

Magellan

USER INSTRUCTIONS



Magellan Server



Innotech Magellan

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1.0	November 2019	eServer renamed to Magellan Server, new document based on eServer Setup & Site Installation Instructions, added Innotech Magellan installation instructions, removed IIS information, removed ActiveX information.
1.1	April 2020	Added information about communication security for Magellan Server and Innotech Magellan.

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SETUP AND SITE INSTALLATION INSTRUCTIONS

1

Preliminary Information

1-1 Introduction

This manual is intended to provide the customer with complete and comprehensive documentation to set up and configure the Magellan Server software for a host computer and Innotech Magellan for the remote client computer. Magellan Server enables local and remote client computers access to an Innotech Magellan interface, enabling direct access to information on the site computer.

Although the intent of this manual is to simplify the installation task, instructions contained in this manual are based on the assumption that the typical installer is familiar with the operation of the Microsoft Windows 7 or 10 Professional or Windows Server 2008/2012 R2 operating systems.

Customers should familiarise themselves with the content of this manual before attempting installation and setup of Magellan Server or Innotech Magellan on their computer.

Throughout this manual there are icons to illustrate general notes and important notes, as illustrated below:



These notices indicate a piece of useful information which should be read.



IMPORTANT

*These notices contain information about the software that **must be done** before proceeding further to ensure success.*

1-1.1 Systems Covered by this Manual

The manual covers the preparation and configuration of Magellan Server to enable a remote computer to access and display a Magellan project using Innotech Magellan.

1-1.2 Terminology used in this Manual

In order to simplify the instructions, common terminology and references to other Innotech products are used throughout this manual. A brief description of some of the terminology is provided in this section.

Magellan Server (host) computer: the computer which is running the Magellan Server software and has the Magellan project loaded. In common scenarios, this will be a computer on site, and accessible from computers on the local area network and computers on external networks if required. The Magellan Server Host computer requires a supported Windows operating system.

Innotech Magellan (client) computer: any computer which is connecting to the Magellan Server (host) computer. In common scenarios, a client computer will be a laptop computer, a computer on the site's local area network or an external computer connecting to the host computer via a secure Internet connection.



References throughout this document:

- References to the **host** computer refer to the computer running Magellan Server with a loaded Magellan Project.
- References to the **client** computer refer to the Windows operating system based computer or compatible Android device running Innotech Magellan to access a Magellan Server project.

DNS: Domain Name System, a naming system for computers, services or any resources on a private network.

iComm: Innotech's communications server used by applications software.

Innotech Magellan: A client interface on the remote computer that connects to the Magellan Server host and displays the loaded project.

IP address: a numerical label that is assigned to any device participating in a computer network that uses the Internet Protocol for communication between its nodes.

Magellan Builder: an event driven, object oriented real-time Supervisory Control and Data Acquisition package. Magellan Builder is used to create or modify a Magellan Project.

Magellan Server: hosts the loaded Magellan project for access by a remote computer using Innotech Magellan.

1-1.3 Scope of this Technical Manual

This technical manual contains:

Table 1-1: Document Chapters

Chapter Number	Chapter Name	Description
1	Preliminary Information	Contains initialisation related information of a general nature such as computer requirements and pre-installation materials.
2	Installation of Magellan Server Software	Contains instructions for the installation and basic configuration of the Magellan Server software onto a computer, and installation of the additional ATOM Reports Component if required.
3	Configuring Magellan Server Communications	Contains instructions for the configuration of security and access control on Magellan Server software. Additionally, steps are provided to enable Magellan Server to communicate with an SQL Server database.

1-2 System Requirements

Both the Magellan Server (host) computer and any connecting Innotech Magellan (client) computers must meet the minimum computer requirements to ensure correct operation.

1-2.1 Minimum Computer Requirements

Magellan Server Supported Operating Systems:

- Windows® 10 Professional 64-bit & 32-bit
- Windows® Server 2016
- Windows® Server 2012 R2
- Windows® 7 Professional 64-bit & 32-bit with Service Pack 1

Innotech Magellan Supported Operating Systems:

- Windows® 10 Professional 64-bit & 32-bit
- Android Marshmallow 6.0 or later

Magellan Server Minimum System Requirements:

- Intel Pentium Dual-Core 2.8GHz processor or equivalent
- 4GB of RAM
- 350MB Hard Disk Drive required
- 1024 x 768 display with 16-bit video card (1920 x 1080 recommended)
- CD-ROM or DVD-Drive
- Keyboard and mouse of compatible pointing device
- Requires a computer with iComm installed

1-3 Special Considerations

The following installation considerations must be observed to ensure the proper installation and configuration of Magellan Server, Innotech Magellan and optional ATOM Reports Component. The amount of concurrent connections to the Magellan project depends on your licence. The following items are required for proper operation:

- Magellan Server v2.00B or greater installation package and a valid software licence
- Completed Magellan project
- A static IP address from the ISP and proper Firewall / Router configuration if using internet access

1-4 Advanced Site Considerations

The following installation considerations must be observed for sites with advanced data logging requirements, such as connection to an SQL Server database:

- Both the Magellan Server (host) computer and any connecting Innotech Magellan (client) computers must meet the minimum computer requirements to ensure correct operation. Depending on the site requirements, more advanced computer specifications may be required for the host computer, such as RAID-based redundancy systems, and a higher-end computer processor. Refer to [1-2 - System Requirements](#) for more information.
- Consult with the site IT Manager to ensure that connecting client computers can access the host computer and the SQL Server database in a safe and secure way.
- Be aware that installing SQL Server 2008/2016 R2 Standard Edition may take up to 60 minutes to complete. SQL Server Express 2008 R2 can take up to 20 minutes.

