Office 365

A COMPREHENSIVE GUIDE TO PROJECT ONLINE

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Microsoft

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Office 365 is a Software As A Service (SaaS) cloud services platform that provides access from anywhere to familiar office applications: email, calendar, high definition video conferencing, enterprise social networking and most up-to-date documents, across your devices – from PCs to smartphones to tablets.

Project Online is the Project Portfolio Management component service in Office 365. It is procured as a standalone service or added as part of an Office 365 Enterprise (E[1]) Service Plan.

This white paper provides comprehensive guidance for technical decision makers who are considering a Project Portfolio Management Information System in the cloud with Office 365/Project Online rather than the traditional, on-premises version of Project Server.

[1] For details, see Office 365 E Service Plan - **http://www.microsoft.com/en-us/office365/enterprise.aspx**

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1 Overview

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Project Online is the Project Portfolio Management component service in Office 365. It is procured as a standalone service or added as part of an Office 365 Enterprise (E[2]) Service Plan.

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The most compelling value proposition for Project Online over On-premise Project can be summarized as follows:

- **Easy startup**: Simple, predictable, low cost per user licensing basis (monthly subscription fee)
- **99.9% guaranteed uptimes**: Microsoft offers guaranteed, financially-backed uptimes. Office 365 is available 24 hours a day, 365 days a year. Office 365 employs robust disaster recovery capability, globally-redundant back-ups. Office 365 provides phone support 24 hours a day, seven days a week.
- **Security**: Extensive privacy features and industry-standard security certification including HIPAA. Filters help protect users against spam and viruses.
- **Zero server footprint**: There are no upfront infrastructure costs
- **No IT maintenance needed**: You no longer have to commit IT resources to tasks such as updates, disaster recovery, and maintenance. Also, preventive maintenance scripts are run on your databases to prevent problems before they happen. All operational maintenance is handled through the Project Online service.
- **Evergreen service**: Latest, most stable application version for the most advanced and improved user experience (i.e. service packs or cumulative updates/hotfixes applied)
- **Multi-national**: Available in 88 countries and regions, 32 languages

While the IT, availability, security and cost efficiencies are apparent, it is important to have a clear understanding of what Project Online can and cannot support. Knowing these things, you will be fully armed with the information to determine whether Project Online is a good fit for your organization.

Apart from core project data, particularly schedules and resources, there are other critical areas to consider, including configuration, security, workspace, Business Intelligence reports and custom Line-of-Business integration.

Equally diverse are the various scenarios and strategies to consider. This document provides an overview of migration requirements from previous Project Server versions, namely 2010, 2007, and 2003, including hosted 2010 implementations. The platform cloud service known as Windows Azure is also described to distinguish what it offers vis-à-vis Project Online.

[2] For details, see Office 365 E Service Plan - **http://www.microsoft.com/en-us/office365/enterprise.aspx**

Then there are the tools, utilities and techniques to consider, including vendor solutions such as FluentPro, which has an extensive collection of migration tools.

Additional references to related white papers are also provided, particularly around migrating custom workflow and custom Line of Business integration.

2 What is Project Online

Project Online is the Project and Portfolio Management service offered in Office 365 to host, track and manage enterprise projects.

Project Online is the online version of Project Server 2013 and, as with previous versions, it is hosted on SharePoint Server 2013, which is used for collaboration—particularly project sites. Project Web App and Project Professional for Office 365 Project Online are the primary end-user interfaces to Project Online.

Project Online provides business-critical applications including the following Project Portfolio Management capabilities:

- Innovation Management
- Application Lifecycle Management
- New Product Development
- New Product Development

Depending on the scale and complexity of project and portfolio management required, Project and SharePoint Online can be adapted accordingly.

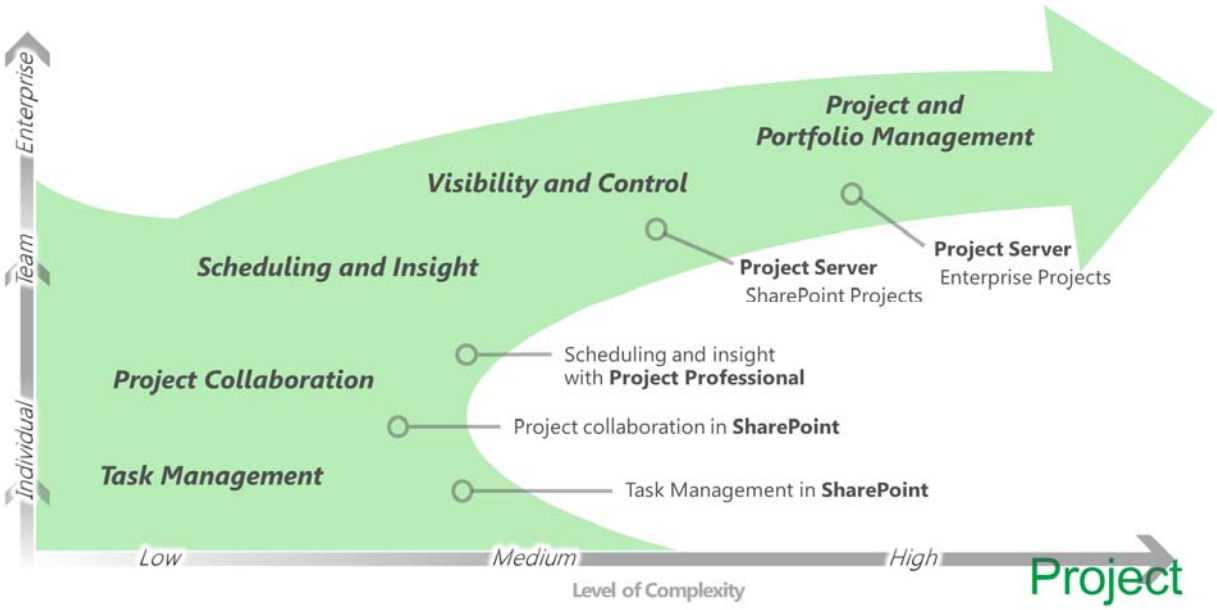

Figure 1 - Project Online Scale and Complexity Graph

2.1 SharePoint Task Lists

The basic concept of scheduling begins with task lists. By providing the ability to synchronize SharePoint Task Lists in Project Online, the organization can begin to grow from simple silos of individual or team tasks to more complex, enterprise projects that depend on various divisions within an organization to be successful.

2.2 Project Professional for Office 365

Project Professional for Office 365 is the full scheduling tool for enterprise projects intended for use by project managers and resource managers.

2.3 Project Web App

Project Web App is the browser-based[3] user interface for Project Online intended for viewing and collaboration with project participants, including team members and business decision makers.

2.4 Project Online with Project Professional for Office 365

The combination of Project Professional for Office 365 with Project Online provides full, enterprise-level scheduling and collaboration among all project participants — project managers, resource managers, PMO, and business decision makers.

The following table defines the Project Professional client compatibility with Project Server and Project Online.

Table 1 - Project Compatibility Matrix

	Project Server 2007	Project Server 2010	Project Server 2013 / Project Online
Project Professional 2013 Project Pro for Office 365			●
Project Professional 2010		●	
Project Professional 2007	●	●[4]	

[3] Requires at least Internet Explorer 7 or the latest versions for Safari and Firefox
[4] Only in Backwards Compatibility Mode (required SP2)

3 What's New and Improved

The following table provides a comprehensive overview of what's new and improved in Project Online since the release of Project Server 2010.

Table 2 - New and Improved Features and Functionality

Feature/Function	New	Improved	Notes
User Interface		●	Simplified: reduced ribbon, add-line improvements
User Interaction		●	Carry-forward admin lines, grouping and sorting
Non-project time tracking		●	
Filter categories by department		●	
Control view defaults		●	Grouping and sorting, Always show admin categories
Timesheet managers list		●	Non-fixed approval routing
Close tasks for update		●	
Log level manager		●	
Eventing model		●	Feedback (OnUpdating, OnSubmitting) Adjustment (OnReviewing, OnSubmitting)
Performance		●	
Data Retention		●	
Timesheet jobs out of queue		●	
Work Management Service	●		Aggregate tasks centrally: view work and to-dos, newsfeed tasks caching OOB task aggregation with SharePoint, Exchange and Project Server No config options in Central Admin Provider model implementation dependent to enable future integration of additional systems

Feature/Function	New	Improved	Notes
Web Tier		●	Reduced Page load time WAN optimizations Direct Business Objects database queries for non-queue jobs
Application Tier		●	Queue service optimization Reduced DB requests AD Synchronization Improvements
Database Tier		●	Optimized security validation Data transfer improvements (i.e. using Table Value Parameters) SQL best practices (i.e. daily maintenance jobs)
Homepage		●	72% improvement of page load times
Project Schedule		●	90% improvement of page load times
Resource Center		●	71% improvement of page load times
Timesheet		●	50% improvement of page load times
Multi-browser support	●		Full PWA support for: Internet Explorer 10, 9, 8 FireFox 10 Safari 5 Google Chrome 17
Server-side scheduling engine	●		Implemented as a Windows service - Microsoft Project Server Calculation Server 2013 On par with Project 2013 client scheduling engine

Feature/Function	New	Improved	Notes
SharePoint and Project app model	●		An app is typically a self-contained, interactive program that performs a small number of related tasks SharePoint applications no longer live in SharePoint. Within apps, SharePoint 2013 decouples server-side code from the server, enabling you to run server-side code from outside SharePoint, in the cloud[5] Custom code executes in the client, cloud or on-premises Apps are granted permissions to SharePoint via OAuth Apps communicate with SharePoint via REST / CSOM Acquire apps via centralized Marketplace Apps are for End Users Cloud & Web-Oriented
SharePoint Tasks List Project	●		Team site is in control, tasks are managed in SharePoint Enterprise Project Type This is when Project Server has full control of the Projects and Tasks
New "grow-up" mode	●		
Activate/Deactivate PPM Features	●		
Connected SharePoint Site	●		

[5] For details, see **http://msdn.microsoft.com/library/office/apps/fp179930(v=office.15)#SPappoverview_where**

Feature/Function	New	Improved	Notes
Authentication and Authorization	●		Default is Claims authentication Claims authentication cookie ("FedAuth" cookie) is tracked at the Distributed Cache Service level Classic authentication enabled via Windows PowerShell (not through UI) No need to re-authenticate at each WFE like in SharePoint 2010
SharePoint Permission Mode	●		SharePoint Permissions Mode: Permissions managed in SharePoint Resources managed in Project Server Project Server Permissions Mode: Permissions and Resources managed in Project Server Default for upgraded sites

4 Online versus On-premises

Project Online and on-premises Project features and functionality are based on Project Server 2013. There are differences in what's available online and on-premises. The following table provides an overview of the differences between Project Online and On-premises Project.

