

# Anyplan<sup>®</sup> for System Integrators

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## Introduction

Anyplan® is a highly customizable solution for Planning and Scheduling that can be integrated by Value Added Resellers (VARs) and System Integrators (SIs) into customer solutions across different business areas and domains.

### THE XYMPHONIC SYSTEMS BENEFIT

Anyplan® has been designed on two fronts: for ease of use right out of the box; and for customization and integration into scalable enterprise solutions.

### INTENDED AUDIENCE

This White Paper is intended for a technical audience including technical pre-sales and systems integration professionals.

### RELATED READING

Please read the "Anyplan® Product Overview" White Paper for an overview of the features provided by Anyplan®.

Further white papers can be found [here](#).

### WHITE PAPER OVERVIEW

This White Paper contains an overview of the Anyplan® architecture and describes the many points at which Anyplan® can be customized by Value Added Resellers, Systems Integrators and the technical staff of end-user customers.

## Anyplan® for VAR's and SI's

Xymphonic Systems is a leading developer of software products for the enterprise planning and scheduling market. Our products work seamlessly across project planning, manufacturing scheduling and operations and maintenance cycles. Our premier product called Anyplan® is a highly customizable solution that can be integrated by **Value Added Resellers** and **System Integrators** into customer solutions across different business areas and domains.

### ANYPLAN DELIVERS:

- Ease of Use - we are passionate about attractive, user-friendly interface design.
- Modularity and Customization - we ensure that our solution partners can configure customer solutions quickly and effectively from our product suite.
- Built for Integration - so that the planning and scheduling systems can collect and feed data into other enterprise systems.
- Fast, Scalable and Collaborative - so that they can be used for very large plans and schedules and run by international teams.

## Anyplan® Architecture Overview

Anyplan® uses a layered client-server architecture based around an in-memory network that contains all entities associated with a portfolio of plans with persistent storage to a database (typically Microsoft SQLServer®).

### THE ANYPLAN® SMARTNET™

At the heart of Anyplan® is a smart network of planning objects that are held in memory in the Anyplan® server and replicated on request by the client. This provides scalability for large projects and processing for both the business rules and general calculations on either server side or client side as required.

### ANYPLAN® MANAGERS AND SERVICES

The **Network Manager** takes the core data objects and creates coupled objects that make up the network. A configurable **Entity Factory**

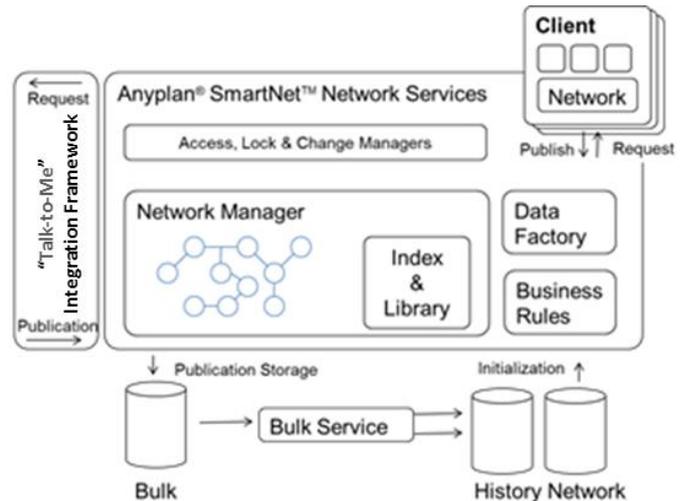


Fig. 1 Simplified architectural diagram

is used to create the coupled object that maps to the core data object. Entities are objects that represent a conceptual aspect of a planning system, such as an activity, person, resource, project or calendar. Every coupled object will contain a reference to the core object and all data updates and retrievals will be made against that object.

The result of the **Network Builder** is a network of nodes and links. This can be a completely new network or the addition to an already in-memory network.

All the nodes and links in the network are indexed for fast retrieval.

Storage and retrieval of data is done through the **data access layer**. This layer utilizes the data block of the Microsoft Enterprise Library.

The **Network Manager** on the service side contains the complete live network. All data access from the client to public/published data will be made against this manager and is the gateway for making changes to the network from a programming perspective.

A public Library (see Fig.1) in the Network Manager contains a lightweight index of the network.

The **Access Manager** takes data retrieval requests from any client and routes the request and communicates with the lock manager to avoid retrieval of dirty data.

The **Change Manager** takes data storage requests from any client and routes the request and communicates with the lock manager to lock entities being updated.

