Asta Development

Product Overview and System Requirements Guide

Asta Development plc
Kingston House
Goodsons Mews
Wellington Street
Thame
Oxfordshire
OX9 3BX
United Kingdom

Tel: +44 (0)1844 261700
Fax: +44 (0)1844 261314
www.astadev.com
enquiries@astadev.com

Trademarks

Table of Contents

Table of Contents 3
1 Overview of this document 5
2 Architecture overview 5
2.1 Asta Powerproject Enterprise 5
2.2 Asta Powerproject BIM 6
2.3 Time Sheet for Asta Powerproject 7
2.4 Web Access for Asta Powerproject 8
2.5 Site Progress Mobile for Asta Powerproject 8
2.6 Business Intelligence for Asta Powerproject 10
2.7 Bidcon 11
3 Technical briefing 12
3.1 Architecture 12
3.2 Database and file types 12
3.2.1 Supported databases for Bidcon 12
3.3 Using software in a virtual environment 13
3.4 Customisation 13
3.4.1 User-defined fields 13
3.4.2 Microsoft Visual Basic for Applications (VBA) 13
3.4.3 Asta Powerproject Developers' Toolkit, or OCX 13
3.5 Firewall configurations in Asta applications 14
3.6 Factors that affect database performance 14
3.7 Factors that affect application performance 14
3.7.1 Configuration, hardware and environment factors 15
3.7.2 Application data factors 15
3.8 Supported types of IFC file 15
4 Hardware and software requirements for deploying Asta Powerproject Enterprise 15
4.1 Asta Powerproject client 16
4.2 Asta Powerproject BIM 16
4.3 Asta Powerproject Enterprise server 17
4.4 Asta Licence Manager 17
5 Hardware and software requirements for deploying Time Sheet and Web Access 18
6 Hardware and software requirements for deploying Site Progress Mobile for Asta Powerproject 19
7 Hardware and software requirements for deploying Business Intelligence for Asta Powerproject 20
8 Hardware and software requirements for deploying Bidcon 20
8.1 Bidcon client 20

8.2 Bidcon BIM client 21
8.3 Dedicated server for Bidcon database 22

1 Overview of this document

This document describes the architecture of the Asta Powerproject® Enterprise system and provides an estimate of the hardware and software requirements for deploying the system. The document also describes the architecture and hardware and software requirements of the following companion products to Asta Powerproject Enterprise:

- Asta Powerproject BIM.
- Time Sheet for Asta Powerproject.
- Web Access for Asta Powerproject.
- Site Progress Mobile for Asta Powerproject.
- Business Intelligence for Asta Powerproject.
- Bidcon®.

The recommendations in this document have been produced following extensive in-house testing by Asta Development.

2 Architecture overview

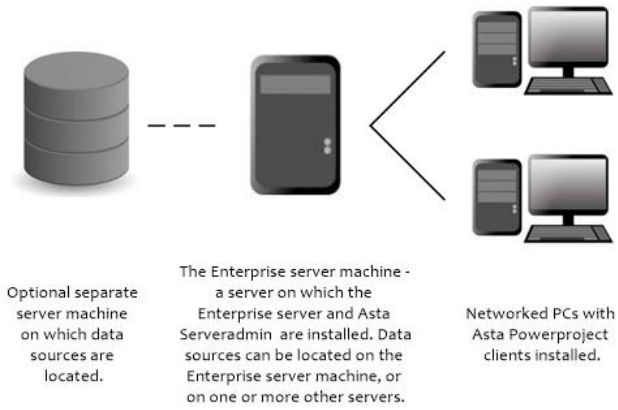
2.1 Asta Powerproject Enterprise

Asta Powerproject Enterprise enables many users of Asta Powerproject to work simultaneously on the same projects. An Enterprise server controls access to the data sources (ie “databases”) in which your projects are stored.

The system comprises the following elements:

- The Enterprise server. This is an application, installed on a server machine that the client machines can access, that controls access to projects that are stored in central data sources. The Enterprise server must be running all the time while users are working on projects that are stored in central data sources. It is possible to set up and run more than one Enterprise server on a machine, with each server controlling access to one or more data sources.
- A server administration utility, Asta Serveradmin, installed onto the same machine as the Enterprise server. You use this program to administer the Enterprise server, for example to add users to the system or maintain the data sources in which your projects are stored. You only need to run Asta Serveradmin occasionally.
- The Asta Powerproject client applications. Many users running the client application on different PCs on a network can log into the Enterprise server(s) to work on projects that are stored in central data sources.
- One or more data sources. These are databases in which your Asta Powerproject Enterprise data is stored. Your data sources can be located on the Enterprise server machine, or on one or more other servers.

The following diagram illustrates the basic structure of the Enterprise system, displaying the required hardware and the software that is installed on each item of hardware:



Although data sources can be located on the Enterprise server machine in some circumstances, it is recommended that they are located on a separate machine. You can use more than one data source. If you do use multiple data sources, they do not have to be located on the same machine.

