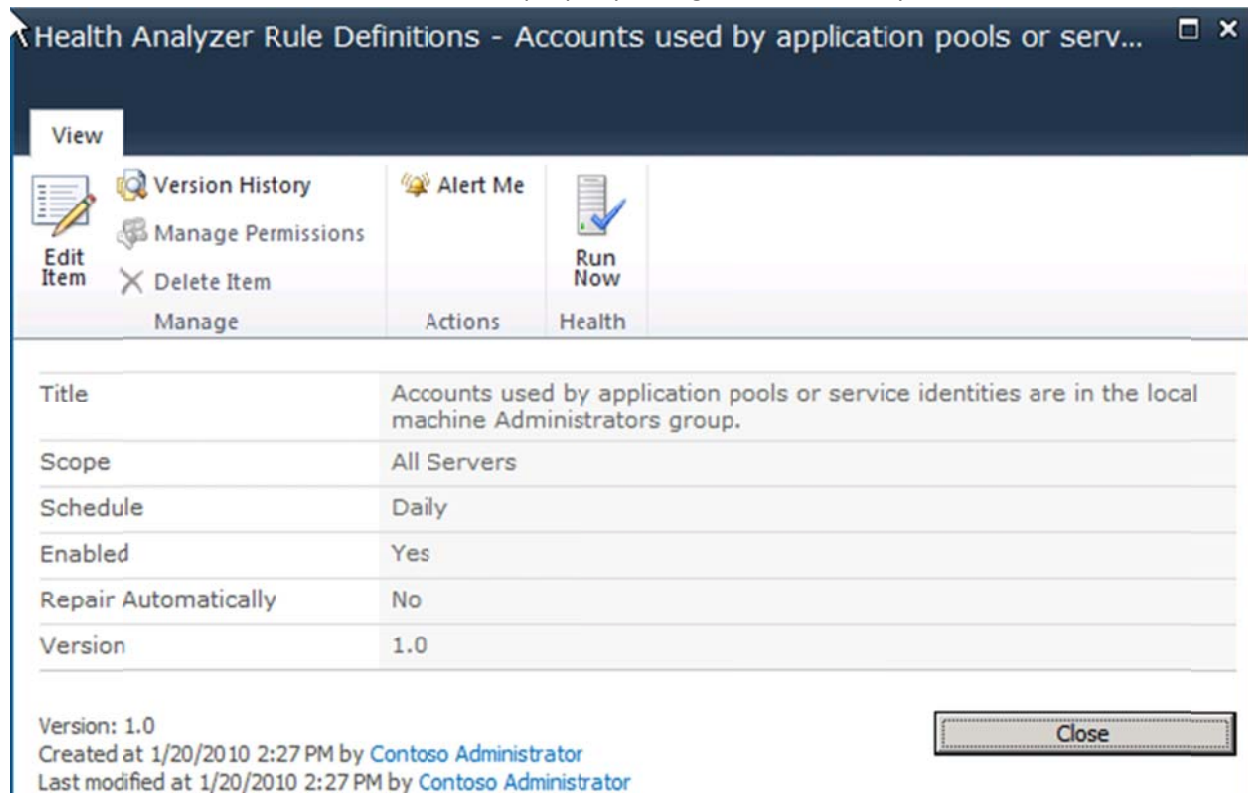


Figure 22. SharePoint Server 2010 – Health Rule Definitions

SharePoint Server 2010 will ship a management pack for System Center Operations Manager. It provides real-time alerts and troubleshooting in the context of a larger infrastructure. It watches events, monitors

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performance counters, and takes corrective action where necessary. The management pack for SharePoint Server 2010 understands and discovers topology; grabs events from ULS, the Windows Event Log, usage database, and SPME; and is integrated with ULS.

### Upgrade from Project Server 2007

Microsoft is aware that our customers have made significant investments in deploying Project Server 2007 across their organizations. With this in mind, we have invested in upgrade processes and strategies to help ensure that customers can smoothly migrate from Project Server 2007 to Project Server 2010.

There are two primary methods for upgrading from Project Server 2007 to Project Server 2010:

- In-place
- Database attach

An in-place upgrade allows you to install Project Server 2010 on the same hardware as your Project Server 2007 installation, and then migrate the content and settings in your server farm as part of a single process.

A database attach upgrade allows you to "attach" restored copies of your Project Server 2007 databases to a new Project Server 2010 installation. Project Server 2007 farm databases are backed up and restored on SQL Server, and the new Project Server 2010 farm points to these restored databases when the Project Web App instance is created. When you connect to the databases from the new Project Server 2010 instance, the databases are upgraded to Project Server 2010. For additional upgrade and migration scenarios for other product versions, visit [TechNet Upgrade and Migration Resource Center for Microsoft Project Server 2010](#).