Table 3 – Differences between Project Online and On-premises Project

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
Ease of Setup		●		Get started in minutes. Setup new users in seconds. No training needed. Use Office tools your team knows.
99.9% Guaranteed Uptime		●		7x24, 365 days/year 43 minutes/month, 8 hours 46 minutes downtime per year
Zero server footprint		●		No internal IT involved in backup/recovery, maintenance, updates, disaster recovery
Evergreen service		●		Latest, most stable Service Packs and Cumulative Updates
Multi-national[6]		●		88 countries and regions, 32 languages
Work anywhere on any device		●		Get virtually anywhere-access on nearly any device (Access from mobile devices requires Wi-Fi capability or depends on carrier network availability) Work on your Office files online or offline
SharePoint Task Lists Sync		●	●	
Project Professional for Office 365		●	●	
Project Professional Characteristics				
	Project Pro 2013 Access to Project Server 2013	●	●	
	Project Pro 2010 Access to Project Server 2013			
	Project Pro 2007 SP2 Access to Project Server 2013			

[6] For a list of countries and languages, see the FAQ at **http://www.microsoft.com/en-us/office365/faqs.aspx#International_Availability**

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
	Save as Project Pro 2010	●	●	
	Save as Project Pro 2007	●	●	
	Save as Project Pro 2000-2003	●	●	
	Save as Excel 2010	●	●	
	Save as Excel 2007	●	●	
	Save as Excel 97-2003	●	●	
	Save as PDF	●	●	
	Save as XPS	●	●	
	Save as Text	●	●	
	Save as CSV	●	●	
	Save as XML	●	●	
Project Web App		●	●	
Project Sites		●	●	
Migration				
	Manually Save 2003 .mpp from Project Pro 2013	●	●	
	Manually Save 2007 .mpp from Project Pro 2013	●	●	
	Manually Save 2010 .mpp from Project Pro 2013	●	●	
	Partial Automation through VBA custom dev	●	●	
	3rd Party			
	FluentPro	●	●	Project Server Configuration Migration
	Metalogix Content Matrix	●	●	Project Site Migration
	MetaVis Migrator Online / Office 365 Suite	●	●	Project Site Migration

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
	Project Server 2003		●	Step 1[7]: Project Server 2003-to-2007 using VME (i.e. PS2007 SP2 w/ Oct 2009 CU) Step 2a[8]: Project Server 2007-to2010 Database-attach Upgrade or Step 2b[9]: Project Server 2007-to-2010 In-place Upgrade Step 3[10]: Project Server 2010-to-2013 Database-attach Upgrade
	Project Server 2007		●	Step 1a[8]: Project Server 2007-to2010 Database-attach Upgrade or Step 1b[9]: Project Server 2007-to-2010 In-place Upgrade Step 2[10]: Project Server 2010-to-2013 Database-attach Upgrade
	Project Server 2010		●	Step 1[10]: Project Server 2010-to-2013 Database-attach Upgrade
Resource Definition/Synchronization				
	Bulk upload via CVS	●	●	**http://onlinehelp.microsoft.com/en-us/office365-enterprises/ff637601.aspx**
	Microsoft Online Services Directory Synchronization[11] (with ADFS)	●	●	By using the Microsoft Online Services Directory Synchronization tool, your organization's administrators can keep your local Active Directory continuously synchronized with Office 365. This allows you to not only create synchronized versions of each user
	Manual resource definition	●	●	Tenant administration
	Automation via VBA	●	●	
	3rd Party			
	FluentPro	●	●	Resource Migration
Business Intelligence				

[7] For details, see **http://technet.microsoft.com/en-us/library/ee720443(v=office.14).aspx**
[8] For details, see **http://technet.microsoft.com/en-us/library/ff700208(v=office.14).aspx**
[9] For details, see **http://technet.microsoft.com/en-us/library/ee662104(office.14).aspx**
[10] For details, see **http://technet.microsoft.com/en-us/library/gg502590(v=office.15)**
[11] For details, see **http://onlinehelp.microsoft.com/en-us/office365-enterprises/ff652543.aspx**

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
	SSRS Integration		●	
	ODATA Access to RDB	●	●	
	Direct Access to RDB		●	
	OLAP Cubes	●[12]	●	
	ODATA Access to OLAP	●	●	
	T-SQL Access to OLAP		●	
	Excel 2007 Access to OLAP			
	Excel 2010 Access to OLAP	●	●	PowerPivot Add-in
	Excel 2013 Access to OLAP	●	●	
	Excel 2013 Services Access to OLAP	●	●	
	3rd Party			
	FluentPro	●	●	FluentPro Project Dashboard 2013
Demand Management/Workflow				
	Declarative – SharePoint Designer 2013	●	●	
	Visual Studio WCF	●	●	
Line of Business Integration				
	Custom Dev with SharePoint BCS	●	●	
	TFS Integration		●	TFS2012 integration with On-premise only
	Dynamics Integration			Not yet available
	SharePoint Online (Dedicated) integration			Project Server 2013 needs to be in the same farm as SharePoint 2013
	OnPrem SharePoint integration			Project Server 2013 needs to be in the same farm as SharePoint 2013
Outlook/Exchange Integration				
	Calendar: Out-of-office integration		●	

[12] Planned Spring 2013

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
Extensibility				
	ODATA	●	●	
	CSOM	●	●	
	SharePoint Store (Apps for Project)			http://office.microsoft.com/en-us/store/apps-for-project-FX103441147.aspx
	2A QuickStart	●	●	http://office.microsoft.com/en-us/store/2a-quickstart-WA103044072.aspx
	CS Milestone Trend Analysis	●	●	http://office.microsoft.com/en-us/store/cs-milestone-trend-analysis-WA102963787.aspx
	Mavenlink	●	●	http://office.microsoft.com/en-us/store/mavenlink-WA103795941.aspx?redir=0
	MindMapper	●	●	http://office.microsoft.com/en-us/store/mindmapper-WA103953725.aspx?redir=0
	Publish All Enterprise Projects	●	●	http://office.microsoft.com/en-us/store/publish-all-enterprise-projects-WA103982215.aspx
	Sensei Task Analyzer	●	●	http://office.microsoft.com/en-us/store/sensei-task-analyzertm-WA103755437.aspx?redir=0
	SharkPro Project View for Project Web App	●	●	http://office.microsoft.com/en-us/store/sharkpro-project-view-for-project-web-app-WA103045491.aspx
	SharkPro SharePoint Insite for Project	●	●	http://office.microsoft.com/en-us/store/sharkpro-sharepoint-insitetm-for-project-WA103524900.aspx?redir=0
	SOLVIN TrackTimesheet Go	●	●	http://office.microsoft.com/en-us/store/solvin-tracktimesheet-go-WA103044075.aspx
	TPG MTA Chart	●	●	http://office.microsoft.com/en-us/store/tpg-mta-chart-WA102996391.aspx
	TPG Risk Chart	●	●	http://office.microsoft.com/en-us/store/tpg-risk-chart-WA103809908.aspx
	UMT Essentials Lite	●	●	http://office.microsoft.com/en-us/store/umt-essentials-lite-WA103795933.aspx
Timesheet and Task Status				
	Simplified Single Entry Mode (SEM)	●	●	
	End-User Improvements	●	●	
	PM/Administrator	●	●	

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
	Improvements			
	Developer/Backend Improvements	●	●	
Status Reports		●	●	
Data Privacy				http://trustoffice365.com/
	No advertising	●		Office 365 does not build advertising products out of customer data. We don't scan your email or documents for building analytics, data mining, advertising, or improving the service.
	No mingling	●		Office 365 always allows you to keep your customer data separate from consumer services.
	Data portability	●		Office 365 customer data belongs to the customer. Customers can remove their data whenever they choose to.
	Transparency	●		Know where the major data centers are located, and how data storage location is determined Detailed information on who can access your Office 365 customer data Choose to receive updates regarding data center location changes, as well as security, privacy and audit information
Industry Standards Verification				
	Certified for ISO 27001	●		Office 365 is the first major business productivity public cloud service to have implemented the rigorous set of physical, logical, process and management controls defined by ISO 27001
	EU Model Clauses	●		In addition to EU Safe Harbor, Office 365 is the first major business productivity public cloud service provider to sign the standard contractual clauses created by the European Union ("EU Model Clauses") with all customers. EU Model Clauses address international transfer of data.
	HIPAA-Business Associate Agreement (HIPAA-BAA)	●		Office 365 is the first major business productivity public cloud service provider to sign requirements for the HIPAA-BAA with all customers. HIPAA is a U.S. law that applies to healthcare entities that governs the use, disclosure and safeguarding of protected

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
				health information (PHI), and imposes requirements on covered entities to sign business associate agreements with their vendors that use and disclose PHI.
	Federal Information Security Management Act (FISMA)	●		Office 365 for Enterprise was granted the Authority to Operate (ATO) under the Federal Information Security Management Act (FISMA) by the Broadcasting Board of Governors. Office 365-ITAR was granted ATO by the United States Department of Agriculture. Both Office 365 for Enterprise and O365-ITAR received FISMA-Moderate level ATO
	Data Processing Agreement	●		Microsoft offers a comprehensive standard Data Processing Agreement (DPA) to all customers. DPA addresses privacy, security and handling of customer data. Our standard Data Processing Agreement enables customers to comply with their local regulations.
Work Management Service		●	●	
Performance Improvements		●	●	
Browser	Internet Explorer 8	●	●	**http://technet.microsoft.com/en-us/library/ff603505**
	Internet Explorer 9	●	●	
	Internet Explorer 10	●	●	
	FireFox 10	●	●	
	Mac Safari 5	●	●	
	Google Chrome 17	●	●	
Server-side scheduling engine				
	Microsoft Project Server Calculation Service 2013	●	●	
SharePoint and Project App model		●	●	
New Enterprise Project Types				
	SharePoint Tasks List	●	●	
	Enterprise Project	●	●	

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
Authentication and Authorization				
	Claims Authentication	●	●	
	Classic Authentication	●	●	
Office 365 Security				http://www.microsoft.com/en-us/download/details.aspx?id=26647
	> 15 years of experience in providing security for online data	●		
	Secure Development Lifecycle[13]	●		The Security Development Lifecycle (SDL) is a software development security assurance process consisting of security practices grouped by seven phases: training, requirements, design, implementation, verification, release, and response
	5 Layers of Security[14]	●		Moving productivity services to the cloud requires a serious consideration of security and privacy issues and technologies. Office 365 is designed to deliver the enterprise-grade security you require to move to the cloud with confidence. Our data centers are designed, built, and managed using a defense-in-depth strategy at both the physical and logical layers, and our services are engineered to be secure using the Security Development Lifecycle.
	Proactive Monitoring	●		
	Operations Access Restriction	●		
Application Security				http://technet.microsoft.com/en-us/library/fp161361.aspx

[13] For details, see http://www.microsoft.com/security/sdl/default.aspx
[14] For details, see http://www.microsoft.com/en-us/download/details.aspx?id=26552

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
	SharePoint Permissions Mode[15]	●	●	SharePoint Permission Mode creates SharePoint groups that directly correspond to the default security groups found in Project Permission Mode. In SharePoint Permission Mode, you cannot edit the default permissions assigned to any of these SharePoint groups. Also, you cannot create additional custom groups, categories, Resource Breakdown Structure (RBS) nodes, or edit the default permissions assigned to any of these objects. If you need more management of your user permissions in Project Server 2013, you can change to Project Permission Mode. For more information about the differences between the two security modes available to you in Project Server 2013
	Unified security management through SharePoint Server	●	●	
	Permissions inheritance for PWA and Workspaces	●	●	
	Direct authorization against Active Directory security groups	●	●	
	Claims-based authorization	●	●	
	Manage authorization by role-based groups	●	●	
	Extensible and customizable	●	●	
	Project Server Permissions Mode			http://technet.microsoft.com/en-us/library/cc197354.aspx
	Claims-based authorization	●	●	
	Manage authorization by role-based groups	●	●	

[15] For details, see http://technet.microsoft.com/en-us/library/jj219510(v=office.15).aspx