## ANYPLAN® SERVICE ARCHITECTURE

All communications with the services are based on Windows Communications Foundation (WCF).

## AUTHENTICATION, LOGGING AND PREFERENCES

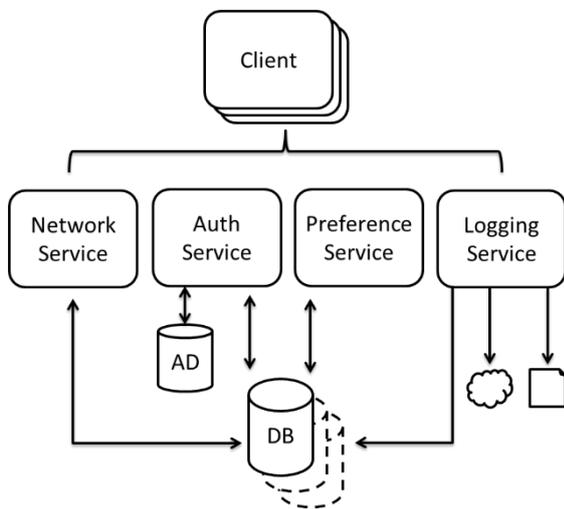


Fig. 2 Authentication and Logging Architecture

The **Preference Service** handles the user settings for the application. The Preference Service stores user settings in the database and delivers settings to the Anyplan® Client upon request. Colors, fonts, panels and column settings are some of the settings the preference service can control.

The **Log Service** handles logging from both Anyplan® Client and Services. The Log Service writes log entries to the Anyplan® database.

The **Authentication Service** talks to Microsoft Active Directory to authenticate a person logging into the client and retrieves the claims used to define UI access configurations.

## ANYPLAN® CLIENT ARCHITECTURE AND CUSTOMIZATION

The Anyplan® client architecture uses the Model-View-ViewModel (MVVM) Pattern.

The **Network Manager** (client side) contains the parts of the network that the client has opened (Project/Calendars). This will be a subset of the full server-side live network. The client side network manager contains both the public library (retrieved from the network manager on the service side) and the private library (an index of everything updated on the client). This is the Model element of the architecture pattern.

The **UI Manager** manages all communication with the network manager for the user interface. It contains a UI factory that takes the Model, consisting of coupled nodes and links, and wraps them in View Models to which the UI views can bind.

The Anyplan® client is built on the following frameworks:

- .NET 4 and Windows Presentation Foundation (WPF)
- Prism
- Unity
- Microsoft Extension Framework (MEF)
- Microsoft Identity Foundation (MIF)
- Microsoft Workflow Foundation (WF)

## GANTT GRID COLUMNS

The Anyplan® data model can be extended by solution developers using attributes or new entities. These can then be displayed in the Gantt data grid as additional columns. Developers can choose to include these in the Anyplan® filtering mechanism.



Fig. 3 Filter example

A *UIFactory* class is designed to manage the transformation of domain specific objects to ViewModels and provides the means for third party developers to extend it, such as adding new columns that are available when a plan is loaded in Anyplan®. These additional columns are defined in the Gantt DataGrid control and mapped to specific custom properties that have been added to the domain and its corresponding ViewModel.

## PROPERTY PANELS

Anyplan® uses a variety of property panels to provide an interface to many types of object in the network (projects, plans, activities, links, resources and calendars). All property panels can be extended by solution developers using the available frameworks and APIs.

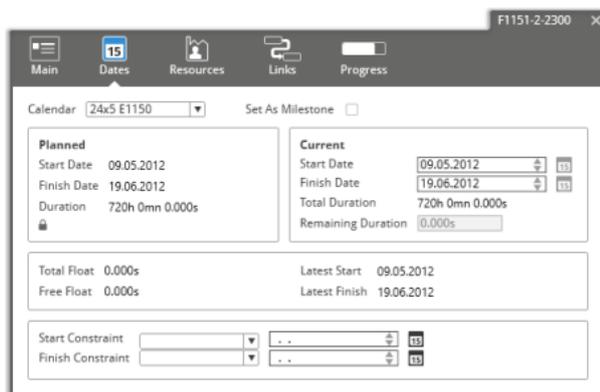


Fig. 4 Example property panel for an activity

The property panels are designed to be activated by user selection and displayed in a modeless floating panel that can be dragged around by the user.

Property Panels are an essential component of Anyplan® and a standard mechanism that is used to view and edit details about the active target object. Property Panels are built on the Model-View-ViewModel pattern where the business logic and presentation is separated, harnessing the power of DataBinding between the View and the ViewModel.