1-5 Installation Plans

The following installation data should be gathered and made available to the installation team in the event that a connection to an SQL Server is required:

- This technical manual
- Ensure you are logged into the computer as a System Administrator when installing software and commissioning the host and client computers
- Site Information Technology security and installation requirements
- Magellan Server requires a valid software licence.
- For the setup of client computers that require access to generated Crystal Reports, you may choose to download the Crystal Reports package from the Innotech website and install it manually as it is a 100MB file download
- DNS name or static IP address of the SQL Server computer
- Name of the SQL Server Database being used for point logging
- Any other data source as it becomes known

1-5.1 Required Software on Site Computer

The following software needs to be installed on the site computer.

- Magellan Server v2.00B or greater with Magellan Server licence. The Magellan Server licence file must remain existing to the Magellan Server Host computer in order for Magellan Server to run.
- ATOM Reports Component (optional)
- iComm Communication Server



The Magellan Server software may be used on an intranet (internal Ethernet), externally via the internet or both.

1-6 Security Information

- Communications Channel: Innotech Magellan (client) to Magellan Server
- Port: TCP 20001
- Protocol: Proprietary, binary-encoded
- Encryption: AES, 256-bit
- Key Exchange: Diffie-Hellman, 4096-bit
- Content: All project messages, including: frame layout, graphics, user authentication, database queries, historical data, reports
- Innotech Magellan (client) uses port 20000 to communicate with iComm to get point data. This channel is not encrypted.

Magellan

SETUP AND SITE INSTALLATION INSTRUCTIONS

2

Installation and
Configuration of Magellan
Server Software

2-1 Overview

This section provides an overview of the steps required for the installation and basic configuration of the Magellan Server and Innotech Magellan software, and installation of the additional Magellan Crystal Report additions if required.

2-2 Pre-installation Tasks

2-2.1 Overview

Prior to installing Magellan Server, there are a series of pre-installation tasks to undertake. This includes gathering all the required information to make the installation process easier, and preparing site computer security settings to facilitate an easy setup process.



IMPORTANT

Many of the processes within the Pre-installation tasks assume a moderate to high degree of technical IT expertise. It is recommended to consult with the site IT Manager for assistance and site specific security settings where required.

2-2.2 Remote Access, Ports and Security Information

2-2.2.1 Internet Access

You may use an existing and available Broadband Internet Connection, however in this scenario the site will need to have a **DNS name or static IP address setup through the Internet Service Provider (ISP)**, and also allow the opening of Ports through their Firewall / Router.



*If the site IT Staff deny the setup of required ports, a separate Internet connection will need to be provided to a dedicated computer. This computer can be configured with a **Static External IP address** and configured to have **Port Forwarding**. The computer running Magellan Server and iComm needs to have the full incoming and outgoing connections to the Ports setup.*

2-2.2.2 Port Forwarding and Firewalls

The following Ports are required to be opened through the Firewall to allow incoming and outgoing connections to specific parts of the Innotech System.

Table 2-1: Required Ports for an Innotech System

Required Ports	Usage
Port 8080	Omni Schedules
Port 20000	Innotech Communications Server (iComm)
Port 20001	Secure Communications Port (Magellan Server)
Recommended Additional Ports 	
Port 5900	For VNC (Virtual Network Computing)
Port 21	For FTP (File Transfer Protocol)
Port 1723	For VPN (Virtual Private Network)
Optional Ports	
Port 8227, 8228, 8230 	Innotech Chronicle Manager remote communications with the Chronicle Server (if required)
Port 3389	For Remote Desktop (mstsc)

 ¹ Enabling VNC, FTP or VPN assists with remote site access to the computer for management and file transfers. This is optional but highly recommended as it allows remote diagnostics, analysis and troubleshooting of site problems if they occur.

 ² Enabling Ports 8227, 8228 and 8230 is only necessary for remote access using Chronicle Manager to configure the site Chronicle Server.



At a minimum ensure to enable the Required Ports as listed above.

2-2.2.3 Security Information

Both iComm and Magellan Server are resistant to denial of service attacks from unauthenticated clients, and both support 32-bit encryption with initial login challenge/response authentication. If a client's login name and password is not authenticated immediately by Magellan Server or iComm, the connection is terminated.

Both servers have been tested for buffer overrun attacks, and both servers have an audit trail of connection attempts. It is not possible, even with a custom-written rogue program that manages proper authentication, for any program to connect to either of these servers and execute a file or download unauthorised data from the server. Neither of these programs currently contains functionality to allow file downloads, server-side execution, or any kind of interactive login.

To setup access over the internet, you will need to open 20000 and 20001 through the Firewall to transmit and receive data. Then accept incoming connections, and Port Forward from the external static IP address, to the internal static IP address of the computer running the iComm Server and Magellan Server software. You will be able to see who has logged in via the audit trails, even from an Innotech Magellan computer.

From the Innotech Magellan computer, only ports 20000 and 20001 need to be open for an outgoing connection.

2-2.3 Setup of a Dedicated Site Computer with WAN Connection

2-2.3.1 Overview

This section provides detailed information for configuring a site computer with a dedicated WAN connection for running the Magellan Server software. Refer to Figure 2-1 for an example Magellan Server setup network topology.