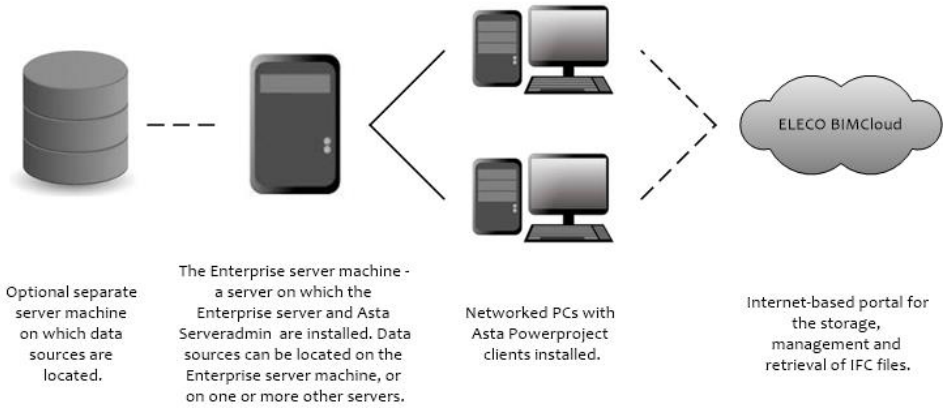
2.2 Asta Powerproject BIM

If you have a licence for Asta Powerproject BIM, additional functionality becomes available within Asta Powerproject that enables you to build detailed projects using information that is stored within 3D models that have been saved in IFC format. This results in “4D” project plans that include time and planning information as well as detailed 3D information about the building or facility on which you are working.

When using Asta Powerproject BIM, you work with IFC files that are located either locally or in the ELECO BIMCloud®. This is an internet-based portal for the storage, management and retrieval of IFC files. When using Asta Powerproject BIM, you associate IFC files with your Asta Powerproject BIM projects, and build project schedules using the data from within the IFC models.

If you use IFC files that are located in the ELECO BIMCloud, you must have a valid internet connection in order to use Asta Powerproject BIM.

The following diagram illustrates the basic structure of the Enterprise system when you have a licence for Asta Powerproject BIM:



You can also use Asta Powerproject BIM with non-Enterprise versions of Asta Powerproject – ie with versions of Asta Powerproject in which projects are located on local or network drives rather than in central data sources.

2.3 Time Sheet for Asta Powerproject

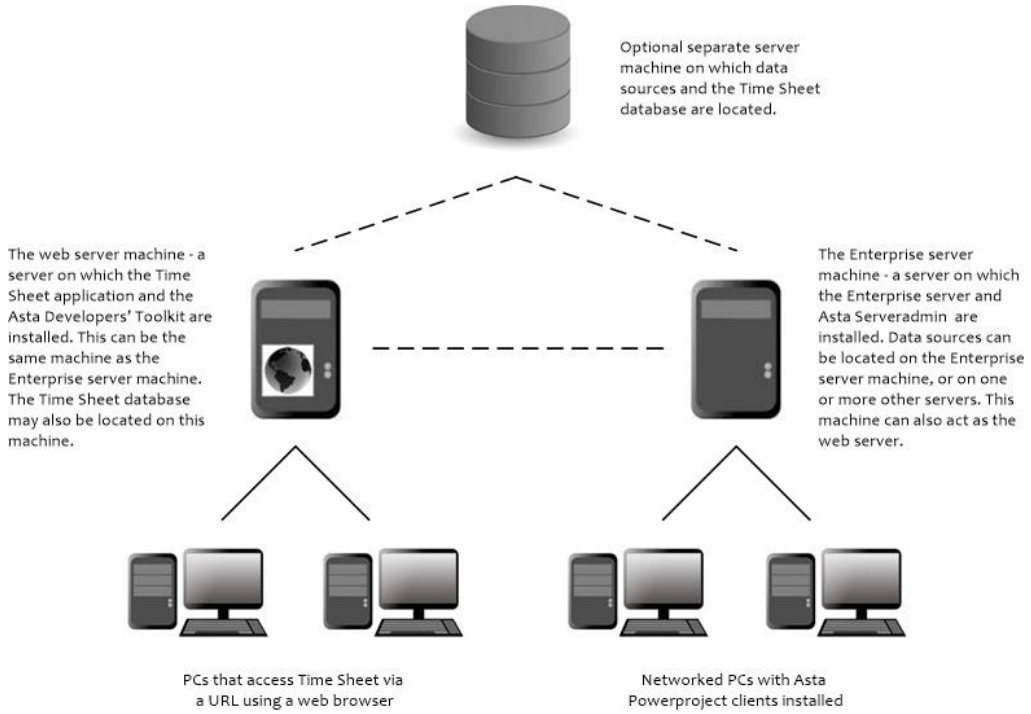
Time Sheet for Asta Powerproject enables users to record, submit and update time spent on project and non-project work using web-based timesheets, without the need for a full Asta Powerproject licence. It comprises a number of Active Server Pages (ASP) scripts that run within Microsoft® Internet Information Services. Time Sheet uses the Asta Developers' Toolkit to read and update Asta Powerproject projects, and updates a separate Time Sheet database.

Time Sheet comprises the following elements:

- The Time Sheet application. This is an application, installed on a machine that acts as a web server. You can install Time Sheet onto the same machine as the Enterprise server – provided that machine can operate as both an application server and a web server – or you can install it onto a separate machine. If you use both Time Sheet and Web Access, you can install both onto the same machine (with each running in its own application pool).
- Asta Developers' Toolkit. This is an application that enables communication between Time Sheet and your Asta Powerproject Enterprise server. It must be installed onto the web server, alongside the Time Sheet application.
- The Time Sheet database. This is a Microsoft SQL Server® or Oracle® database. The Time Sheet database can be located anywhere; you may want to locate it in the same place as your Asta Powerproject Enterprise data sources.

Users launch Time Sheet within a web browser on their computer.