Feature/Function Area	Feature/Function Details	Project Online	On-premises Project	Notes
	Extensible and customizable	●	●	
	User delegation	●	●	
	Ability to secure work resources	●	●	
	Impersonation	●	●	
	Security filtering using the Resource Breakdown Structure	●	●	
	Custom Security Categories	●	●	
Excel	PWA Import to Excel 2013	●	●	
	PWA Import to Excel 2010			
	PWA Import to Excel 2007			
Word	PWA Import to Word 2013	●	●	
	PWA Import to Word 2010			
	PWA Import to Word 2007			

5 Differences between Online and On-premises

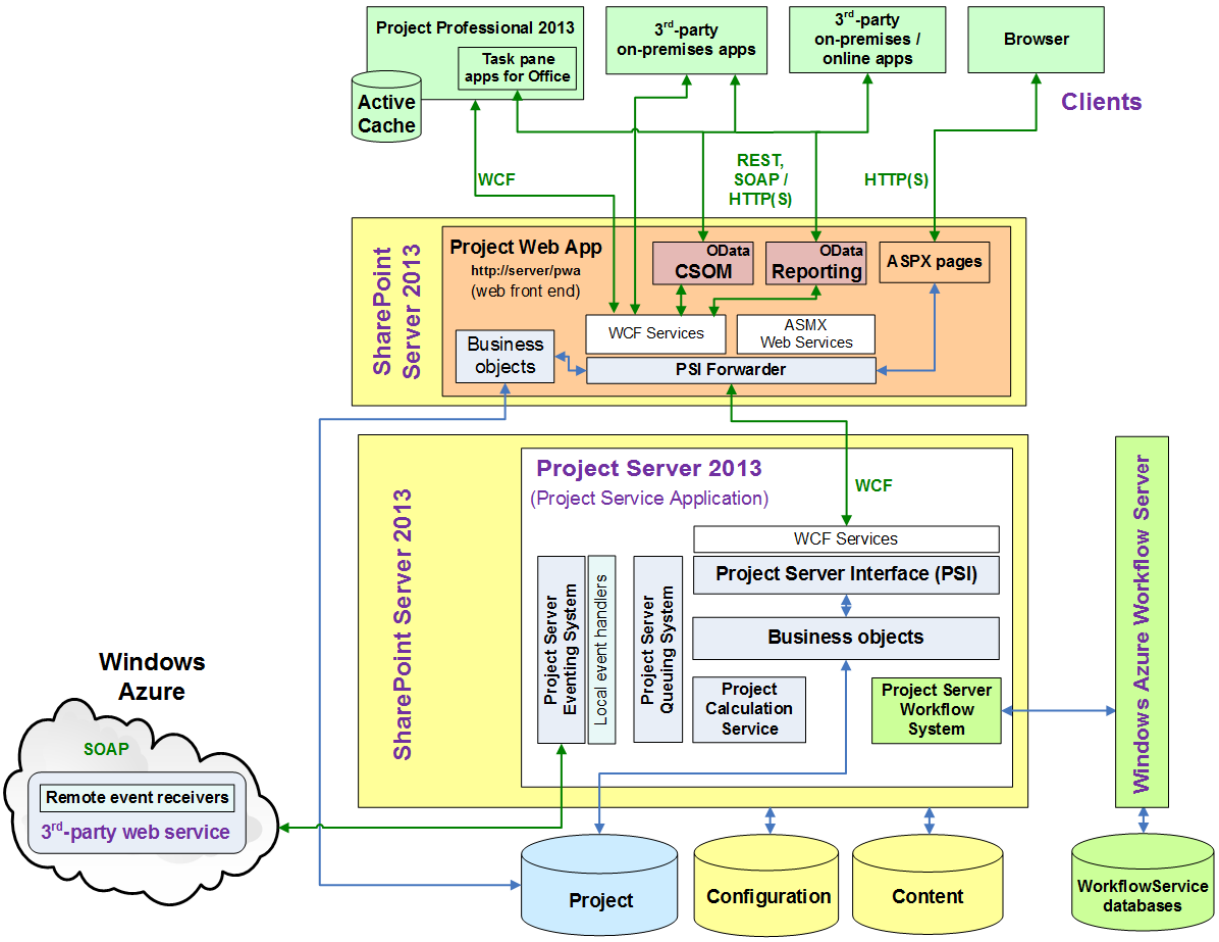

Figure 2 - On-premises Project Logical Architecture

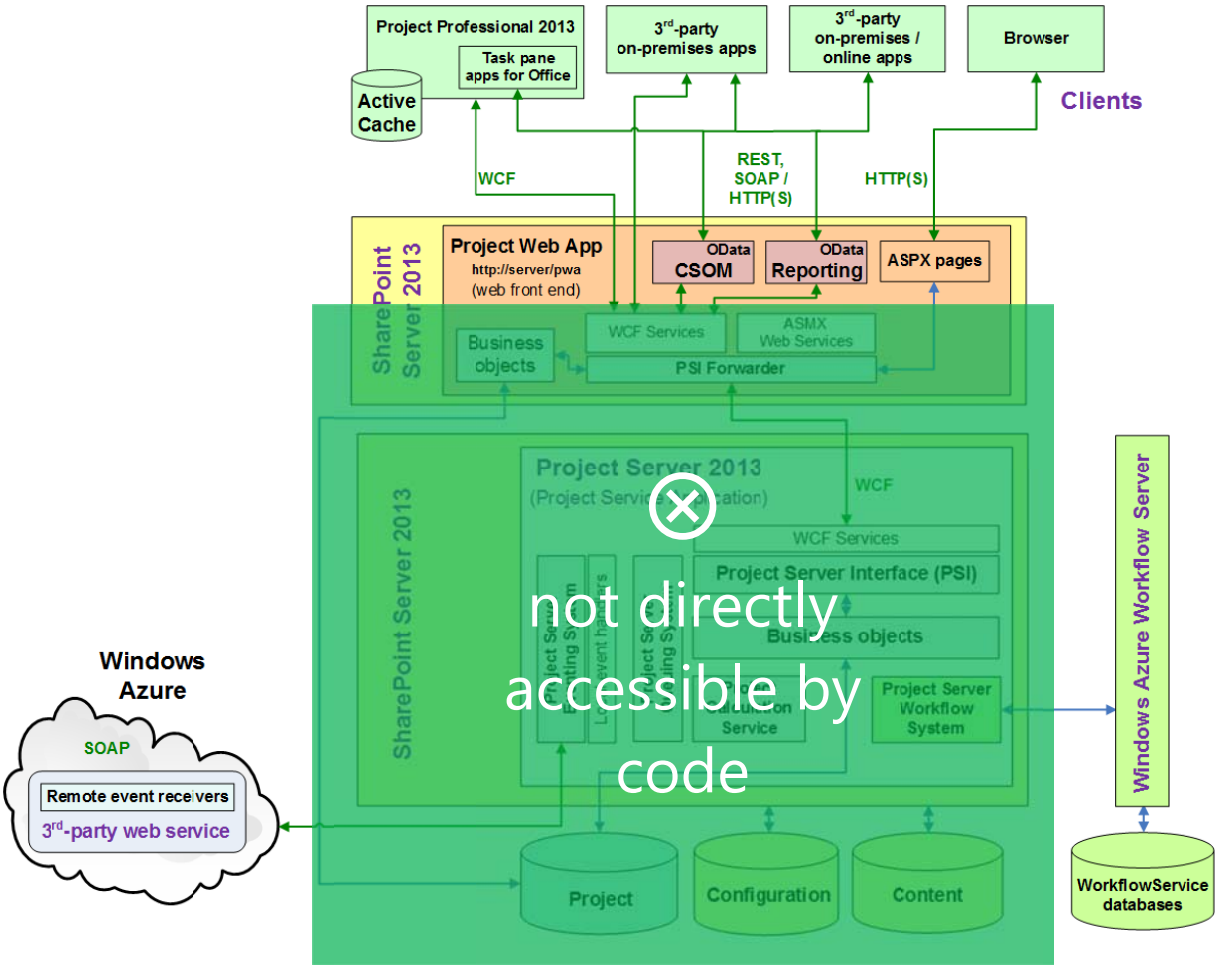

Figure 3 - Project Online Logical Architecture Restrictions

From a database perspective, the most visible change to the data architecture from previous Project Server versions is that Project Server 2013 combines four separate databases into a single database with different schemas.

- The default name of the Project database is ProjectService
- Draft, Published, and Archive table names have prefixes: draft., pub., and ver
- Direct access is not supported to draft, pub and ver

For Project Online specifically, the Reporting database is exposed for BI reporting via the new Open Data Protocol (OData) feeds.

Any existing reports that use direct T-SQL against the Reporting database must be recreated using OData protocol.

Online

- Extensibility via SharePoint extensibility model
- No full-trust code
- Reporting is done via OData

- No direct access to the SQL and OLAP databases
- Access using CSOM (PSI interfaces do not support OAuth)

On-Premises

- Full access to databases
- Full access to PSI and CSOM

In Project Server 2010

- Event handlers are written in full-trust code deployed on Project Server computer
- They run inside the Project Server Eventing System

In Project Server 2013 and Project Online you need to implement remote event receivers.

On-premises Project Server 2013 can use both full-trust event handlers and remote event receivers.

Table 4 - Online and On-premises Differences

Tool/Feature	Online	On-premises	Notes
Direct access to Reporting Database	●[16]	●	The relational Project Server Reporting database is the core data source for reporting. However, direct access is only available in On-Premises Project Server 2013. Use the new Open Data Protocol (OData) for data mining.
Access to Reporting Data via OData	●	●	
OLAP Database	●[17]	●	
SQL Reporting Services (SQL Query)	●[18]	●	Any existing reports that use direct T-SQL against the Reporting database must be recreated using OData protocol.
Excel 2010 with PowerPivot Add-In	●	●	
Excel 2013	●	●	
Excel Services	●	●	
Team Foundation Server Integration	●		Line of Business Integration is feasible[19] using SharePoint Business Connectivity Services with custom application development depending on the scenario.

[16] Via OData
[17] Via OData
[18] Via OData
[19] Solution: Surface external data from AdventureWorks in SharePoint 2013 Preview and Office 2013 Preview (white paper)

Tool/Feature	Online	On-premises	Notes
Dynamics Integration			Line of Business Integration is feasible[20] using SharePoint Business Connectivity Services with custom application development depending on the scenario.
Calendar out-of-office Integration		●	

[20] Solution: Surface external data from AdventureWorks in SharePoint 2013 Preview and Office 2013 Preview (white paper)

6 Business Intelligence

One of the major shifts in features and functionality with Project Online from traditional on-premises Project Server is in the area of access, extract and presentation of data for the purpose of business intelligence analysis.

Given the security concerns and management practicability of an online service, direct access to the Project Server Reporting database is not permissible in Project Online as it would normally be so in an on-premises Project Server deployment.

In Project Online, Open Data Access Protocol (OData) is used to access the data. Excel and Excel Services are the standard out-of-box end-user interface tool and service with which to display project data. New Project Professional 2013 business intelligence reports are also provided.