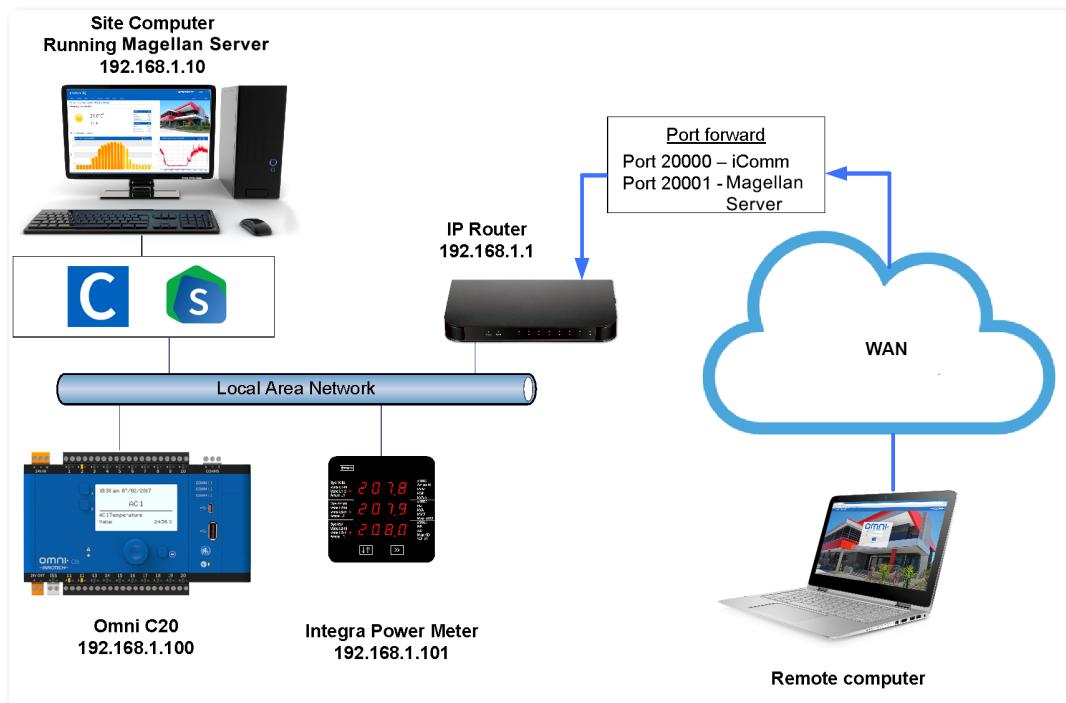


Figure 2-1: Example of Magellan Server Setup Network Topology

2-2.3.2 Computer Setup

Once the WAN connection to the Magellan Server computer is completed, the computer must be protected. The following is required to complete this step:

- Antivirus software from a reputable provider. Some antivirus and security software will block Magellan Server communication and port traffic by default. If this occurs, allow the required communications on the computer. Refer to the specific antivirus or security software help manual for more details on how to do this
- Firewall enabled and configured - either Windows firewall or third party software. Ensure to enable the required ports for Magellan Server communications
- Administration rights on the computer with a valid username and password
- Static IP address for the WAN connection
- Static IP address on the local computer

2-3 Installation of Magellan Server Software

2-3.1 Overview

The following steps describe the process to install the software onto a site host computer.



The Magellan Server installation file also includes Facility Manager Server and the Innotech Licence Activator. If FM Server is not required, you can cancel the FM Server installation after the installation of Magellan Server is complete. The Licence Activator setup will then begin.



IMPORTANT

Ensure that the Magellan Server (host) computer meets the minimum specifications outlined in [1-2 System Requirements](#) before installing the software. Ensure that you have configured and DNS and Port Security settings prior to installation, as during installation you will be asked to enter this information.



There are common installation steps for all supported Operating Systems. Any specific differences are described at the relevant section in the document.

2-3.2 Installation Steps

Launch the Magellan Server Installation Program. From the Setup window, select Next to commence installation.

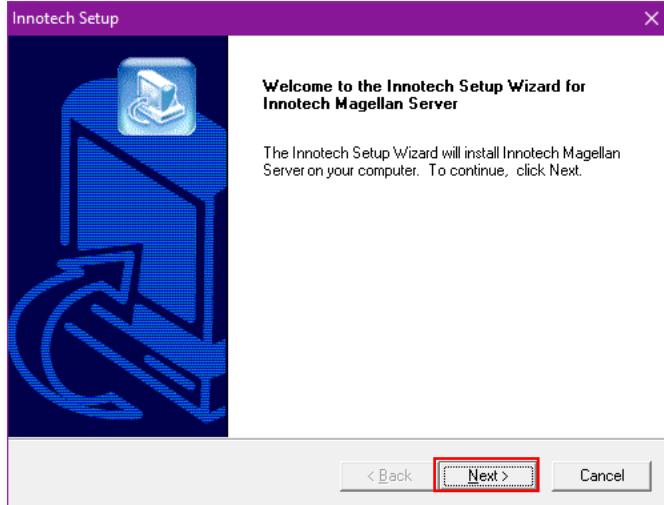


Figure 2-2: Commence Installation of the Magellan Server Software

Magellan User Instructions

Read and acknowledge the **Software Licence Agreement**.