The following diagram illustrates the basic structure of the Time Sheet system, displaying the required hardware and the software that is installed on each item of hardware:



2.4 Web Access for Asta Powerproject

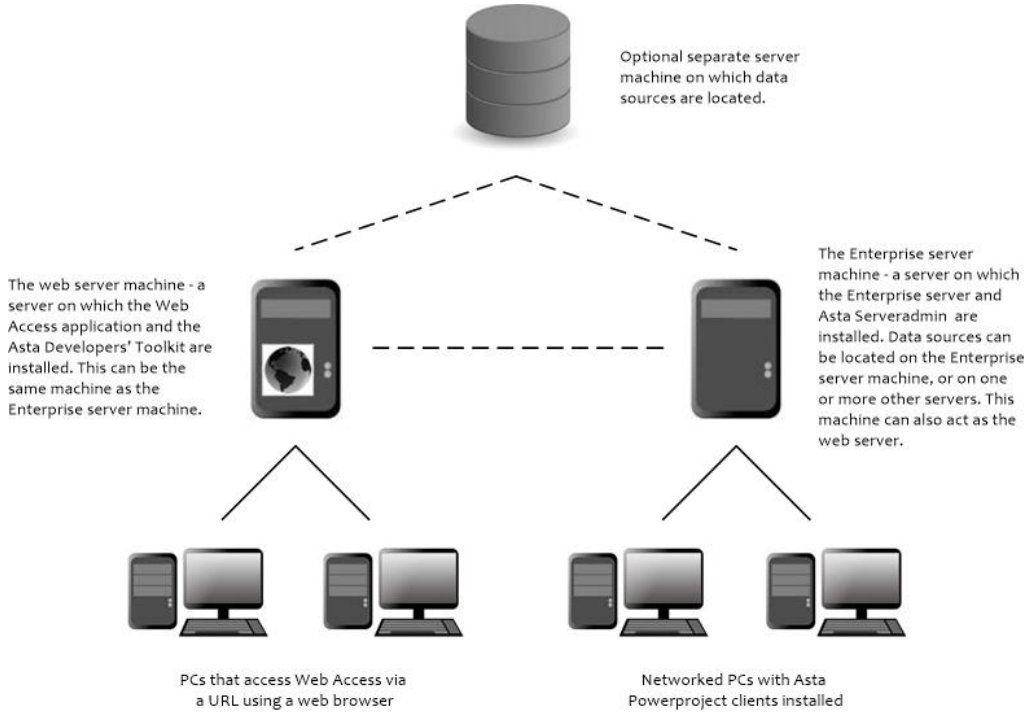
Web Access for Asta Powerproject enables users to view, edit and share project information over an intranet, without the need for a full Asta Powerproject licence. Like Time Sheet, Web Access for Asta Powerproject comprises a number of Active Server Pages (ASP) scripts that run within Microsoft Internet Information Services. Web Access uses the Asta Developers' Toolkit to read and update Asta Powerproject projects.

Web Access comprises the following elements:

- The Web Access application. This is an application, installed on a machine that acts as a web server. You can install Web Access onto the same machine as the Enterprise server – provided that machine can operate as both an application server and a web server – or you can install it onto a separate machine. If you use both Time Sheet and Web Access, you can install both onto the same machine (with each running in its own application pool).
- Asta Developers' Toolkit. This is an application that enables communication between Web Access and your Asta Powerproject Enterprise server. It must be installed onto the web server, alongside the Web Access application.

Users launch Web Access within a web browser on their computer.

The following diagram illustrates the basic structure of the Web Access system, displaying the required hardware and the software that is installed on each item of hardware:



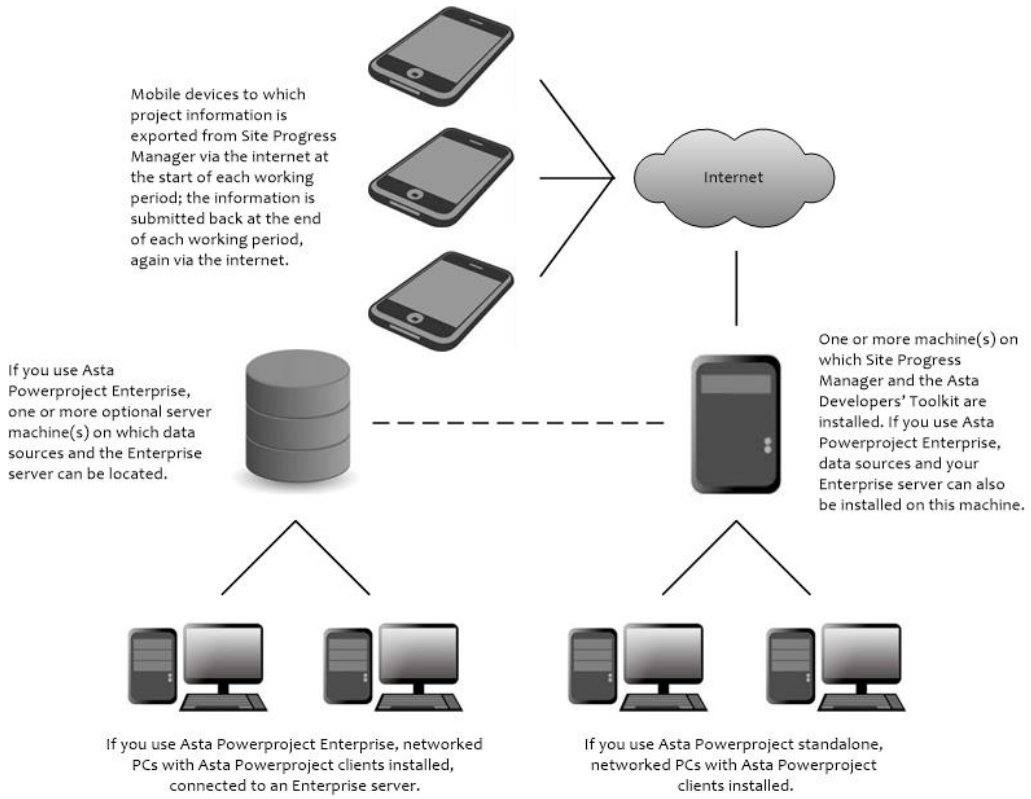
2.5 Site Progress Mobile for Asta Powerproject

Site Progress Mobile for Asta Powerproject enables on-site reporting of progress against tasks and build stages in Asta Powerproject projects, using a mobile app. Site Progress Mobile can be used either with Asta Powerproject Enterprise, or with a non-Enterprise Asta Powerproject client.