Please refer to TechNet for the respective IT pro documentation for both Project Server 2010 and SharePoint Server 2010:

- <http://technet.microsoft.com/projectserver>
- <http://technet.microsoft.com/sharepoint>

### Extensible and Programmable Platform

Leading PPM solutions need to provide an open, extensible, and programmable platform to help ensure that organizations can develop and deploy custom offerings and effectively integrate the toolset with LOB systems. The EPM Solution includes the Project Server Interface (PSI), a flexible API that helps ensure that customers and Microsoft partners can continue to extend Project Server to meet their unique requirements. The PSI includes the following enhancements in Project 2010:

- With the portfolio capabilities of Project Portfolio Server 2007 incorporated into Project Server 2010, the PSI has been extended to include both project and portfolio capabilities.

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- Compatibility with all PSI 2007 methods helps ensure the seamless migration of all custom solutions developed using Project Server 2007.
- Because Project Server 2010 is built on SharePoint Server 2010, developers can take advantage of a consistent and robust platform to rapidly build and deploy solutions using familiar tools and services, including Windows Communication Foundation, Business Connectivity Services, Visual Studio 2010, and SharePoint Designer 2010.

Project Server 2010 offers a wealth of new development capabilities and scenarios that administrators can use to adapt and extend the capabilities and application of Project Server 2010 in large enterprises and small organizations. The integration of Project Server 2010 with SharePoint Server 2010 enables easier customization of many pages in Project Web App, in addition to many new technologies and SharePoint features. Using Windows Communication Foundation improves performance, security, and deployment of client applications that connect with Project Server. Similar to Project Server 2007, Project Server 2010 has a fully documented, dedicated relational and decisional database (reporting database and Online Analytical Processing [OLAP] cubes) that administrators can query to build custom reports, dashboards, and key performance indicators using familiar Microsoft Business Intelligence solutions such as SQL Server Reporting Services and PerformancePoint Services.

For additional information about Project Server 2010 and Microsoft EPM Solution extensibility and programmability, visit <http://msdn.microsoft.com/project>. Refer specifically to the Project 2010 Software Development Kit (SDK); it contains documentation, code samples, "How to" articles, and programming references to help customize and integrate Project 2010 clients and Project Server 2010 with other applications for enterprise project management.

### SharePoint 2010 Development

Because Project Server 2010 is built on SharePoint Server 2010, key enhancements made to SharePoint Server 2010 extend Project Server 2010 in key ways that developers will benefit from.

SharePoint Server 2010 provides the business collaboration platform for developers to rapidly build solutions using familiar tools while leveraging a rich set of out-of-the-box features. Visual Studio 2010 and SharePoint Designer 2010 help developers be more productive, and Visual Studio Team Foundation Server delivers support for application life cycle management. Developers can integrate LOB data in SharePoint Server 2010 with read/write capability delivered by Business Connectivity Services. Sandboxed solutions can be deployed to a shared hosting environment to limit the impact of unpredictable code on other applications in use.

SharePoint Server 2010 is a major step forward for SharePoint products and technologies as a development platform not only because of the richer set of overall features that the platform supports, but also because significant investments have been made in the suite of tools to make developers more productive, and to be more accessible to developers of all skill levels.

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SharePoint Server 2010 includes numerous new capabilities and features for professional developers, most of which are discussed here. The following list summarizes new features.

### Developer Productivity

- Visual Studio 2010 SharePoint project types and items
- Visual Studio 2010 SharePoint tools extensibility
- Visual Studio extensions for SharePoint upgrade
- Windows® 7 and Windows Vista® operating system support
- SharePoint Designer 2010
- Developer dashboard
- Team Foundation Server 2010 integration

### Rich Platform Services

- SharePoint Ribbon
- SharePoint dialogs
- Silverlight® Web parts
- List lookups and relationships
- Business Connectivity Services
- LINQ to SharePoint
- Performance enhancements
- Solution throttling
- Event enhancements
- Workflow enhancements
- Client object models
- REST APIs

### Flexible Deployment

- Sandboxed solutions
- SharePoint Online
- Upgrading solutions

For additional resource information about SharePoint Foundation 2010, and for the SharePoint Server 2010 Software Development Kit (SDK), visit [MSDN](#).

## Scalable, Connected, and Programmable Platform

### Additional Resources

#### Product information

[MSDN Project 2010 Beta](#)

[Project 2010 Blog](#)

[Project Team Blog](#)

#### Interactive content - Videos & Sessions & WebCast

[Project 2010 Video Showcase](#)

[Enterprise Project Management Microsoft Events](#)

[Project Developer Center](#)

[Microsoft Office Project TechNet](#)

#### Project Professional 2010 and Project Server 2010 Demo Image:

[Download](#)

[Hosted Virtual Lab](#)

#### IT Professional related – Tech Center at TechNet

[Project Server](#)

[SharePoint](#)

[Project Administration Blog](#)

#### Developer related - Developer center at MSDN

[Project](#)

[SharePoint](#)

[Programmability blog](#)

#### Additional questions? Project 2010 Forums!

[Project 2010](#)