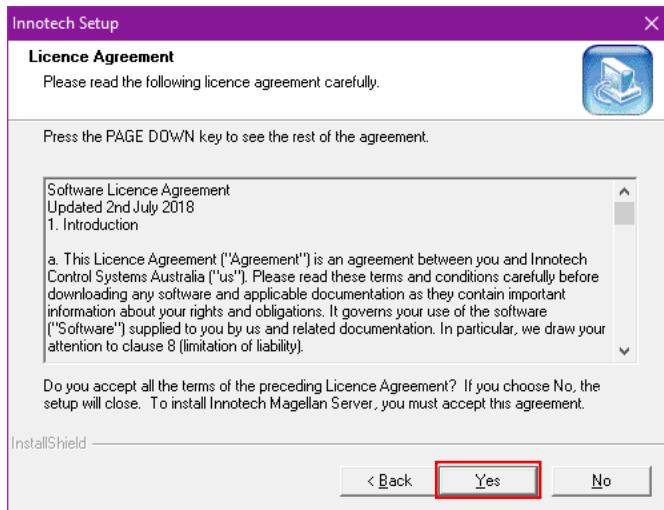


Figure 2-3: Software Licence Agreement

Enter the **Customer Information** for your Magellan Server software installation. Click **Next** to continue.

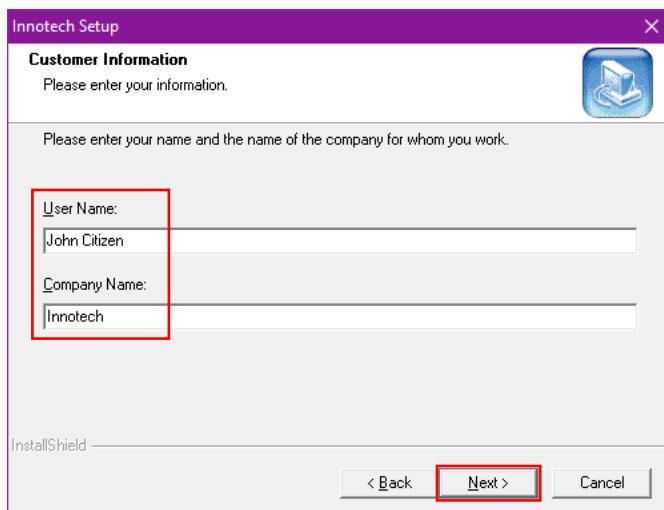


Figure 2-4: Customer Information

Confirm the **installation location**. Click **Next** to continue.

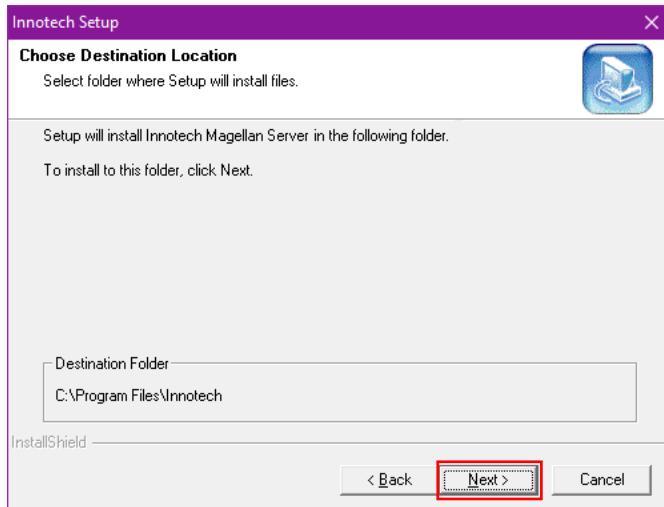


Figure 2-5: Installation Location

Wait a few minutes as the software is installed on your computer.

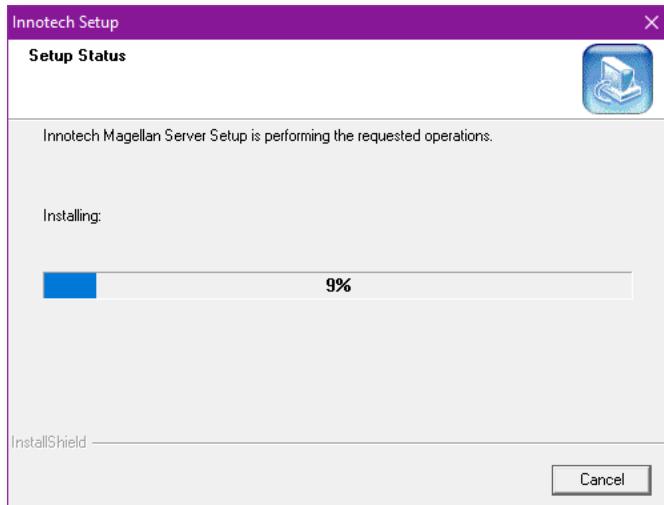


Figure 2-6: File Installation

When the installation process is completed, click **Finish** to close.