Site Progress Mobile comprises the following elements:

- The Site Progress Manager application. This is an application that is used by administrators to export information from your Asta Powerproject projects to Site Progress Mobile, and to import information back into the Asta Powerproject projects once progress has been recorded and submitted. Site Progress Manager is also used to configure the way in which Site Progress Mobile operates. The Site Progress Manager application passes project information between Asta Powerproject and the mobile devices via the internet, so you must have a valid internet connection in order to use Site Progress Manager. You can install Site Progress Manager onto more than one machine; for example, you may want to install it onto one machine for use by the overall administrator, who sets up users and configures their access rights, and onto several other machines for use by "publisher" users, who assign Site Progress Mobile users to the appropriate tasks in your projects and export and import project information.
- The Site Progress Mobile app. This freely-downloadable app is used by on-site progress reporters to record the progress of tasks and build stages from a remote location using a mobile device. Although the mobile devices must have a valid internet connection (either via a cellular network or via Wi-Fi®) in order to receive and submit project information at the start and end of each working period, Site Progress Mobile does not require an internet connection to be available all the time, which enables it to be used in locations with little or no network coverage or Wi-Fi availability. There are three versions of the Site Progress Mobile app: one suitable for use with Android™ mobile devices, one suitable for use with iOS® mobile devices and one suitable for use with Windows® Mobile devices.
- Asta Developers' Toolkit. This is an application that enables Site Progress Mobile to read Asta Powerproject files that have a .PP extension. If the Asta Developer's Toolkit is not present on the machine on which you install Site Progress Manager, it is installed automatically when you install Site Progress Manager.

The following diagram illustrates the basic structure of the Site Progress Mobile system, displaying the required hardware and the software that is installed on each item of hardware:



Note the following points about the data that is exported to the Cloud:

- The Site Progress Manager application generates export files that are uploaded to our secure hosting environment in the Cloud.
- The minimum amount of data necessary to enable progress reporting onsite is exported.
- No data relating to costs or resources – or any other potentially sensitive data – is exported.
- Your Asta Powerproject schedule itself is not exported.
- Our Cloud environment is hosted securely in a European data centre, on the Microsoft Windows Azure™ platform.
- Access to the Cloud environment is controlled using securely-encrypted user names and passwords.

2.6 Business Intelligence for Asta Powerproject

Business Intelligence for Asta Powerproject enables you to export information from your Asta Powerproject projects into an external database, which is optimised for convenient reporting. If you use Time Sheet for Asta Powerproject, you can incorporate data from the Time Sheet database into your reports as well. You can use a reporting tool of your choice to create reports using the data that has been exported to the database.

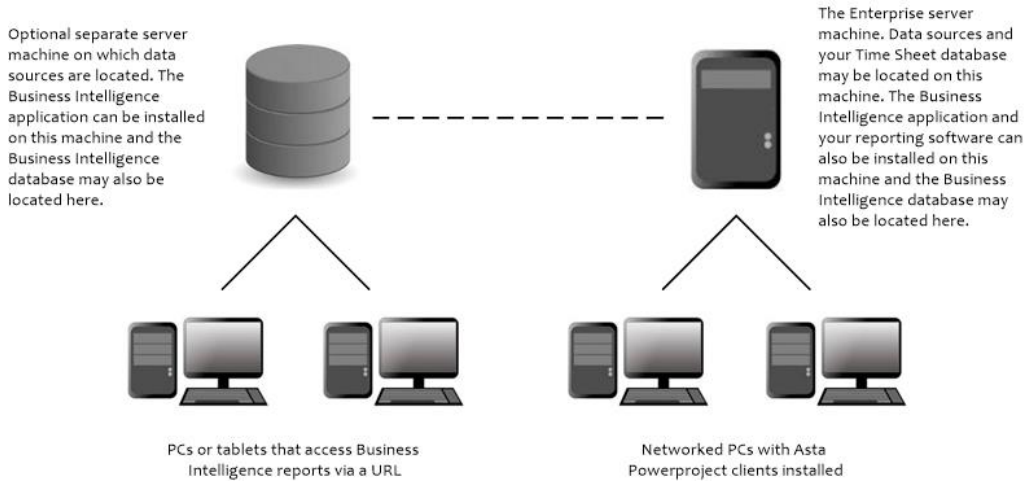
Business Intelligence comprises the following elements:

- The Business Intelligence application. This is an application that enables the export of data from your Asta Powerproject projects and from your timesheet database into an external database – the Business Intelligence database. This application should be installed either onto the same machine as the Enterprise server or onto the machine on which your Business Intelligence database is located. – if you are using Microsoft SQL Server Reporting Services to create reports, this will be the machine on which the Microsoft SQL Server client software is installed.

- Asta Developers' Toolkit. This is an application that enables communication between Business Intelligence and your Asta Powerproject Enterprise server. It must be installed alongside the Business Intelligence application.
- The Business Intelligence database. This is a database of a format that is supported by your reporting tool. The Business Intelligence database can be located anywhere; you may want to locate it in the same place as your Asta Powerproject Enterprise data sources.
- A reporting tool of your choice with which to create reports using the data that has been exported to the Business Intelligence database; we recommend the use of Microsoft SQL Server Reporting Services to create reports.

Users launch Business Intelligence reports within a web browser on their computer, or on tablets or other similar devices.