## CUSTOM MENUS

Solution developers can provide custom menus to control Anyplan® implementation and extensions.

## CUSTOM BRANDING

Solution developers can customize the look and feel and branding of Anyplan® including splash screens, logos and colors.

## CLAIMS FOR SETTING UI ATTRIBUTES

Anyplan® uses the Microsoft Identity Foundation (MIF) to customize the user interface. Versions of Anyplan® can be created that set regions for the UI to one of 3 states:

- Enabled: read/write
- Disabled: read-only
- Hidden: not visible

This allows both Xymphonic Systems and solution developers to create product versions suited to different audiences. The claims are retrieved from the database when the client starts up. Xymphonic Systems can provide customers and partners with a tool to administer and publish the claims.

## UI CONFIGURATION SETTINGS

Many aspects of the UI can be configured including the standard footers and headers used in printing plans and charts. A strings XML file is used for most UI labels and messages and any of these can be overridden by custom strings or translated versions.

## CUSTOM SEARCH

The Anyplan® **Search API** has been created with the intention that third party developers can utilize the application's global search field in their own controls and views.

## Anyplan® Core Customization

### OBJECT MODEL CUSTOMIZATION

The Anyplan® data model can be customized by extending the object model's base classes with custom entities and attributes backed by database metadata.

## CUSTOM BUSINESS RULES

Anyplan® comes with default settings for a wide range of business rules. Rules are created using **Injected Business Logic** which can be overwritten for different product versions or for specific customer or partner implementations. For example, initialization can load organizational defaults.

Some examples are follows:

- Unique Name checks e.g. for public plans and activities;
- Baseline activities and resource usages;
- Activity creation such as rules for when child activities cannot be created;
- Default settings for new plans;
- Resource creation;
- Partial scheduling rules; Etc.

## Planning & Scheduling Customization

Anyplan®'s Scheduling Engine comes with a variety of scheduling algorithms. The engine has been developed as an independent module and can be replaced by one of the VAR/SI's own design.

## Anyplan® Portfolio Services

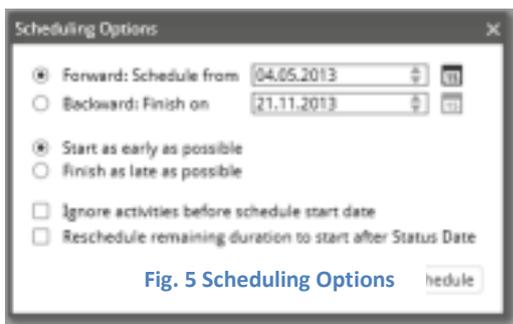


Fig. 5 Scheduling Options

Portfolios in Anyplan® run from the SmartNet™ since this contains all relevant projects and plans in a connected network. In practice Anyplan® users publish a version of their active and public plans and proposals on a periodic reporting date. This creates a version of reported data that can be used to generate and calculate a cached set of portfolio reports.

## PORTFOLIO ROUTING SERVICE

A **Routing Service** is used to manage independent Portfolio services that contain smart networks dedicated to individual reporting dates. These independent Portfolio services are responsible for handling all the portfolio report requests and calculations for that reporting date.

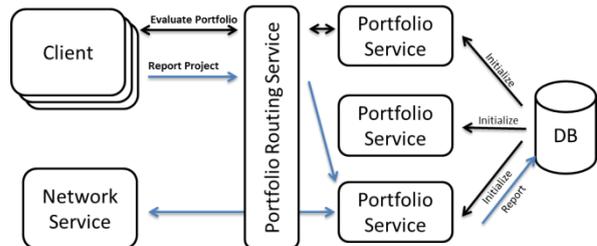


Fig. 6 Portfolio Services Architecture

The latest reporting portfolio's service will normally always be running and commonly used portfolios are pre-calculated and cached ready for retrieval.

New services for older reporting dates can run on demand. This approach protects the performance of both the services for live and in-progress planning and the current portfolio reporting services while still providing direct access to older reports.

## CUSTOMIZING PORTFOLIO REPORTS

Anyplan® uses a query selection mechanism for creating Portfolio queries. The selection mechanism can be extended to include any custom entities.

Portfolios views are very similar to views of live plans (Gantt and other chart views) and UI customization is therefore identical.

## Anyplan® “Talk-to-Me” Integration

### “TALK-TO-ME” INTEGRATION FRAMEWORK

Anyplan® “Talk-to-Me” provides an integration framework and services that communicate with the Network Service via data providers. The data providers manage data mappings, business rules and communications jobs for synchronization between Anyplan® and third-party systems.