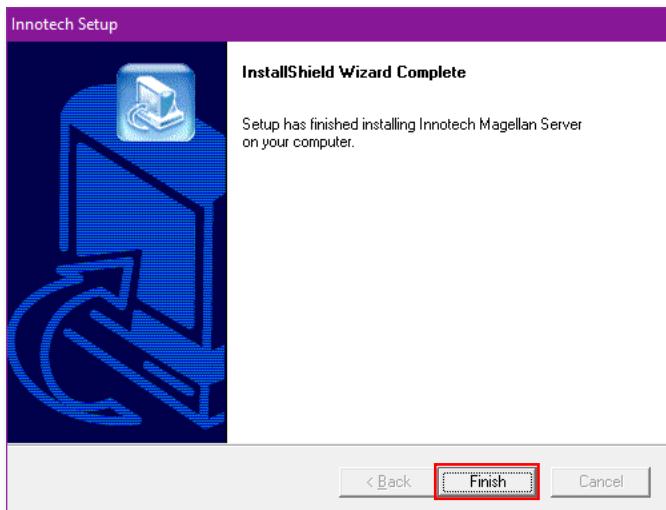


Figure 2-7: File Installation Finished

The FM Server installation will now begin. FM Server is not needed for Magellan Server to run correctly. Click Cancel and confirm the cancellation of the setup to continue to the Innotech Licence Activator setup.

See the [Innotech Licence Activator User Instructions](#) for details on installation and usage.

2-4 Installation of Innotech Magellan Software

See the [Innotech Magellan User Instructions](#) for details on installation and usage.

2-5 Installation of ATOM Reports Component

2-5.1 Overview

The ATOM Reports Component allows for advanced report generation from the Magellan software using the Innotech ATOM software. This is a separate *optional* install which is required for the generation of ATOM Reports. This is to be installed on the host computer.



*The ATOM Reports Component is intended to work in a system where the Magellan software is accessing data stored in a **SQL Server database**. This is part of a system utilising the **Innotech ATOM software**.*

See the following for more information:

- [Chapter 3 - Configuring Magellan Server Communications](#)

2-5.2 Installation Steps

Launch the ATOM Reports Component Installation Program. The program will detect your system configuration to install the required files.

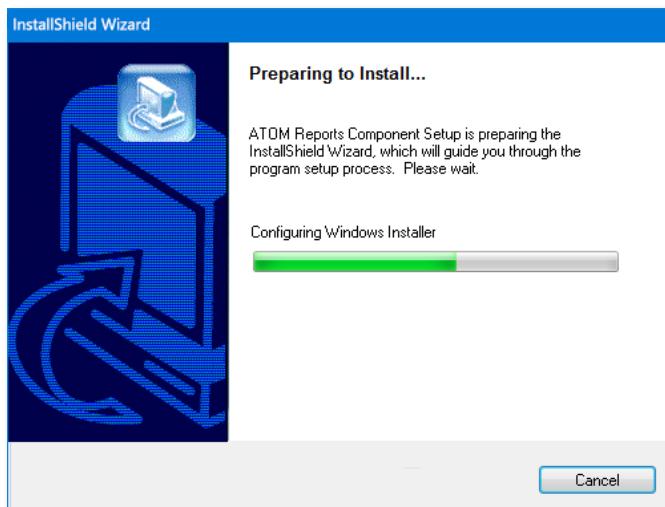


Figure 2-8: ATOM Reports Component Installation Preparation

Click **Next** to commence installation.

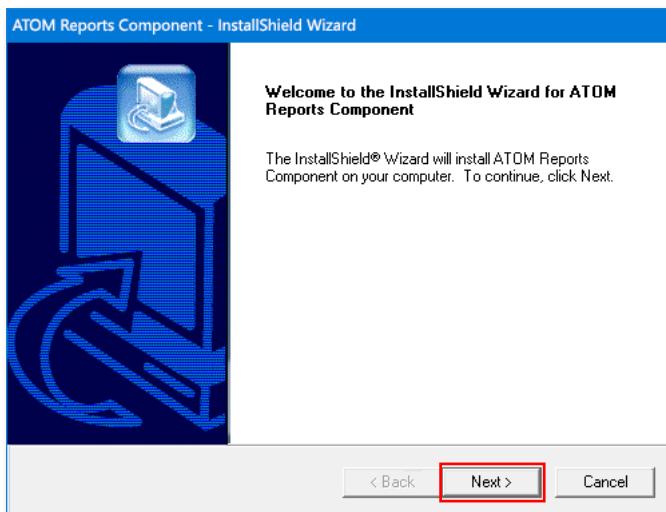


Figure 2-9: Commence ATOM Reports Component Installation

Select the specific ATOM Reports Component items to install. The **default is to install the files required for all software**. Click **Next** to continue.

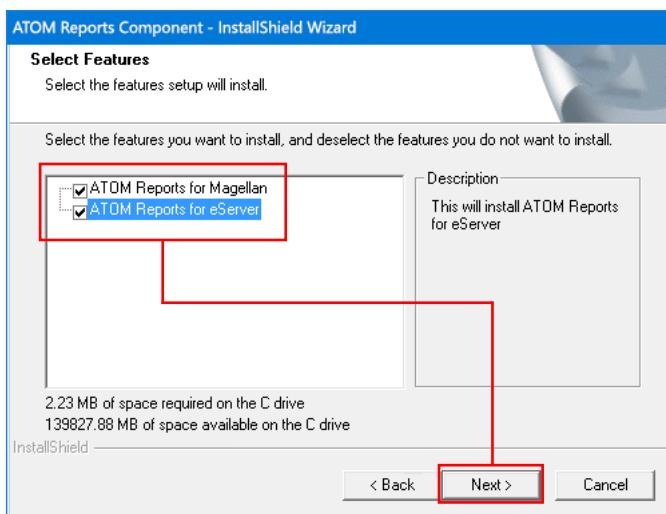


Figure 2-10: Select the Specific ATOM Reports Components to Install

When the ATOM Reports Component installation process is completed, click **Finish** to close and exit.