The following diagram illustrates the basic structure of the Business Intelligence system, displaying the required hardware and the software that is installed on each item of hardware:



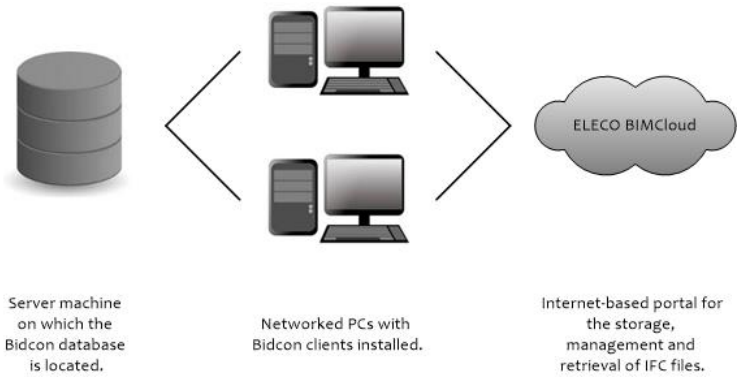
2.7 Bidcon

Bidcon is a fully-featured estimating application that can be used to produce detailed estimates for your projects. Bidcon can be installed as a single-user application on one machine, or as a multi-user application in which a database is installed on a server machine and individual client applications are installed on different PCs. Bidcon can be used in conjunction with IFC files that are located in the ELECO BIMCloud, to produce estimations based on IFC models.

Bidcon comprises the following elements:

- The Bidcon client applications. Many users running the client application on different PCs on a network can access estimations that are stored in a central database.
- The Bidcon database. This is a Microsoft SQL Server database. The Bidcon database can be located anywhere. If Bidcon is installed as a single-user application, the database must be installed on the same computer as the Bidcon application; if Bidcon is installed as a multi-user application, the database can be located anywhere.

The following diagram illustrates the basic structure of the Bidcon system, displaying the required hardware and the software that is installed on each item of hardware:



3 Technical briefing

3.1 Architecture

Asta Powerproject Enterprise is a 3-tier real-time multi-user system. The bottom tier is a database. The middle tier, Asta Powerproject Enterprise server, is a GUI-less transaction server that provides the real-time, multi-user application. As this handles all Enterprise client processing, only a single connection to the database is maintained. The top tier, the Asta Powerproject Enterprise client, is the client application that provides the GUI under Microsoft Windows. Connection methods between the client and the Enterprise server, over a LAN or a WAN, are generally TCP/IP-based, using the Enterprise server's static IP address. Note that alternative methods are available, speed of connection permitting.

3.2 Database and file types

Asta Powerproject Enterprise, Time Sheet for Asta Powerproject and Business Intelligence for Asta Powerproject can be used with the following types of database:

- Microsoft SQL Server 2005 (32 or 64 bit).
- Microsoft SQL Server 2008 R1 and R2 (32 or 64 bit).
- Microsoft SQL Server2012 (32 or 64 bit).
- Microsoft SQL Server2014 (32 or 64 bit).
- Oracle 10g.
- Oracle 11.2 (32 or 64 bit).
- Oracle 12c (32 or 64 bit).

The appropriate Microsoft SQL Server or Oracle client software must be installed on the data source machine(s). If Oracle is used, TCP/IP connectivity database drivers must be installed to enable communication with the data source machine(s). If you use Oracle on a 64 bit operating system, you need to install the x86 Oracle client on the Enterprise server machine, as the Enterprise server makes use of x86 drivers.

3.2.1 Supported databases for Bidcon

Bidcon can be used with any of the Microsoft SQL Server databases listed above, and with Microsoft SQL Server Express 2005 or later. It cannot be used with Oracle databases.

3.3 Using software in a virtual environment

Asta Powerproject Enterprise is supported on VMware® ESX, VMware ESXi and Microsoft Terminal Server® environments.

Bidcon is supported on Microsoft Terminal Server and Citrix® environments.

Neither Asta Powerproject BIM nor Bidcon BIM is supported in virtual environments due to issues with support for Microsoft DirectX®, which is required for these applications.

3.4 Customisation

Asta Powerproject Enterprise has been designed to be as open as possible and provides a number of methods for extension and connection with other systems. This allows integration with other products, the automation of company processes and procedures, plus the extension of the product. The customisable features are in three areas:

3.4.1 User-defined fields

Rather than providing "spare" fields in the database for requirements that have not been anticipated, a flexible interface is provided to allow the creation of unlimited additional fields on any object in the database (for example resources, tasks and cost centres). You can create user-defined fields of the following types:

- Date.
- Boolean.
- String.
- Integer.
- Float.
- URL.

Once created, user-defined fields are an integral part of Asta Powerproject. They can be viewed and edited on properties dialogs, in the spreadsheet and in text annotations. They can also be accessed programmatically via Microsoft Visual Basic® for Applications (VBA) and the Asta Powerproject Developers' Toolkit (see below).

3.4.2 Microsoft Visual Basic for Applications (VBA)

The Asta Powerproject client includes Microsoft Visual Basic for Applications as a feature-rich macro/programming language. This enables you to enhance Asta Powerproject in ways that suit your specific needs. All of the objects that are available to the Asta Powerproject client can be accessed and manipulated via VBA. You can launch macros using either Ribbon commands or keyboard shortcuts.

3.4.3 Asta Powerproject Developers' Toolkit, or OCX

The Asta Powerproject Developers' Toolkit has been developed as a programmable, GUI-less client. It is a Microsoft ActiveX® control, with a file extension of .OCX. The OCX acts as a client in the Asta Powerproject Enterprise environment. It can be referenced in any other software application and used to carry out tasks designed by a developer. The syntax and data model is the same as the one you use when using VBA. The OCX is available as the Asta Powerproject API and it carries no royalty payment when used internally within a company.