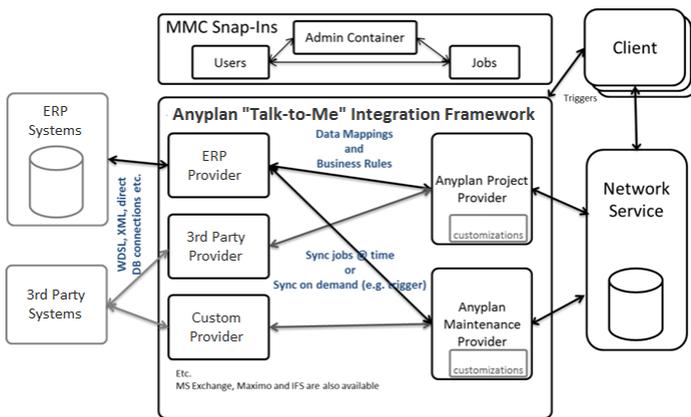


Fig. 2 Anyplan "Talk-to-Me"

Common data connections are supported such as SOAP and XML web services (WDSL), or direct database connections. This offers an open interface accessible by the widest variety of potential clients.

### “TALK-TO-ME” SERVICE MANAGEMENT

Anyplan “Talk-to-Me” integration framework uses WMI (Windows Management Instrumentation) with the user-interface provided by a snap-in to the MMC (Microsoft Management Console). This provides facilities to control the progress of synchronization jobs and can also be used to monitor the status of sync (Success, Failure).

### “TALK-TO-ME” REQUESTS AND REPORTS

The Anyplan® “Talk-to-Me” Integration Framework is designed to support:

- Network Requests
- Report (custom data) Requests
- Publication

A Network Request is used to query entities in Anyplan for its current state. For example, when an external system needs to be updated with data from Anyplan®, or when data is to be exported to any system.

A Report Request is used to query Anyplan® for custom data queries that include calculated values, summary and compound values deduced from the network hierarchy.

Both request types use the same interface with different structure and values in the request. The integration service will support complex queries to retrieve data and complex reports from a single interface method. Any request will be responded to with the same structure. This reduces the impact in the Integration Service from any extension of Anyplan®.

Publication is a process where data from external systems may either import data to, or update existing data in, Anyplan®.

### INTEGRATION EXAMPLE:

A customer has a project where actual resource usage is reported in an ERP system. Anyplan® has resources usages registered against activities but the actual usage data is imported through the Anyplan® “Talk-to-Me” Integration Framework.

Resource usages are retrieved from the network service by submitting a request to the integration service. The request consists of an appropriate filter and query to define the data that should be included in the return packet. The resource usages can be iterated and the actual usages can be added or adjusted.

The collection of actual usages is a property on the resource usage object. This is a “complex” data type, which means that it is represented as XML. Either the XML can be modified directly, or de-serialized into an appropriate data structure, then modified and serialized back to XML.

Once the resource usages have been updated then would be published via the integration services for storage in the network service.

## Anyplan® Exchange and Calendar Synchronization

Anyplan® “Talk-to-Me” also provides a mechanism to synchronize activities from projects and other plans to external calendar services such as Microsoft Exchange, Google Calendar. Those equipped with Microsoft Outlook, a web browser or mobile phone can easily access their synchronized calendars.

The modular components of the Anyplan® Calendar Synchronization are as follows:



Fig. 7 Anyplan activities in Microsoft Outlook

## “TALK-TO-ME” + EXCHANGE/GOOGLE PROVIDERS

The Sync Services in “Talk-to-Me” handle synchronization of activity data through the **Anyplan® Provider** that interfaces the sync services to Anyplan® data.

Providers interface to Microsoft Exchange Servers or a Google calendar Service.

## ANYPLAN® OUTLOOK ADD-IN

An Outlook Add-In provides custom Outlook UIs for viewing activities and (in the pipeline) reporting on progress.

## SUPPORT FOR WEB AND MOBILE DEVICES

Anyplan® supports web-based calendars such as Office Outlook Web Access and Google Calendars and their synchronization to mobile devices.



Fig. 8 Mobile Calendar Events

## For Further Information please contact Xymphonic Systems:

### MAILING ADDRESS:

Xymphonic Systems AS  
P.O Box 747  
N-4666 KRISTIANSAND  
Norway

Email: roger.berntsen@xymphonic.com

Telephone: + 47 90 581840