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SETUP AND SITE INSTALLATION INSTRUCTIONS

3

Configuring Magellan Server
Communications

3-1 Overview

This section provides an overview of the steps required to configure security and access control on Magellan Server (host) software to allow remote computers to access Magellan projects via the Innotech Magellan (client) software. Additionally, steps are provided to enable Magellan Server to communicate with an SQL Server database.

3-2 Configure Magellan Server Project Settings

3-2.1 Overview

This section provides instructions on how to configure your project settings to work as part of a system including Magellan Server 2.00 or greater. Specifically, this section provides information on how to open your project and set project connection properties for a database, iComm server and connected devices.



*Ensure you are logged into the computer as a **System Administrator**. You will need to use **Magellan Builder v1.60A or greater** to configure the project.*

3-3 Setup SQL Server Communications

3-3.1 Overview

The following information is intended to provide qualified technical personnel with the required settings for a manual setup of a Microsoft SQL Server 2016/2008 R2 Express Edition database.



SQL Server 2016/2008 R2 Express Edition is required for site which are using historic Trends or ATOM Reporting functionality.

Innotech recommends where possible to use the Innotech Chronicle Server Installation Package which **automates the installation and configuration of SQL Server** to operate correctly with Magellan Server. Contact Innotech Sales for more information on Chronicle, ATOM and other BMS solutions. **Note that this requires a computer which has not had any version of SQL Server installed previously.**



IMPORTANT

To integrate with an existing SQL Server, or upgrade to SQL Server 2016/2008 R2 Express Edition, consult with the Site IT Manager to ensure that the SQL Server settings are correctly configured as listed below in [4-3.2 Default SQL Server 2008 R2 Express Edition Settings](#).

3-3.2 Default SQL Server 2016/2008 R2 Express Edition Settings



IMPORTANT

Advanced users only!

Table 3-2: Default SQL Server 2016/2008 R2 Express Edition connection settings

Parameter	Recommended Setting	Notes
Default Instance	MSSQLSERVER	
Instance ID	MSSQLSERVER	
Authentication Mode	Mixed Mode	Required for remote access to SQL Server.
SQL Server Authentication	Enabled	
Communication Protocol Configuration 		
Shared Memory Protocol	Enabled	
Named Pipes Protocol	Enabled	
TCP/IP Protocol	Enabled	
UDP/IP Protocol Default Port	1434	Ensure no other applications are using port 1434. Ensure a firewall is not blocking incoming or outgoing traffic on port 1434.
VIA Protocol	Disabled	

 Use the SQL Server Configuration Manager to manage Communication Protocol settings. This tool is accessible from the Windows Start Menu once SQL Server Express Edition is installed.

3-4 Setup Magellan Server Security, Access Control & Restarting

3-4.1 Overview

Information contained in this section includes configuration settings for security and access control allowing Magellan Server to facilitate secure connection with connecting Innotech Magellan computers.

3-4.2 Configure Magellan Server Security

Start the Magellan Server program (it will minimize on the bottom right of your toolbar). Double-click on the Magellan Server icon on the toolbar to open the window. From the File Menu, select **Load Configuration** to select and load your Magellan Project.



Magellan saves the project by default as a .mag project. Use Magellan to export the project as a .mpk file, which is a packaged version for delivery, including all the project's graphical objects. The .mpk file is the file to open using Magellan Server.

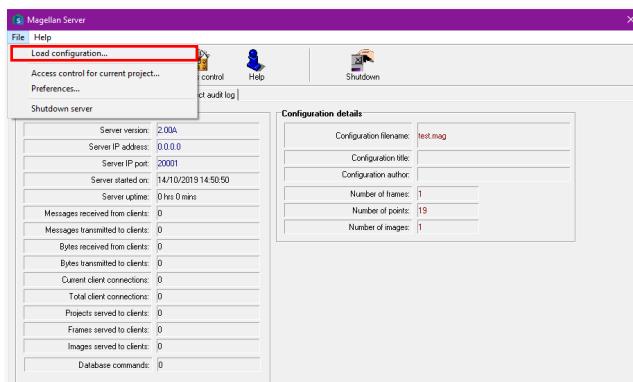


Figure 3-1: Load the Magellan project into Magellan Server

To enable security for incoming connections, open the **Preferences** Menu.

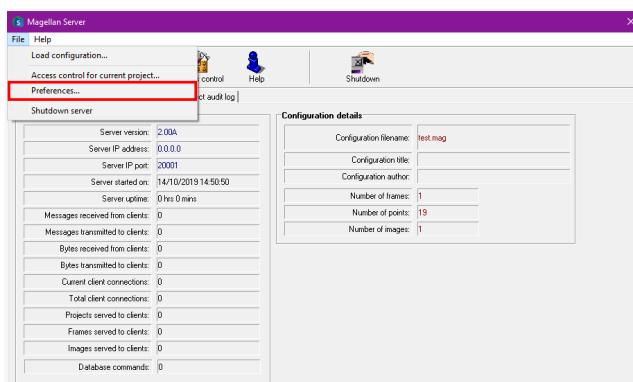


Figure 3-2: Open Magellan Server Project Preferences

From the Preferences Menu, tick the **Enable security for connection to Magellan Server** box and enter the Username and Password.