3.5 Firewall configurations in Asta applications

The Asta Powerproject Enterprise system uses the following ports (all TCP/IP connections):

- The Asta Powerproject clients use port 4198 plus the server ID to connect to the Enterprise server – if the Enterprise server has an ID of 1 (this is the default), the clients would connect to it using port 4199.
- If you use more than one Enterprise server, ports 4200 and 4201 can be used for client-server communication, as each server needs its own port.
- If you install a second service on a single Enterprise server, it uses the port number immediately after that used by the Enterprise server itself.
- The Enterprise server communicates with the name server (which enables client-server communication) using port 42362.
- Asta Licence Manager (which is used to manage your Asta licences) uses port 135 to listen for incoming connections.
- In some circumstances – if a large number of clients are accessing the server at the same time – the system may use additional ports in order to send notifications to the clients: those between 4299 and 4398.
- Web activation of Asta software uses port 80; this port is also used by Asta Web Access for listening.
- Microsoft SQL Server uses a particular port to listen for incoming connections. The default is port 1433, but another port may be used for this purpose, depending on the way in which your deployment of Microsoft SQL Server has been configured.

For security, we recommend creating firewall exceptions for the applications themselves rather than for the individual ports. This is especially important for the astalicenceserve.exe (used by Asta Licence Manager and the Asta Powerproject clients) as port 135 has been targeted by viruses in the past.

3.6 Factors that affect database performance

Regardless of the type of database you use, the following factors can affect its performance:

- The hardware architecture and operating system.
- The hardware specifications (the number of CPUs, speed, RAM, etc).
- The number of network interface controllers, their speed and duplex settings).
- The number of data sources on a server.
- The performance of the disk storage system (I/O speed, buffer and mirroring).
- Connection management.
- RAM allocations.
- Anti-virus software.

3.7 Factors that affect application performance

The following factors can affect the performance of Asta Powerproject:

3.7.1 Configuration, hardware and environment factors

- Network latency and bandwidth between the client machines and the machines on which data sources are located.
- The available memory on the client machines.

Optimum performance is achieved when the Enterprise server machine and the machines on which data sources are located reside on the same subnet of the network, with no network hops between subnets. This is due to two main factors:

- Any hops between subnets add to the overall latency of the configuration.
- A simplified network configuration allows for fewer things to go wrong. If the machines are on the same subnet, diagnosing and resolving issues is made easier.

It is also advisable to ensure that there are as few network hops as possible between the client machines and the Enterprise server machine.

One of the biggest factors that can affect performance is network infrastructure: performance problems can often be caused by poor network infrastructure. Sometimes problems can be caused by the network being saturated; it may be the case that a server machine or the clients are located in an old building with an out-of-date network. For this reason, it is important that you ensure that your network infrastructure is in a good state.

3.7.2 Application data factors

- The number of projects in a data source.
- The number of projects that are open concurrently.
- The total number of activities in concurrently-open projects.
- The number of resources in concurrently-open projects.
- The number of user-defined fields in concurrently open projects.

3.8 Supported types of IFC file

There are a number of different versions of IFC. Asta Powerproject BIM and Bidcon BIM are able to open IFC version 2.3, 2.4 and 4 files. In order to be able to export cost and duration information from a Bidcon estimation to an IFC file, IFC version 4 files must be used.

4 Hardware and software requirements for deploying Asta Powerproject Enterprise

English-language versions of Asta software must only be installed on hardware that is running an English-language operating system. Foreign-language versions of Asta software must only be installed on hardware that is running an operating system of the same language. This means, for example, that if you need to install a foreign-language version of Asta Powerproject Enterprise and an English-language version of Time Sheet, you cannot install both onto the same server machine.

4.1 Asta Powerproject client

The following table displays the minimum requirements to run the Asta Powerproject client:

	Minimum	Recommended
Processor	Intel®-compatible 400 MHz	Intel-compatible 1 GHz or greater
Operating system	• Windows XP SP3 • Windows Vista® (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)	• Windows Vista (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)
Memory	• 1 Gb RAM (32 bit) • 2 Gb RAM (64 bit)	• 1.5 Gb RAM (32 bit) • 2.5 Gb RAM (64 bit)
Hard disk	150 Mb disk space	250 Mb disk space

4.2 Asta Powerproject BIM

The following table displays the minimum requirements to run the Asta Powerproject BIM client:

	Minimum	Recommended
Processor	Intel-compatible 400 MHz	Intel-compatible 1 GHz or greater
Operating system	• Windows Vista SP2 (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)	• Windows Vista SP2 (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)
Memory	• 1 Gb RAM (32 bit) • 2 Gb RAM (64 bit)	• 1.5 Gb RAM (32 bit) • 2.5 Gb RAM (64 bit)
Hard disk	150 Mb disk space	250 Mb disk space
Graphics	• A graphics card that is capable of supporting Microsoft DirectX 10 or greater* • Must have the DirectX End-User Runtimes installed**	
Internet connection	If the ELECO BIMCloud is to be used to store IFC files, must be able to access the ELECO BIMCloud via HTTP***	

* To determine the maximum version of DirectX that a computer's graphics card can support:

1. Launch the DirectX Diagnostic Tool by running dxdiag from the Windows Start menu or from the Search charm in the Windows 8 Charms bar.
2. When the DirectX Diagnostic Tool appears, click the **Display** tab. The **DDI Version** field (the **Feature Levels** field in the case of Windows 8) indicates the maximum version of DirectX that the graphics card can support.