6.1 Open Data Access Protocol (OData)

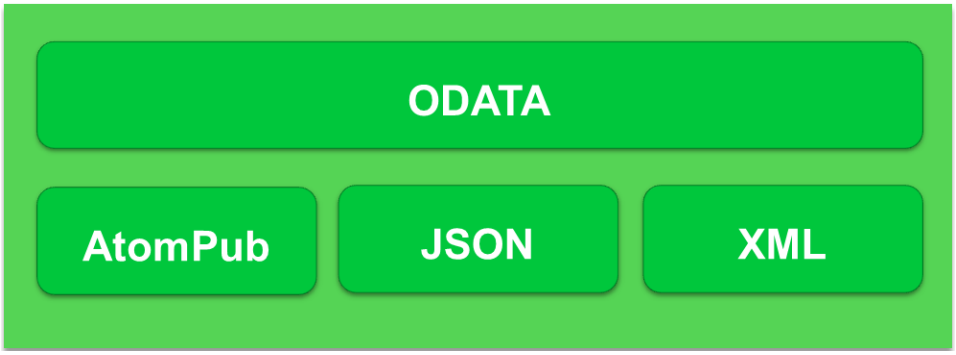

Figure 4 - Open Data Protocol (OData)

Open Data Protocol (OData) is the protocol used for accessing Business Intelligence data in Project Online or on-premises Project Server.

- Web-Based Open-Standards Protocol for querying data **http://www.odata.org**
- HTTP-based over port 80 or port 443
- Can deliver data as Atom feed, JSON or as XML document
- Available initially with SharePoint 2010 for list data, expanded in 2013

ProjectData[21] is a WCF Data Service, also known as an OData (Open Data Protocol) service. The ProjectData service is implemented with the OData V3 libraries.

The ProjectData service enables REST queries and a variety of OData client libraries to make both online and on-premises queries of reporting data from a Project Web App instance. For example, you can directly use a REST query in web browsers, or use JavaScript to build web apps and client apps for mobile devices, tablets, PCs, and Mac computers. Client libraries are available for JavaScript, the Microsoft .NET Framework, Microsoft Silverlight, Windows Phone 8, and other

[21] Excerpt from **http://msdn.microsoft.com/en-us/library/jj163015.aspx**

languages and environments. In Project Server 2013, the ProjectData service is optimized to create pivot tables, pivot charts, and PowerView reports for business intelligence by using the Excel 2013 desktop client and Excel Services in SharePoint.

When Project Server 2013 or Project Online is in Project permission mode, you can explicitly grant or deny access to the OData feed for specified Project Web App users. For example, on the Edit User page in Project Web App, expand the Global Permissions section, and then in the General section, select the Access Project Server Reporting Service check box in the Allow column.

OData maps CRUD operations to HTTP verbs

- Read operations mapped to HTTP GET
- Insert operations mapped to HTP POST
- Update operations mapped to HTTP PUT or HTTP MERGE
- Delete operations mapped to HTTP DELETE

For development, use the _api entities and not the ProjectData, which is Read Only. For example to select a Project:

- http://ServerName/ProjectServerName/_api/Projects

6.2 Project Desktop Business Intelligence

Desktop-level Business Intelligence is available in Project Standard 2013, Project Professional 2013, or Project Professional for Office365.

The following provides a composite of the new features and functionality provided in the out-of-box Project Desktop Business Intelligence.

- Project Manager's view, including Master Project consolidated reports

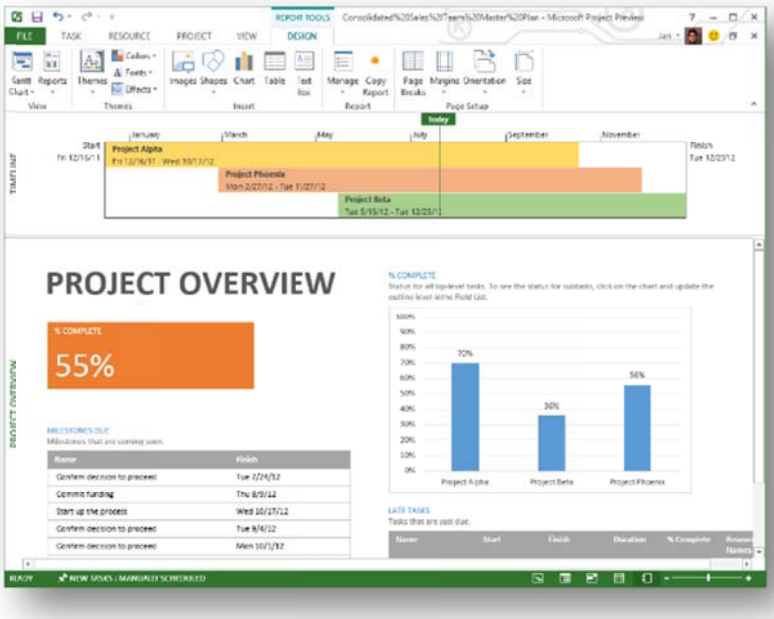

Figure 5 - Project Overview Report

- New Project Reports (includes Burndown reporting)

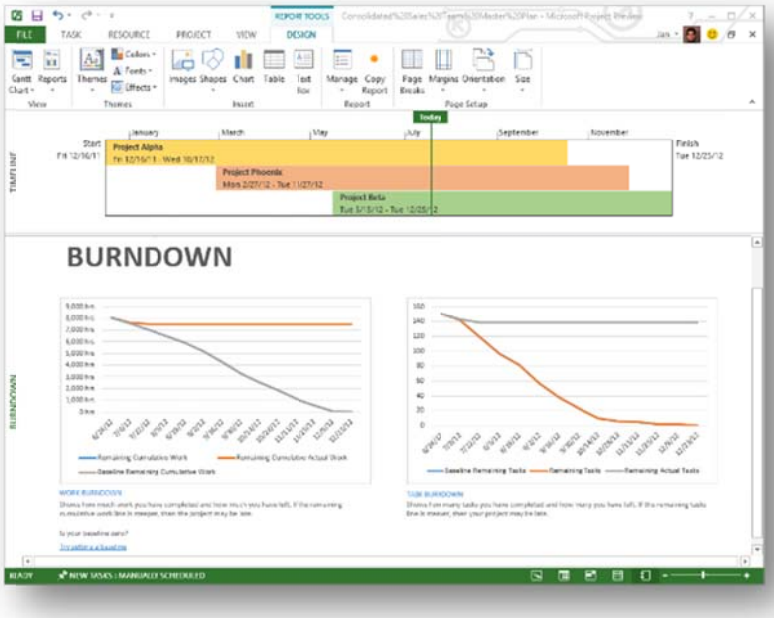

Figure 6 - Project Burndown Report

- No Programs or Portfolio Views in Desktop BI
- Introduces new Cumulative fields

- New “Excel-like” out of the box report templates
- Charts, tables, shapes and images to compose the report
- Copy/paste reports and individual items into Office applications
- Good for viewing and printing
- Service Account running Project Server Events Service 2010 service should be a user in PWA and be a member of Administrators Security Group

7 Demand Management/Workflow

Demand Management process is the guiding process for Project lifecycle – from initiation to selection to planning and to managing. It typically follows the customer business process or methodology requirements, and consists of Phases, Stages, Project Detail Pages (SharePoint page with Web Parts), Specific Custom Fields and Workflow.

The Project Online and Project Server 2013 workflow builds on SharePoint 2013 Workflow Infrastructure and includes Project Server 2013 specific workflow actions.

- Workflow now treated as a service in SharePoint 2013
- Moved to Workflow Manager (formerly Windows Azure Workflow Server (WAWS))
  - No longer runs in the content farm
  - No longer runs on SharePoint WFE / App servers
  - Harnesses the latest workflow technology from Microsoft
- SharePoint deployment drives where workflow runs
  - On-Premises and Hosted – Workflow Manager
- Improves stability, scalability & transparency

For a step-by-step walkthrough of demand management and workflow development, please refer to the Project Server 2013 version of the Hitchhiker's Guide to Demand Management.[22]

7.1 Declarative – SharePoint Designer 2013

Project Online and Project Server 2013 now supports declarative workflows and using Microsoft Visio 2013 and SharePoint Designer 2013 with no code (customization).

Projects can originate from SharePoint items (a.k.a. Ideation).

- Introducing "Stages"
  - Mitigates SharePoint Designer's lack of loop support
  - Provides functionality of "state machine" workflows in Workflow Foundation 3.5
- Declarative workflows have loops
  - Loop # times / with condition / with expression
- Declarative workflows can call REST/SOAP services

7.2 Visual Studio WCF

Custom code extensibility is possible with Visual Studio:

[22] Hicthhiker's Guide by Steven Haden
https://msft.spoppe.com/teams/WM/wma/PM/spc/Shared%20Documents/New%20IP/Project2013_DemandManagementGuideVNext.docx?Web=1

- SharePoint/Project 2010 Workflows
- SharePoint 2013 Workflows

Table 5 - Workflow Creation Comparison: SharePoint Designer and Visual Studio

	SharePoint Designer	Visual Studio
Reusability	Create reusable WF	Create WF templates
Include in SP App		●
Custom code		
Custom actions	Consume, not create	Yes, underlying activities
Visio integration	●	
Debugging		●

7.3 Custom Workflow Creation Process

There are four general steps[23] to perform to create your workflow in Microsoft Project Server 2013 or O365 Project Online:

- Plan/Vision
- Workflow Configuration: Create objects in Project Server
- Workflow Orchestration: Create workflow in SharePoint Designer 2013
- Deploy the Workflow

Demand management processes in Project Server 2013[24] include workflows that help you manage project proposals and portfolio analyses.

Project Server 2013 workflows use the SharePoint Server 2013 workflow platform, which is built on version 4 of Windows Workflow Foundation (WF4). WF4-based workflows are declarative, which means that the workflow design tool saves workflow stages, actions, conditions, and other elements to XAML code, which is interpreted at run-time. You can use either SharePoint Designer 2013 or Visual Studio 2012 to create declarative workflows. A workflow requires the Workflow Manager Client 1.0 execution engine, which can be on a local server for on-premises solutions or on a remote server for Project Online solutions.

You can use SharePoint Designer 2013 to create relatively simple declarative workflows. For complex workflows, and workflow templates that can be reused, you can use Visual Studio 2012 to develop and debug workflows for Project Web App[25].