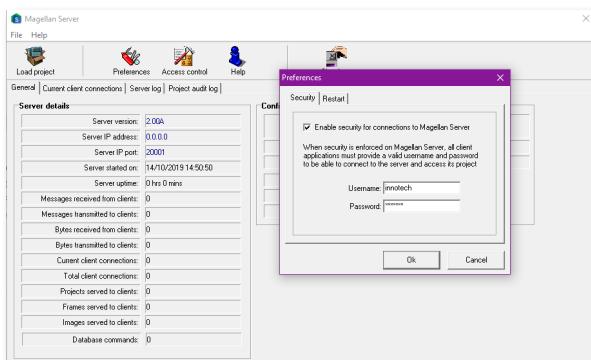


Figure 3-3: Configure Magellan Server Connection Security

3-4.3 Setup Magellan Server Automatic Restart

In the Preferences, check the box on the Restart tab to automatically restart Magellan Server at a specified time. Restarting Magellan Server will refresh all the connections.

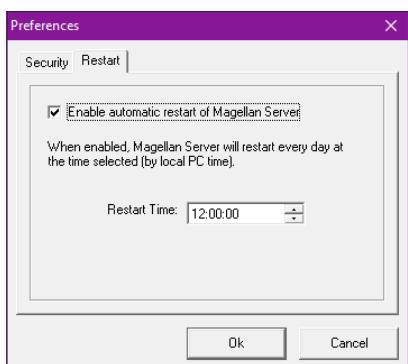


Figure 3-4: Preferences - Restart Tab



If using this feature, it is not compatible with RDP and it is recommended to disable RDP if being used. You can generally disable RDP by going into Control Panel -> System -> Remote Settings -> Don't Allow remote connections to this computer. Please note that machines joined to a Domain may have these settings overridden by group policy. In that case liaise with your IT department.

3-4.4 Enabling Magellan Server Access Control

Click the Access Control button to change the settings. To enable, tick the **Enable access control for this project** box, and enter the information. If you don't want Access Control, uncheck the box.



If your Magellan Project has access control setup already, simply check the box and this information will be added automatically.

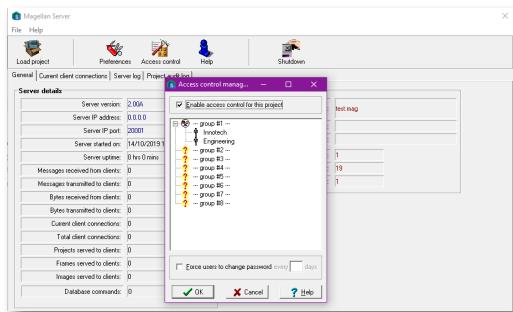


Figure 3-5: Enable Magellan Server Access Control

3-5 Setup of the Innotech Magellan Client Computer

3-5.1 Overview

Follow the steps in this section to remotely connect to a Magellan project using Innotech Magellan.

3-5.2 Pre-Requisites

- Magellan Server with valid software licence must be installed on the host computer
- A Magellan project must be loaded in Magellan Server
- Innotech Magellan on the remote client computer as [detailed previously](#) in this document

3-5.3 Magellan Server Preparation

1. Open Magellan Server on the host computer
2. Click Load Project, select a .mag file and click Open

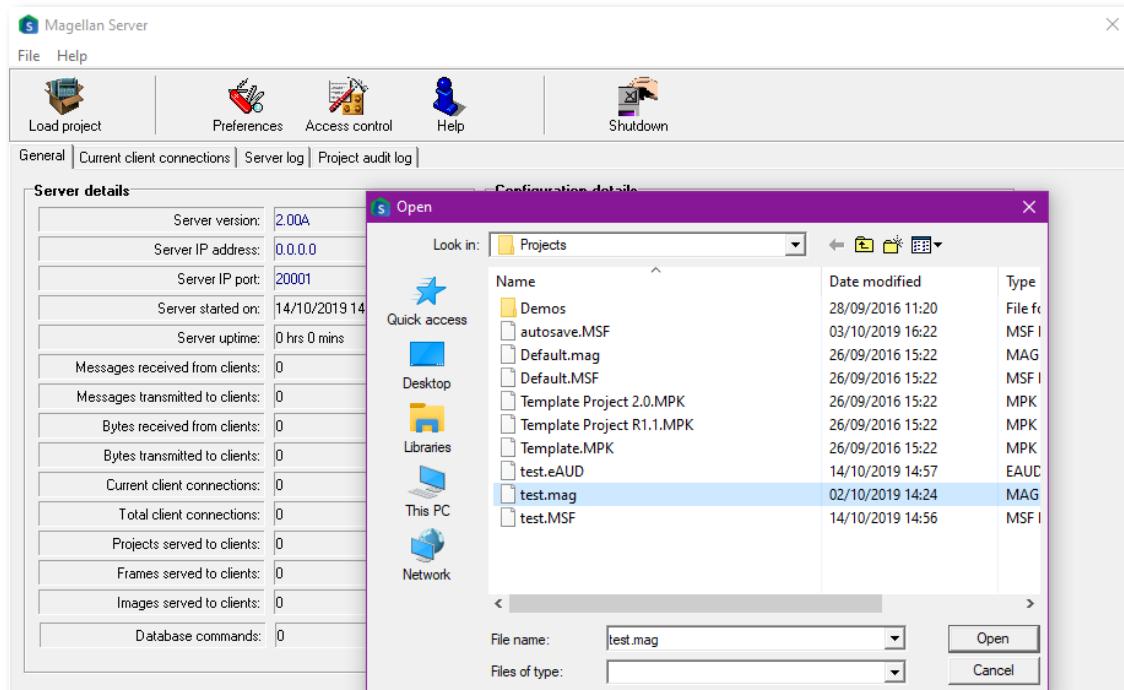


Figure 3-6: Open Magellan Project

3-5.4 Innotech Magellan Connection

1. Open Innotech Magellan on the client computer
2. Enter an address in the Server Address field, this can be an IP or DNS address and click the Add button. Use localhost as the address for Magellan Server projects running on the same computer as the client server.
3. Click to select an item in the connections list.
4. Click the Connect button to connect to the server.