** You can download and install the required DirectX End-User Runtimes from the following location:

http://www.microsoft.com/en-gb/download/details.aspx?id=8109

*** No proxy server settings should be necessary unless your IT configuration applies restrictions to HTTP traffic. If you require further information on this – for example, if you need to know the precise URL and port number that are used to access the ELECO BIMCloud – please contact Asta's Technical Support department.

4.3 Asta Powerproject Enterprise server

The hardware that is required to run the Asta Powerproject Enterprise server depends on two main variables:

- The maximum number of tasks that the projects within a data source are anticipated to contain. If a data source contains a single project, this applies to the number of tasks in the project; if a data source contains more than one project, this applies to the combined number of tasks in all of the data source's projects.
- The maximum number of concurrent users.

The table below considers two deployment scenarios:

- Small to medium: up to 140,000 tasks in a data source.
- Large: up to 200,000 tasks in a data source.

	Small to medium deployment (up to 140,000 tasks)	Large deployment (up to 200,000 tasks)
Processor	• Single quad core (up to 70 concurrent users) • Twin quad core (more than 70 concurrent users)	• Single quad core (up to 30 concurrent users) • Twin quad core (more than 30 concurrent users)
Operating system	• Windows 2003 Server • Windows 2008 Server R1 and R2 (32 or 64 bit) • Windows 2012 Server (excluding non-GUI versions)	• Windows 2003 Server • Windows 2008 Server R1 and R2 (32 or 64 bit) • Windows 2012 Server (excluding non-GUI versions)
Memory	4 Gb RAM	4 Gb RAM or more
Hard disk	2 Gb disk space	2 Gb disk space

Note that the 64 bit version of the Asta Powerproject Enterprise server is supported only on 64 bit Windows Server operating systems.

Deployments involving more than 200,000 tasks in a data source require that projects are divided into subprojects, which are distributed across multiple Asta Powerproject Enterprise server instances.

Regardless of the number of tasks in a data source, performance degrades significantly when the number of concurrent users goes beyond 100. For this reason, we do not support deployments with more than 100 concurrent users accessing a single project.

4.4 Asta Licence Manager

The following table displays the minimum requirements to run the Asta Licence Manager application:

	Requirements
Processor	Intel Pentium® 4 or greater
Operating system	• Windows XP SP3 • Windows Vista (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit) • Windows 2003 Server • Windows 2008 Server R1 and R2 (32 or 64 bit) • Windows 2012 Server (excluding non-GUI versions)
Memory	256 Mb RAM
Hard disk	50 Mb disk space

Asta Licence Manager enables you to make Asta licences available over a network. Asta Licence Manager must be installed onto a machine to which all of your clients can connect. It is recommended that Asta Licence Manager is used in a domain environment, in which all machines are in the same domain.

It is possible to use Asta Licence Manager in a peer-to-peer network, but this is inadvisable as the initial setup and configuration is more complex and it requires ongoing administration:

- When configuring DCOM, you can use only the 'Everyone' group or specific logins; DCOM must be open for Asta Licence Manager to work, which is relatively insecure.
- Each user's username and password must be mirrored on the machine on which Asta Licence Manager is installed and any changes to usernames or passwords must be replicated on this machine on an ongoing basis.

5 Hardware and software requirements for deploying Time Sheet and Web Access

The following table displays the minimum requirements for the web server on which to install the Time Sheet and/or Web Access applications:

	Requirements
Processor	Single quad core
Operating system	• Windows 2003 Server* • Windows 2008 Server R1 and R2 (32 or 64 bit)** • Windows 2012 Server (excluding non-GUI versions)**
Required software	• Microsoft Internet Information Services 6 or later*** • Asta Developers' Toolkit, 12.0.02 or later (either on the web server or onto a machine to which the web server has access) • (Time Sheet only) A suitable Microsoft SQL Server or Oracle database (either on the web server or onto a machine to which the web server has access)
Memory	4 Gb RAM
Hard disk	2 Gb disk space

* If you install Time Sheet or Web Access onto a computer that is running Windows 2003 Server, you must configure Windows to allow ASP pages to run. To do this, you need to access Internet Services Manager, select Web Service Extensions and click the Allow button against 'Active Server Pages'.

** If you install Time Sheet or Web Access onto a computer that is running Windows 2008 Server R2 or Windows 2012 Server, you must use Server Manager to ensure that the following role services are installed for the Web Server (IIS):

- Static Content.
- Default Document.
- Directory Browsing.
- HTTP Errors.
- ASP.
- ISAPI Extensions.
- HTTP Logging.
- Request Monitor.

*** If Microsoft Internet Information Services 7 or later is installed, you must ensure that the following components are installed:

- IIS 6 Metabase Compatibility.
- IIS 6 WMI Compatibility.
- IIS 6 Management Console.

You must ensure that the current version of one of the following web browsers is installed on the computers that are to access Time Sheet or Web Access:

- Microsoft Internet Explorer.
- Firefox.
- Safari.
- Chrome.

6 Hardware and software requirements for deploying Site Progress Mobile for Asta Powerproject

For the installation of Site Progress Manager, the hardware and operating system requirements stated in section 4.1, *Asta Powerproject client*, apply. Note the following additional requirements which apply to all machines on which Site Progress Manager is installed and to all user accounts that are to use Site Progress Manager:

- They must be able to access Asta's Cloud server via HTTP. No proxy server settings should be necessary unless your IT configuration applies restrictions to HTTP traffic. If you require further information on this – for example, if you need to know the precise URL and port number that are used to access the Cloud server – please contact Asta's Technical Support department.
- They must have access to the location in which the Asta Powerproject project files are located, which may be on a local drive, on a network share or in a central data source (if using Asta Powerproject Enterprise).
- They must have access to the location in which any photographs that have been taken using Site Progress Mobile are downloaded – this is likely to be a location on the network.