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[23] Hicthhiker's Guide by Steven Haden
https://msft.spoppe.com/teams/WM/wma/PM/spc/Shared%20Documents/New%20IP/Project2013_DemandManagementGuideVNext.docx?Web=1

[24] See reference **http://msdn.microsoft.com/en-us/library/office/ee767703.aspx**

[25] For more information, see Creating Project Workflows using Visual Studio 2012.
http://blogs.msdn.com/b/project_programmability/archive/2012/11/07/creating-project-workflows-using-visual-studio-2012.aspx

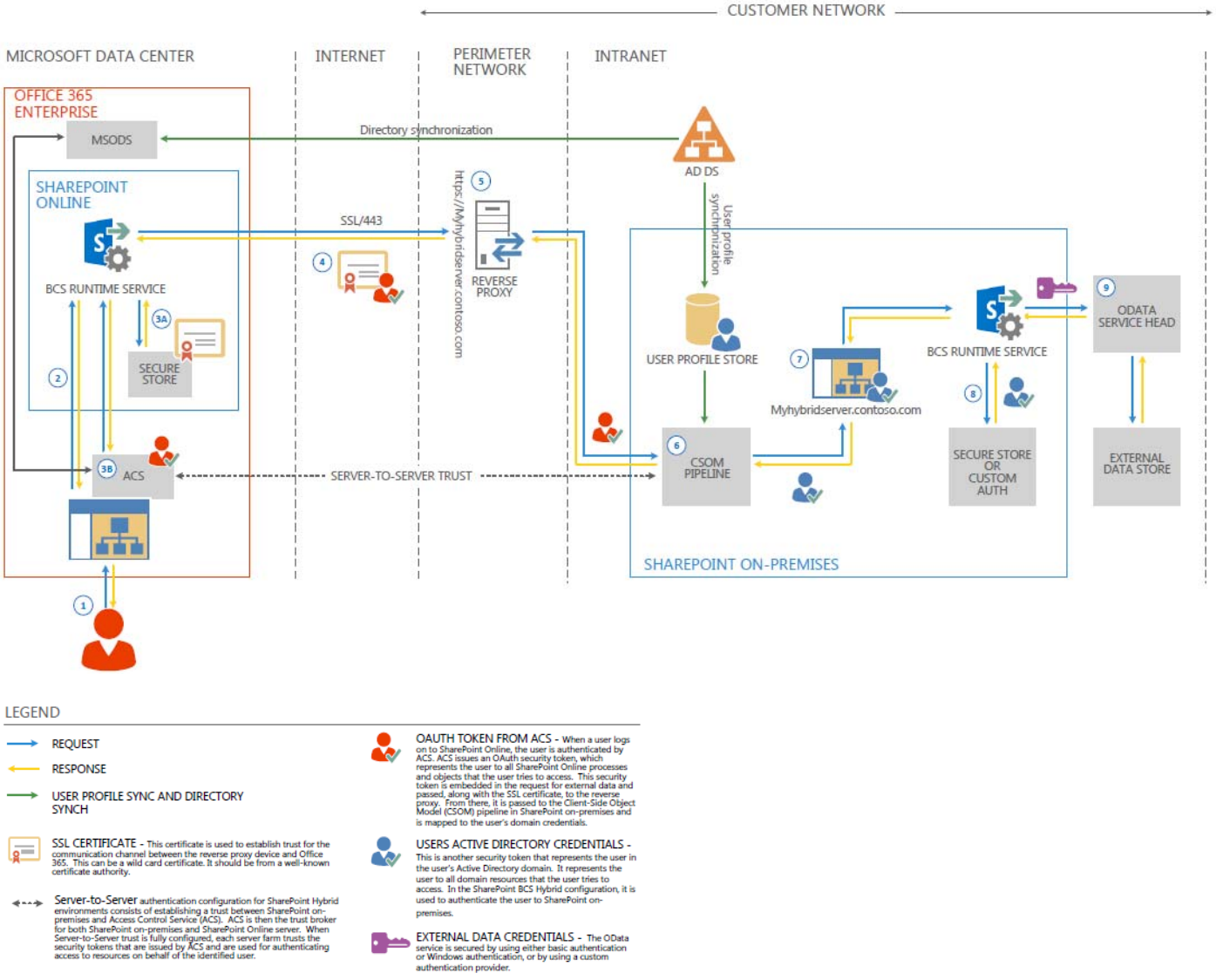
Use a test installation of Project Server, not a production installation, to develop and test workflows. Workflows that are developed for pre-release versions of Project Server 2013 must be tested for the release version, and may have to be created again and redeployed.

8 Line-of-Business Integration

A hybrid SharePoint environment is composed of SharePoint Server, typically deployed on-premises, and Microsoft Office 365 - SharePoint Online. A hybrid environment may be configured to provide one of several levels of integration, depending on the purpose of the integration.

Hybrid SharePoint environments may provide some or all of the following functionality:

- **Federated search:** Users in the cloud and in your on-premises domain environment will be able to obtain search results that include content from both locations.
- **Business Connectivity Services:** Makes line-of-business data available, by using Business Connectivity Services, to applications for SharePoint and external lists in SharePoint Online.
- **Single sign-on (SSO):** Users who are connected to either the corporate network or Office 365 only have to authenticate once in a given session to access resources in both the on-premises SharePoint farm and SharePoint Online.
- **Directory synchronization:** User accounts in the on-premises Active Directory Domain Services (AD DS) domain automatically synchronize to Office 365.
- **One-way or two-way server-to-server trust:** A trust relationship between the on-premises SharePoint farm and SharePoint Online that enables secure connections and data flow.



The diagram above provides the flow from a Project Online request to a Line-of-Business External Data Source through Business Connectivity Services. Each process flow step is described below:

1) An information worker logs on to their SharePoint Online tenancy and opens an app for SharePoint or external list that needs data from an on-premises OData data source.
2) The external list creates a request for the data and sends it to Business Connectivity Services. BCS looks at the connection settings object and the external content type to see how to connect to the data source and what credentials to use.
3) Step 3

a) BCS retrieves the client SSL certificate from the Secure Store in SharePoint Online. This is used for SharePoint Online authentication to the reverse proxy.

b) BCS retrieves an OAuth token from the Access Control Service. These are the user's credentials used for user authentication to the SharePoint 2013 on-premises farm. The Access Control Service is part of every SharePoint Online subscription. It is a Security Token Service that manages security tokens for users of SharePoint Online.

4) BCS sends an HTTPs request to the published endpoint for the data source. The request includes the client certificate from the Secure Store and the user's OAuth security token as well as a request for the data.

5) The reverse proxy authenticates the request by using the client certificate and forwards it to the CSOM pipeline of the on-premises SharePoint 2013 farm.

6) The CSOM pipeline consults the User Profile Service to look for a mapping between the user's OAuth security token from ACS and the user's domain credentials from AD DS. If one exists, the user's domain credentials are returned to the request.

7) The user's domain credentials are used to authenticate to the SharePoint on-premises site that receives Hybrid requests and the request is passed to the SharePoint on-premises BCS service.

8) The SharePoint on-premises BCS retrieves the credentials that are used to authenticate to the external data source from the SharePoint on-premises Secure Store Service.

9) The SharePoint on-premises BCS service passes the request for data along with the external data credentials to the OData service head which then performs the desired operations on the external data and returns the results to the SharePoint Online user.

9 Extensibility

Project Server 2013/SharePoint 2013 architecture is based on:

- Microsoft .NET Framework 4.0
- Microsoft ASP.NET 4.0 pages
- Client Side Object Model (CSOM) programming interfaces
- OData Open Data Protocol
- OAuth Security in App Model

Project Extensibility relies and inherits many platform extensibility investments from Office 2013, Office365, SharePoint 2013 and SharePoint Online.

- The same development tools and principles
- Apps for Office extensibility (based on Web Extensibility Framework)
- APIs (CSOM, JSOM, OData interfaces….)

Project 2013 builds on Project 2010 extensibility.

- All customization options and extensibility platforms from Project 2010 are still available in Project 2013

Extensive customization options

- New Project Reports (includes burndown reporting and built-in dashboards)
- Custom Fields
- Views
- Visual Reports
- Ribbon

Extensibility options

- New Apps for Office
- Object Model
  - Visual Basic for Applications (VBA)
  - Component Object Model (COM) Add-ins

9.1 CSOM and JSOM

CSOM is a Client-Side Object Model API.

- New and main extensibility model for Project Server

Could be leveraged through the following:

- Microsoft .Net CSOM (language C# or VB#) (synchronous)
- Microsoft SilverLight CSOM (asynchronous)
- Windows Phone 7 CSOM (asynchronous)
- JavaScript object model (JSOM) using JavaScript language

JSOM is JavaScript Object Model

- Exposing the same objects as CSOM
- Deployed as custom application page, app parts, and ribbon extensions
- Calls to the server are asynchronous

Already available with SharePoint 2010

9.2 Client Side Object Model (CSOM)

Track using ODATA and customize using CSOM

Project CSOM is an extension of SharePoint CSOM

Project apps work exactly like SharePoint apps

Project Server 2013 Preview extensibility builds on the Project Server 2010

Customization / no code:

- Enterprise Custom Fields, Views (including Web Parts and Web Part Pages), Timesheets, (NEW OPTIONS) Security, (NEW OPTIONS) Reporting/Business Intelligence (BI), (NEW OPTIONS) Project "Demand Management"

Extensibility / code:

- Web Services – Project Server Interface (PSI) & Event Handlers
- (NEW) Client Side Object Model (CSOM) & Remote Event Receivers
- (NEW OPTIONS) Project Workflow (based on SharePoint 2013 Workflow)
- (EXTENDED) Project sites (SharePoint Sites)
- Leverage other Advanced SharePoint Workloads (Excel Services, Visio Services, PerformancePoint,…)
- (NEW) In-product Marketplace

Table 6 - Extensibility Features

New Feature	SharePoint 2013	Project 2013	Notes
New App model	Full	Full	Apps can be published in the Marketplace
CSOM	Full	Full	
Javascript	Full	Full	Using CSOM
Windows Phone	Full	Full	Using CSOM
Silverlight	Full	Full	Using CSOM
Workflow	Full	Full	Including SharePoint Designer
Server Object Model (WCF)	Full	Full - additional Web Services	PSI web services interface
LINQ	Full	Partial	Yes, for custom web parts and some others
Odata	Full	Full	
Remote Event Receiver	Full	Full	
Apps for Office	Full	Full	
SharePoint Designer 2013 Preview	Full	Partial	Project Workflows, Project sites, No PWA Theming
Dedicated Reporting Database	Not included	Full	Including multi-dimensional OLAP database Available using OData when Online
Development platform with Visual Studio 2010, Visual Studio 2010 RC	Windows 7 and Windows Server 2008 R2	Windows 7 and Server 2008 R2 and higher	Windows 7 and higher for CSOM development

Languages

- XML

- JSON

Protocols

- HTTP
- SOAP
- OData

Architecture Style

- REST (relies on XML and HTTP)
- WCF: runtime + set of APIs

Object Models and set of API

- CSOM
- JSOM

Standards

- OAuth

When to use CSOM?

- The CSOM can be used both for Project Server Online solutions and for on-premises solutions
- If you want/need OAuth CSOM is the only way for a programmatic access to Project Server Online
- Suggested for new developments and to develop Project apps for the Office and SharePoint Store

Scenarios to use CSOM

- Develop apps that extend Project Server
- Automate the creation or management of entities in Project Server
- Get data from the published tables of the Project database
- Validate statusing and timesheet data
- Integrate with accounting systems
- Automate updates from team members
- Evaluate Project Server data in remote event receivers
- Support declarative Project Server workflows
- App that requires to call another Project Server Service in its implementation (use of OAuth)

9.3 Apps for Office

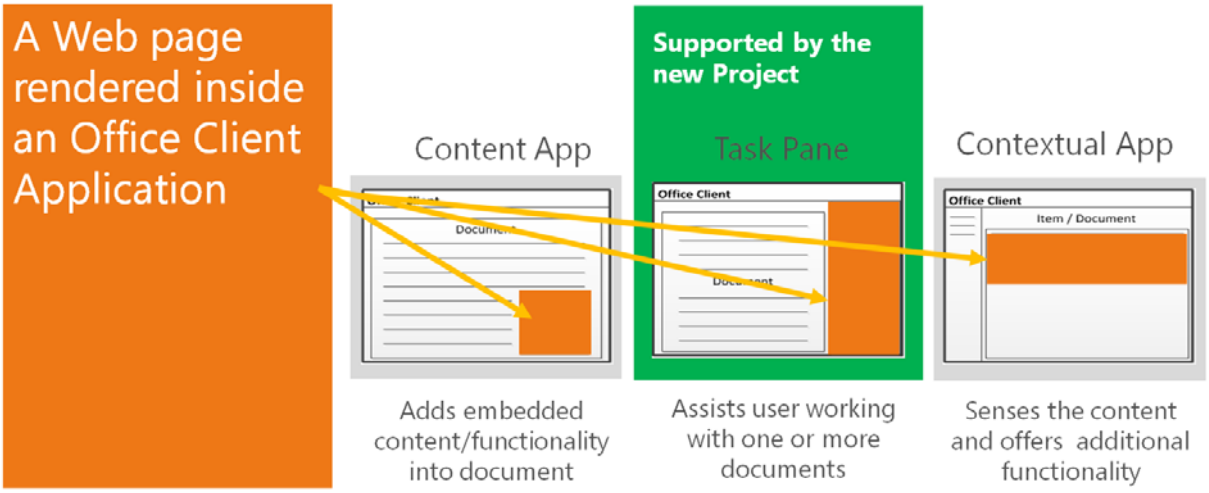


Figure 7 - Apps for Office

Apps for Office are web pages loaded inside an Office Application:

- Embedded inline or as task pane within documents, emails or appointments.
- Works in both Office Applications and Office Web Applications

Allow Office applications to leverage Web technologies:

- HTML 5 and CSS for rendering user interface
- JavaScript and jQuery to add behavior
- Calls to REST APIs to retrieve and update data from across network

Web Extensibility Framework (WEF) allows:

- Web page content to render inside an Office Application
- Web page code to run within a set of constraints
- Web page code to interact with Office documents
- Web page code to interact with Exchange items

WEF is the development platform used to build Apps for Office:

- Apps for Office provide basis for a component architecture
- Apps for Office provide foundation for an Office Store and App Catalogs
- Apps for Office can be deployed in private networks
- "Agave" was a codename for Apps for Office in pre-release version

9.4 Extensibility: Online versus On-premises

To help you decide whether to use Project Server on-premises or Project Online, and what kinds of extensions you can develop in either case, Table 2 compares the extensible features of an on-premises installation of Project Server 2013 with Project Online. Table 2 does not include differences in deployment, administration, or usage. For more information about Project Online and Project Server 2013, see **Project 2013 for developers** and **Project Online Preview**.

Table 7- Developing in Project Online versus On-premises

Feature	Project Online	Project Server on-premises

Programmability	• CSOM-based apps; consistent programming model
	  • .NET, Silverlight, Windows Phone client libraries
	  • JavaScript library for custom pages, Web Parts, and ribbon extensions
	  • OData and REST protocols
	• Can use the PSI, but not supported: no OAuth and no service-to-service connections
	• No extensions of the CSOM API
	• No custom permissions
	• No impersonation
	• No full-trust code
		• CSOM-based apps; consistent programming model
		  • .NET, Silverlight, Windows Phone client libraries
		  • JavaScript library for custom pages, Web Parts, and ribbon extensions
		  • OData and REST protocols
		• PSI-based apps; complex programming model, can also create apps for administration, portfolio analysis, notifications, Project mode security, queue system, and other areas
		• PSI extensions
		• Custom permissions with Project mode security (deprecated)
		• Impersonation with the PSI (deprecated)
		• Full-trust code; install extensions in SharePoint farm

Custom databases	• SQL Azure • SQL Server (modification of reporting tables and views in the Project Server database is not supported)	• SQL Azure • SQL Server (modification of reporting tables and views in the Project Server database is not supported)
Reporting	• **ProjectData** service; OData and REST protocols	• **ProjectData** service; OData and REST protocols

Feature	Project Online	Project Server on-premises
		• Reporting tables and views in the Project Server database • OLAP database
Event handlers	• Remote event receivers, accessible through WCF endpoints	• Remote event receivers, accessible through WCF endpoints • Full-trust event handlers, installed in SharePoint farm

Workflows	• Declarative workflows, created with SharePoint Designer 2013
	  • Use only on a specific Project Web App instance
	  • Can import a workflow design from Visio 2013
	  • Can import and use custom actions
	• Declarative workflows, created with Visual Studio 2012
	  • Create an app that can include workflows
	  • Create a SharePoint solution package (.wsp) that can include workflows
	  • Create workflow templates for reuse
	  • Create and use custom actions
		• Declarative workflows, created with SharePoint Designer 2013
		  • Use only on a specific Project Web App instance
		  • Can import a workflow design from Visio 2013
		  • Can import and use custom actions
		• Declarative workflows, created with Visual Studio 2012
		  • Create an app that can include workflows
		  • Create a SharePoint solution package (.wsp) that can include workflows
		  • Create workflow templates for reuse
		  • Create and use custom actions
		• Can use legacy compiled workflows, created with WF3.5 (recommend upgrade to declarative WF4 workflow)

Distribution	• Office Store • Private app catalog on SharePoint	• Office Store (for CSOM-based apps) • Private app catalog on SharePoint • Intranet file share

10 Setting up Project Online

Setting up Project Online starts with signing up for Office 365.

- Sign up for Office 365
  - Sign up for a new Project Online Preview tenant here
  - Add users to Project Web App for Project Online
  - Create a user
  - Share PWA
  - SharePoint & Project Administration Center
  - Site Collections
  - Site Collection with Project Web App
- Get started with Project Web App
  - Create or import projects.
  - Use reports. Gain insight.
  - Share your site.
- Get started with Project Pro for Office 365
  - Click-to-run: streaming technology, quickly installs Project Pro for Office 365 over the Internet, internal networks, local file systems or from offline media
  - No install necessary, instantly streamed using App-V
  - Always run the latest version of Microsoft Project
  - Login to have files and settings follow you
  - Runs side-by-side with existing Project applications

10.1 Click to Run: Installing Project Professional for Office 365

Click-to-Run is a Microsoft streaming and virtualization technology that you can use to install and update Project Professional for Office 365 and other Office products. These streaming and virtualization capabilities are based on technologies in Microsoft Application Virtualization (App-V). In Office 2010, Click-to-Run was available to consumer users only. In Office 2013, Click-to-Run supports large enterprise deployments.

Table 8 - Click to Run

	Installing by Click-to-Run	**Installing by Windows Installer (MSI)**
Streaming technology	Faster to download and install Allows Office use before installation completion Install features on as-needed basis	Non-streaming installation Office use only after installation
Isolated installation	Allows side-by-side Office	

	Installing by Click-to-Run	Installing by Windows Installer (MSI)
	versions[26]	
Always up-to-date[27]	Up-to-date from the start Updated automatically over time	Manually download Office Service Packs and Cumulative Update
Locally installed	●	●
Deploy on-premises by common software management tools like SCCM	●	●
Enforce Office Group Policy	●	●

For more information about the Click-to-Run setup process, see Click-to-Run for Office 365 setup architecture overview.

Note that even though the Office product runs in a self-contained environment, the Office product can interact with the other applications that are installed on the computer. Macros, in-document automation, and cross-Office product interoperability will work. Click-to-Run is also designed to allow locally-installed add-ins and dependent applications to work with it. However, there is the possibility that some add-ins or other integration points with Office might behave differently or might not work when you are using Click-to-Run.

[26] The earlier version of Office that is already installed on the computer must be one of the following versions of Office: Office 2010, Office 2007, or Office 2003. The versions of Office installed must be the same edition. For example, both Office installations are 32-bit edition.
[27] You can view the update status of a Click-to-Run product in the Backstage view of the program

11 Migration

Migrating a Project Server instance into Project Online can be straightforward as in direct subscription or can require a sequence of steps depending on the source instance.

Table 9 - Migration Scenarios

Scenario	Project Server 2007	Project Server 2010	Project Online
On-premises Project Server 2013	N/A	N/A	**Migrate**
Existing hosted 2010 customers	N/A	**Migrate**	**Migrate**
Existing 2007 customers	N/A	**Upgrade**	**Migrate**
Existing 2003 customers	**Upgrade**	**Upgrade**	**Migrate**
Project Desktop only customers	N/A	N/A	N/A
New customers	N/A	N/A	**Subscribe**
Existing 2010 customers	N/A	N/A	**Migrate**

11.1 What kinds of data can be migrated

The following data elements can be imported manually or semi-automatically through custom VBA or a third-party tool:

Table 10 - Data that can be migrated

Data	Project Online	On-premises Project
Projects	●	●
Resources	●	●
Custom Fields	●	●
Organizer data	●	●
Calendars	●	●
Security Groups	●	●
Security Categories	●	●
Archive		●
OLAP		●
Quick Launch	●	●
Views	●	●
Task Configuration and Settings	●	●
Timesheet Configuration and Settings	●	●
Project Site Configuration	●	●
Enterprise Resource Pool	●	●
Custom Event Handlers	●	●
EPTs	●	●
PDPs	●	●

Phases	●	●
States	●	●
Workflow	●	●
Reports	●	●

11.2 Full Manual Migration

The following table provides the Project versions that can be migrated manually.

Project Online does not offer the Database Attach upgrade method that is available to On-premises Project Server 2013.

	Project Online (Saas)	On-premises Project	Project on Azure (Iaas)	Hosted Project (Partner)	Project on PaaS
Direct Open/Save					
Project 2003	●	●	●	●	●
Project 2007	●	●	●	●	●
Project 2010	●	●	●	●	●
Project 2013	●	●	●	●	●
In-place Upgrade					
DB Attach Migration		●	●	●	●

11.3 Partially Automated Migration

Using Visual Basic for Applications (VBA)

The Project object model can be used with VBA or with VSTO[28]. The Project object model includes seven new classes, 292 new members, and many new enumeration constants that support many new features in Project Standard 2013 and Project Professional 2013, including:

- Create new reports that can have tables and charts with task and resource fields, can include Office Art features, and can be both manually and programmatically modified.
- Manipulate the Task Path properties to dynamically show how predecessor tasks affect scheduling of a selected task, and how the selected task affects scheduling of successor tasks.
- Monitor the Active Cache to show the status of saving, publishing, and checking in a project to Project Web App.
- Work with SharePoint tasks lists in four different ways, to help realize the goal of managing and visualizing all of your work in one place.

The following illustrates a basic method for partially automating project file migration using VBA macros in Project Professional client. The steps are summarized as follows:

[28] Excerpt from http://msdn.microsoft.com/en-us/library/office/jj651153(v=office.15).aspx

- From Project Center, export a project list into Excel.
- Open the Excel file in Project Professional while logged into the source Project Server.
- Create a VBA Export macro in Project Professional.

```
Sub ExportProjects()
    Dim T As Task
    Dim fName As String
    For Each T In ActiveProject.Tasks
        fName = T.Name
        Application.FileOpenEx Name:="<>\" & fName, IgnoreReadOnlyRecommended:=True
        Application.FileSaveAs Name:="C:\Exports\" & fName,
FormatID:="MSProject.XML"
        Application.FileCloseEx pjDoNotSave, CheckIn:=True
    Next T
End Sub
```

Figure 8 - VBA Export Macro

- Execute the VBA macro to export the projects from the source Project Server to a file folder.
  - You may encounter prompts for individual project update requirements to which you must respond manually in order to continue macro execution.[29]
- Open the Excel file in Project Professional 2013 while connected to Project Online.
- Create a VBA Import macro in Project Professional 2013.

```
Sub ImportProjects()
    Dim T As Task
    Dim fName As String
    For Each T In ActiveProject.Tasks
        fName = T.Name
        Application.FileOpenEx Name:="C:\Exports\" & fName & ".mpp",
ReadOnly:=False, FormatID:="MSProject.MPP"
        Application.FileSaveAs Name:="<>\" & fName, FormatID:=""
        Application.FileCloseEx pjSave, True, False
    Next T
End Sub
```

Figure 9 - VBA Import Macro[30]

- Execute the VBA macro to import the projects from the file folder to the target Project Server.
  - You may encounter prompts for individual project update requirements to which you must respond manually in order to continue macro execution.
- Publish the projects through Project Professional 2013.[31]

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[29] Sample from **http://azlav.umtblog.com/2012/12/11/exporting-mpp-files-with-vba/**
[30] Sample from **http://azlav.umtblog.com/2012/12/12/importing-files-to-project-online-with-vba/**
[31] Consider a utility such as Sample from **http://epmsource.com/2012/11/23/building-your-first-project-server-app-part-1-getting-started-setting-up-a-development-environment/**

11.4 Third-Party Tools

FluentPro Cloud Migrator[32]

Migrate projects from Project Server 2010 to Project Online.

FluentPro Project Migrator for Project Server 2013 Online is small add-on for Project Professional 2013 that allows migration of project schedules from Project Server 2010 to Project Server 2013 Online with project-level and task-level custom field values. The product is delivered as part of Cloud Migrator Free and Pro editions.

Supported configuration elements:

- Custom fields and Lookup tables
- Views
- EPT and PDP
- Workflow Stages and Phases
- Tasks and Timesheet Settings
- Resources
- Time Reporting and Financial Periods
- Projects are supported with license of FluentPro Project Migrator (add-in for Project Professional 2013); license is provided as part of the package
- Templates Migration
- Security Configuration Migration (Project Security Mode)
- Project Sites (Risks, Issues and Document Libraries)
- OLAP Settings

Metalogix Content Matrix[33]

MetaVis offers several products and product suites such as MetaVis Migrator Online and MetaVis Office 365 Suite[34] in particular for migrating from on-premises SharePoint Server to SharePoint Online.

Metavis offers the following features:

- Migrate Content: Bulk migrate and copy entire lists, libraries, sites and site collection along with web parts, views, permissions, versions and many more SharePoint objects.
- Copy Multiple Items: Copy multiple selected items between folders, lists, sites, farms or tenants while simultaneously modifying or retaining an item's content type and metadata.

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[32] See **http://fluentpro.com/productsprojectmigrator.html**
[33] For more details on Metalogix Content Matrix, see **http://www.metalogix.com/Products/Content-Matrix.aspx**
[34] For MetaVis product comparison, see **http://metavistech.com/features/26.25**

- Upload From File Shares: Bulk upload files and folders from file shares into a SharePoint library while assigning each a content type and metadata. Map values from folder names or file system properties to SharePoint fields.
- Retain Metadata: Keep an item's metadata intact during migration, including created and modified properties.
- Migrate from Other Environments: Move content from FAT/NTFS File Shares, Exchange Public Folders and Google Docs.
- Manage Permissions: Browse, add, edit and delete SharePoint groups, users, permissions and permission levels in a visual hierarchical structure of site collections, sites, lists and individual items.
- Security Analysis: Perform real-time security analysis including Permissions given to users and inheritance reports.
- Backup: Create a backup of Office 365 SharePoint content storing it in local or cloud-based storage locations.
- Archive: Archive and copy Office 365 SharePoint content to a file system.

12 Alternatives to Project Online

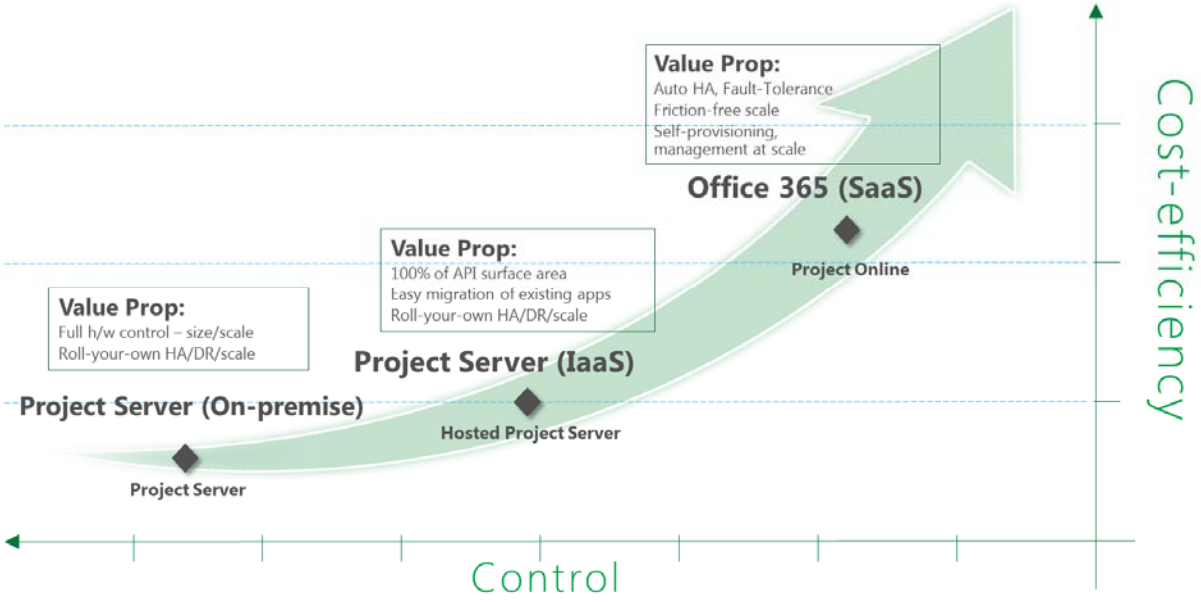


Figure 10 - Project Online Alternatives for Control

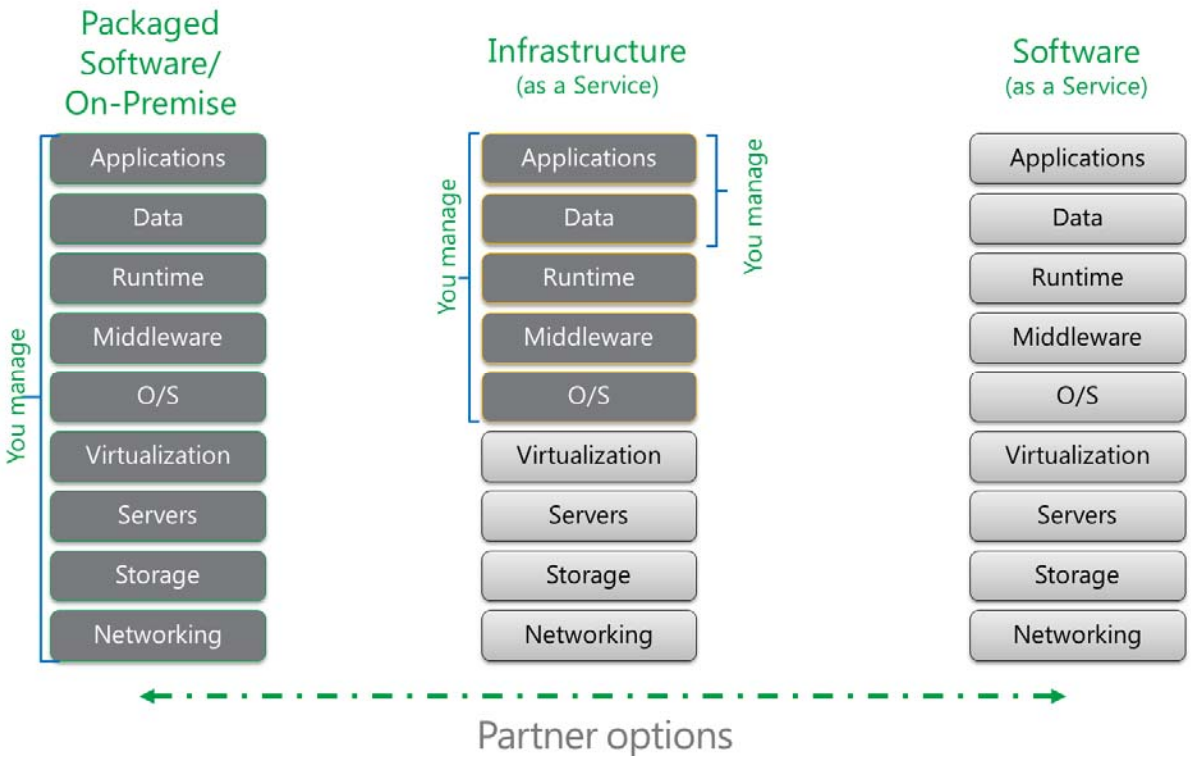


Figure 11 - On-premises, IaaS, PaaS and Online

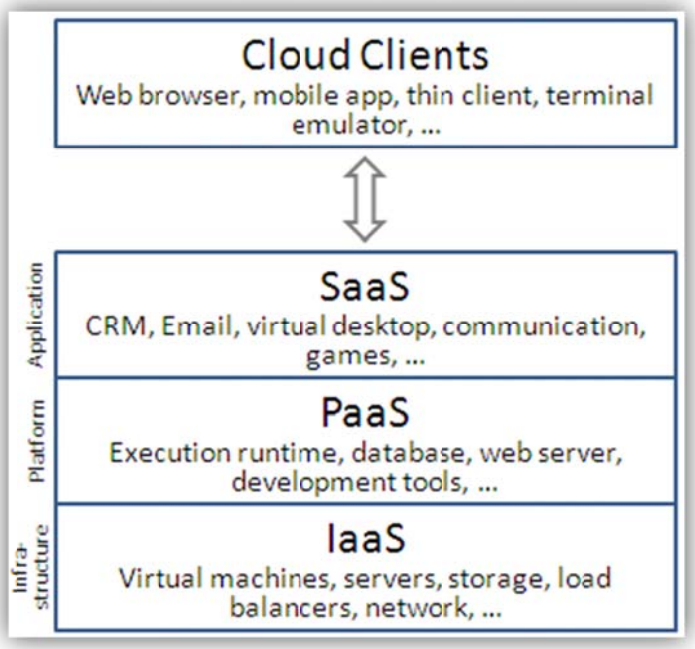


Figure 12 - Cloud Clients and Cloud Services

12.1 Windows Azure: Infrastructure-As-A-Service

Windows Azure VM is a Microsoft offering of Infrastructure-as-as-Service.

12.2 Office 365: Software-As-A-Service

Office 365 is a Microsoft offering of Software-As-A-Service. Project Online is a service offered with Office 365.

12.3 Partner Hosting Services

Several Microsoft partners offer On-Demand Hosting Services for Project Server 2010.

Microsoft Project Server 2010 with a browser-based partner hosted offers the following advantages:

- Accelerate deployment and reduce IT infrastructure costs
- Pay as you go with monthly per user subscription pricing
- Single sign on and federation with Active Directory (AD)
- Standard infrastructure for dynamic, rapidly deployed solutions
- Enterprise class reliability and support

Project Hosts

Project Hosts provides on demand Microsoft® Enterprise Project Management (EPM), CRM, and Microsoft SharePoint® Server services. Our hosted services allow your organization to rollout these applications faster, more reliably, and at a lower cost than deploying them in-house. Our Microsoft EPM solution, CRM, and SharePoint Server SaaS options include Online Tours, Trials, Interim Hosting, and Long-Term Hosting which can help you throughout the product evaluation and deployment process.

EPM Solutions

Back in 2002, EPM Solutions was the first on-demand hosting service provider for Microsoft Project Server in the United States. We pioneered the approach then, and today we are continuing to lead the way. The level of service and the options we offer are unmatched in the industry. This is one of the reasons we have the most successful customers in the industry.