If the Asta Developer's Toolkit is not present on the machine on which you install Site Progress Manager, it is installed automatically when you install Site Progress Manager.

The Site Progress Mobile app can be freely downloaded onto any Android, iOS or Windows Mobile device, from the following locations:

- Android: https://play.google.com/store/apps/details?id=com.astadev.siteprogress
- iOS: https://itunes.apple.com/gb/app/site-progress/id848353233?mt=8
- Windows Mobile: available in the Windows app store. Search for "Asta Site Progress" or "Siteprogress".

7 Hardware and software requirements for deploying Business Intelligence for Asta Powerproject

If Business Intelligence is installed onto the machine on which your Asta Powerproject Enterprise server is installed, the hardware and operating system requirements stated in section 4.3, *Asta Powerproject Enterprise server*, apply. If it is installed onto a separate machine on which your databases are located, refer to the hardware and operating system requirements as given by your database provider.

The following software must be installed on the server on which Business Intelligence is to be installed:

- Asta Developers' Toolkit, 12.0.02 or later.*
- Microsoft .NET Framework 4 or later*.
- A suitable database of a format that is supported by your reporting tool (either on the server or onto a machine to which the web server has access). We recommend the use of Microsoft SQL Server Reporting Services.**

* If you install Business Intelligence onto the machine on which your Asta Powerproject Enterprise server is installed, the Asta Developers' Toolkit and the Microsoft .NET Framework will already be present.

** If you choose to use Microsoft SQL Server Reporting Services as your reporting tool, you need to ensure that you have Microsoft SQL Server Management Studio installed and that you have SQL read/write permissions.

8 Hardware and software requirements for deploying Bidcon

8.1 Bidcon client

The following table displays the minimum and recommended requirements to run the Bidcon client in an installation in which both the Bidcon client and the database are located on the same machine:

	Minimum	Recommended
Processor	Intel Pentium 4 or equivalent, 1.5 GHz	Intel Pentium 4 or equivalent, 2 GHz or greater
Operating system	• Windows XP SP3 • Windows Vista (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)	• Windows XP SP3 • Windows Vista (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)
Memory	1 Gb RAM	2 Gb or more RAM
Hard disk	1 Gb disk space	1.4 Gb disk space
Required software	• Microsoft SQL Server Express 2005 or later, with the latest service pack installed • Microsoft .NET Framework 4	• Microsoft SQL Server 2005 or later, with the latest service pack installed • Microsoft .NET Framework 4

For multi-user installations in which the Bidcon database is located on a different machine from the Bidcon clients, the hardware and software requirements above apply to the Bidcon clients, apart from the fact that a Microsoft SQL Server database does not need to be installed on the machines onto which you install Bidcon.

8.2 Bidcon BIM client

The following table displays the minimum and recommended requirements to run the Bidcon BIM client in an installation in which both the Bidcon client and the database are located on the same machine:

	Minimum	Recommended
Processor	Intel Pentium 4 or equivalent, 1.5 GHz	Intel Pentium 4 or equivalent, 2 GHz or greater
Operating system	• Windows Vista SP2 (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)	• Windows Vista SP2 (32 or 64 bit) • Windows 7 (32 or 64 bit) • Windows 8 (32 or 64 bit)
Memory	1 Gb RAM	2 Gb or more RAM
Hard disk	1 Gb disk space	1.4 Gb disk space
Required software	• Microsoft SQL Server Express 2005 or later, with the latest service pack installed • Microsoft .NET Framework 4	• Microsoft SQL Server 2005 or later, with the latest service pack installed • Microsoft .NET Framework 4
Graphics	• A graphics card that is capable of supporting Microsoft DirectX 10 or greater* • Must have the DirectX End-User Runtimes installed**	
Internet connection	Must be able to access the ELECO BIMCloud via HTTP***	

For multi-user installations in which the Bidcon database is located on a different machine from the Bidcon clients, the hardware and software requirements above apply to the Bidcon clients, apart from the fact that a Microsoft SQL Server database does not need to be installed on the machines onto which you install Bidcon.

* To determine the maximum version of DirectX that a computer's graphics card can support:

1. Launch the DirectX Diagnostic Tool by running dxdiag from the Windows Start menu or from the Search charm in the Windows 8 Charms bar.
2. When the DirectX Diagnostic Tool appears, click the **Display** tab. The **DDI Version** field (the **Feature Levels** field in the case of Windows 8) indicates the maximum version of DirectX that the graphics card can support.

** You can download and install the required DirectX End-User Runtimes from the following location:

http://www.microsoft.com/en-gb/download/details.aspx?id=8109

*** No proxy server settings should be necessary unless your IT configuration applies restrictions to HTTP traffic. If you require further information on this – for example, if you need to know the precise URL and port number that are used to access the ELECO BIMCloud – please contact Asta's Technical Support department.

8.3 Dedicated server for Bidcon database

The following table displays the recommended requirements to run the Bidcon database in an installation in which the database is located on a different machine from the Bidcon clients:

	Requirements
Processor	Intel Pentium 4 or equivalent, 2 GHz or greater
Operating system	• Windows 2003 Server • Windows 2008 Server R1 and R2 (32 or 64 bit) • Windows 2012 Server (excluding non-GUI versions)
Required software	• Microsoft .NET Framework 4 • Microsoft SQL Server 2005 or later, with the latest service pack installed
Memory	• 2 Gb RAM or more for up to 5 concurrent users • 4 Gb RAM or more for up to 10 concurrent users
Hard disk	1.4 Gb disk space

The above requirements also cover installations in which Bidcon is installed in a Terminal Server or Citrix environment.