With a strong infrastructure, a proven methodology and a broad range of end-to-end services, EPM Solutions' hosting packages meet the needs of most companies, from a basic package to a complete enterprise turn-key solution that directly address deployment concerns on top of the infrastructure concerns.

VirtualePM

VirtualePM from RCM Technologies is an easy to use, on demand project, portfolio, and resource management tool built directly from Microsoft Project Server 2010. Pricing is simple and straight forward, and the solution can be ready to use in as little as three weeks.

BeMo

BeMo - Project Intelligence is a certified Microsoft Partner that specializes exclusively in Project Server 2010 hosting solutions. Offering highly dependable, ready in 30-minutes, access to the best on-demand, EPM Software as a service, our goal is to enable companies of any size to be as effective as possible in managing their projects.

Nintex

Nintex Workflow for Project Server (**www.nintex.com**)

12.4 Hybrid[35]

A hybrid SharePoint environment is composed of SharePoint Server, typically deployed on-premises, and Microsoft Office 365 - SharePoint Online. A hybrid environment may be configured to provide one of several levels of integration, depending on the purpose of the integration.

Hybrid SharePoint environments may provide some or all of the following functionality:

[35] An overview of the SharePoint 2013 Hybrid solution is here: **http://technet.microsoft.com/en-us/library/jj838715.aspx**

- **Federated search:** Users in the cloud and in your on-premises domain environment will be able to obtain search results that include content from both locations.
- **Business Connectivity Services:** Makes line-of-business data available, by using Business Connectivity Services, to applications for SharePoint and external lists in SharePoint Online.
- **Single sign-on (SSO):** Users who are connected to either the corporate network or Office 365 only have to authenticate once in a given session to access resources in both the on-premises SharePoint farm and SharePoint Online.
- **Directory synchronization:** User accounts in the on-premises Active Directory Domain Services (AD DS) domain automatically synchronize to Office 365.
- **One-way or two-way server-to-server trust:** A trust relationship between the on-premises SharePoint farm and SharePoint Online that enables secure connections and data flow.

The section Line-of-Business Integration above offers more detail on the processing flow for a Hybrid implementation.

Appendix A: A Primer to Open Data Protocol (OData)

Entity Data Model (EDM) http://*ServerName*/*ProjectServerName*/_api/ProjectData/$metadata

Table 11 - OData Project Data Objects

Object	URL
Project	.../api/ProjectData/Project/
Tasks	.../api/ProjectData/Tasks/
Issues	.../api/ProjectData/Issues/
Risks	.../api/ProjectData/Risks/
Assignments	.../api/ProjectData/Assignments/
ResourceTimephasedDataSet	.../api/ProjectData/ResourceTimephasedDataSet/
Resources	.../api/ProjectData/Resources/

```
http://ServerName/ProjectServerName/_api/ProjectData/Resources?$select=ResourceName,ResourceNTAccount
```

Figure 13 - Get specific fields only

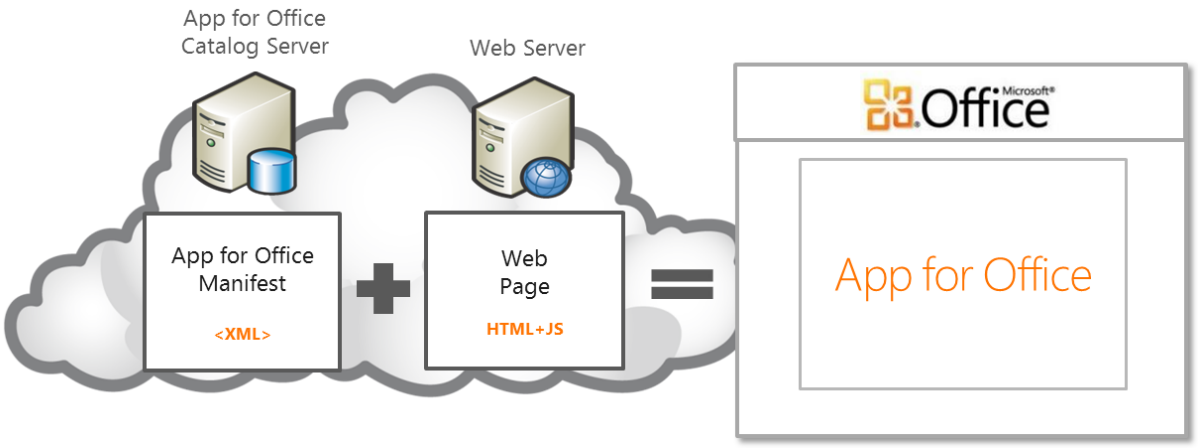
```
http://ServerName/ProjectServerName/_api/ProjectData/Projects?
   $filter=ProjectStartDate gt datetime'2012-01-01T00:00:00'&
   $orderby=ProjectName&
   $select=ProjectName,ProjectStartDate,ProjectFinishDate,ProjectCost,EnterpriseProjectTypeName
```

Figure 14 - Limiting the data: filter or use select

```
http://ServerName/ProjectServerName/_api/ProjectData/Projects(guid'263fc8d7-427c-e111-92fc-
00155d3ba208')/Assignments
```

Figure 15 - Get an entity collection by using an association

Appendix B: Anatomy of an App for Office



Project desktop 2013 Preview specifics:

- Task Pane Experience
- Can Read Data from document, can't write into the MPP file
- Does not support binding with MPP file or persistence of data in the MPP file
- Specific Project set of APIs
  - Access to Tasks, Resources, Views, and Project containers
  - E.g. getTask(), getTaskProperty(), getSelectedTask()
  - Events for task, resource, view selection changed
  - E.g. taskSelectionChanged()

Possible Project scenarios

Surfacing Project related data from SharePoint Server 2013 Preview and/or Project Server 2013 Preview in Office Desktop Applications:

- Team communication – calendars, discussions, including contextual Project documentation
- Contextual data insights and analysis
  - Including Line of Business Application data
- Resource management
- Portfolio Management

Anatomy

Each App for Office is based on an XML-based manifest:

- Manifest points to a Web page

- Manifest defines the type of the App for Office
- Manifest defines which Office applications it supports
- Manifest defines required capabilities

Development Tools

Text Editor:

- HTML webpage(s) and related JavaScript files(s), CSS files and REST queries
- XML manifest file

Microsoft Visual Studio 2012 + Microsoft Office Developer Tools for Visual Studio 2012:

- "App for Office 2013" templates
- Allows comfortable debugging experience
- Microsoft .NET Framework 4.5 on the development computer and on the deployment computers

VBA object model additions:

- New classes: 7
- Class members new: 292
- New enumerations: 3
- New enumeration members: 229
- New classes are for
  - Chart
  - Report
  - Shape (Office Art)

Appendix C: Class Libraries, Entities, CSOM, JSOM and PSI

Table 12 - Project Server Class Libraries

Language	Library Name
Microsoft .Net client library	Microsoft.ProjectServer.Client.dll assembly
Silverlight library	Microsoft.ProjectServer.Client.Sliverlight.dll assembly
Windows Phone 7 library	Microsoft.ProjectServer.Client.Phone.dll assembly
JavaScript library for web applications	PS.js file or PS.debug.js file

Table 13 - Project Server Primary Entities

Base class	Contains the common properties for entities
Creation information class	Contains the properties used to create an entity
Draft class	Includes the read/write properties for editing
Published class	Includes the read only properties
Draft collection	Includes the Add, GetById and the Remove
Published Collection	Includes the GetById for reading or for checking out

Table 14 - CSOM and PSI Comparison

Feature	CSOM	PSI
Complexity for methods and properties	Uses object name	Uses GUID, changeXml parameters, datasets
Accessibility	One WCF service: client.svc	22 public web services
Initialization	ProjectContext	Using WCF reference or proxy assemblies
Platform	On Premises & Online	On Premises (Online limitation no OAuth support)
Scheduling Engine	Same as Project web app and Project Professional	Use QueueUpdateProject2
Project Entities	Restrictions exist - *please refer to the Project SDK for most up-to-date information*	Restrictions exist

Table 15 - CSOM and JSOM ProjectContext Properties

CSOM (.Net, Silberlight, Windows Phone)	JSOM
CustomFields	customFields
EnterpriseProjectTypes	enterpeirseProjectTypes
EnterpriseResources	enterpriseResources
EntityTypes	entityTypes
EventHandlers	eventHandlers
Events	events
LookupTables	lookupTables
Phases	phases
Projects	projects
Stages	stages
WorkflowActivities	workflowActivities
WorkflowDesigner	workflowDesigner

Appendix D: References

Table 16 - References

Product	http://www.microsoft.com/project
Blog	http://blogs.office.com/project http://blogs.office.com/b/project/
TechNet	http://technet.microsoft.com/projectserver http://technet.microsoft.com/en-us/projectserver/fp123546
MSDN	http://msdn.microsoft.com/project http://msdn.microsoft.com/en-us/office/aa905469
Forums	http://social.technet.microsoft.com/Forums/en-US/category/project
Best Practices for Project Server 2013	**Link to Rob Bowers whitepaper**
Hitchhiker's Guide to Demand Management for Project Server 2012	https://msft.spoppe.com/teams/WM/wma/PM/spc/Shared%20Documents/New%20IP/Project2013_DemandManagementGuideVNext.docx?Web=1
Customization and Extensibility	**Link to Olivier Leymand's whitepaper**
Migration	http://www.microsoft.com/en-us/office365/deployment-support.aspx Cloud Migration: Office 365 Capability and Technical Fit Assessment (Whitepaper)
Project Online Support	http://www.microsoft.com/en-us/office365/support.aspx
BI platform investments	http://technet.microsoft.com/en-US/sharepoint/fp142398
OData standard	http://www.odata.org/
Project SDK	http://msdn.Microsoft.com/project
Best practices for submitting and reporting on actual work (Project Server 2010)	http://technet.microsoft.com/en-us/library/hh694531.aspx
Timesheet Improvements for End Users in Project Web App	http://blogs.office.com/b/project/archive/2012/10/25/timesheet-improvements-for-end-users-in-project-web-app-2013.aspx
Timesheet Improvements for Administrators and Developers in Project Web App	http://blogs.office.com/b/project/archive/2012/10/29/timesheet-improvements-for-administrators-and-developers-in-project-web-app.aspx
Plan user access in Project Server 2013 Preview	http://technet.microsoft.com/en-us/library/fp161361(v=office.15)
How to: Build and deploy workflow custom actions	http://msdn.microsoft.com/en-us/library/jj163911(v=office.15)
Sample: SharePoint 2013 workflow: Create a custom action	http://code.msdn.microsoft.com/SharePoint-2013-workflow-41e5c0f9
Demand Management topics and workflow creation in the Project SDK	http://msdn.Microsoft.com/project

Demand Management, Now with SharePoint Designer	http://blogs.office.com/project/archive/2012/09/18/demand-management-sharepoint-designer-project-server.aspx
Office Store Opportunity	http://blogs.office.com/b/office-next/archive/2012/08/06/introducing-apps-for-the-new-office-and-sharepoint-and-the-office-store.aspx
Existing apps in the Office Store	http://office.microsoft.com/store/
Office Store Publishing Process	http://msdn.Microsoft.com/sharepoint
VBA changes object model additions	http://blogs.msdn.com/officedevdocs/archive/2012/09/12/what-s-new-for-developers-in-the-new-project-desktop-besides-task-pane-apps.aspx http://blogs.msdn.com/project_programmability/

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