If you have Access Control enabled on the Magellan Server, window will display requesting password access. Enter the credentials to access the Magellan project.

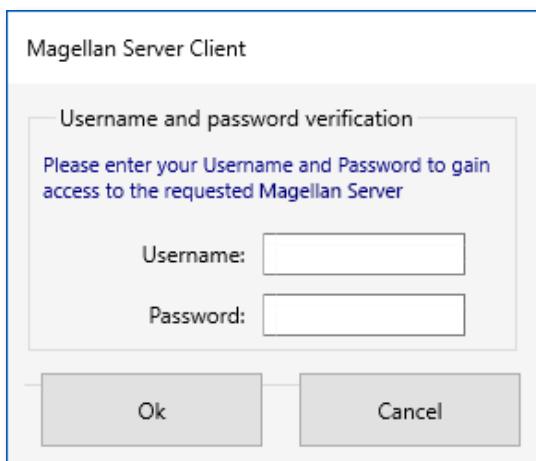


Figure 3-7: Innotech Magellan Access Control

3-5.5 Automatically Load Project

Tick the box at the left end of the selected row in the connections list to automatically load the server project next time Innotech Magellan is started.

3-5.6 Delete a Server Connection

Select an item in the Connections List and click the Delete button at the right of the row.



Figure 3-8: Automatic Connection (left) / Delete (right)

3-5.7 Return to the Connections List and Closing Innotech Magellan

- Return to the Connections List - Click an "Exit" button from within the running project to return to the connections list.
- Closing Innotech Magellan - if the project is running in fullscreen mode, press F11 and then click the close button in the top right of the Innotech Magellan window.

3-5.8 Crystal Reports

3-5.8.1 Requesting a Report

Innotech Magellan supports the generation of Crystal Reports.

When a report is requested, Magellan Server sends the report back to the client in PDF format. The client computer needs a PDF viewer to view the report.


ATOM
BEMS
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Database Location: BEMSISQLEXPRESS
 Generated: 05-11-2019 09:01:51
 Page 1 of 1

Event Report for: Unit Run Times

Start Date: 01-11-2019
 End Date: 05-11-2019

Event	Event ON Time	Event OFF Time	Duration
AC3 Supply Fan - Output	01-11-2019 00:00:10	01-11-2019 06:38:04	6hr 37min 54sec
AHU9 SAF Start - Output	01-11-2019 04:59:45	01-11-2019 17:34:16	12hr 34min 31sec
AHU4 SAF Start - Output	01-11-2019 05:40:53	01-11-2019 17:03:51	11hr 22min 58sec
AHUT SAF Start - Output	01-11-2019 05:59:50	01-11-2019 17:03:14	11hr 3min 24sec
AHU1 SAF Start - Output	01-11-2019 06:08:31	01-11-2019 17:05:16	10hr 56min 45sec
AHU3 SAF Start - Output	01-11-2019 06:45:53	01-11-2019 17:04:14	10hr 18min 21sec
AHU2 SAF Start - Output	01-11-2019 07:31:38	01-11-2019 17:05:16	9hr 33min 38sec
AHU6 SAF Start - Output	01-11-2019 09:06:04	01-11-2019 10:41:09	1hr 35min 5sec
AHU8 SAF Start - Output	01-11-2019 11:09:11	01-11-2019 13:06:21	1hr 57min 10sec
AC3 Supply Fan - Output	01-11-2019 17:04:51	04-11-2019 10:40:36	65hr 35min 45sec
AHU4 SAF Start - Output	04-11-2019 03:58:16	04-11-2019 04:00:17	0hr 2min 1sec
AHU9 SAF Start - Output	04-11-2019 04:59:00	04-11-2019 17:33:18	12hr 34min 18sec
AHU7 SAF Start - Output	04-11-2019 05:59:11	04-11-2019 17:03:15	11hr 4min 4sec
AHU3 SAF Start - Output	04-11-2019 06:00:05	04-11-2019 17:04:11	11hr 4min 6sec
AHU1 SAF Start - Output	04-11-2019 06:02:18	04-11-2019 17:05:13	11hr 2min 55sec
AHU2 SAF Start - Output	04-11-2019 07:30:29	04-11-2019 17:05:13	9hr 34min 44sec
AHU6 SAF Start - Output	04-11-2019 09:07:18	04-11-2019 09:24:19	0hr 17min 1sec
AHU4 SAF Start - Output	04-11-2019 10:40:16	04-11-2019 14:45:55	4hr 5min 39sec
AHU6 SAF Start - Output	04-11-2019 13:04:08	04-11-2019 16:31:13	3hr 27min 5sec
AC3 Supply Fan - Output	04-11-2019 14:46:56	05-11-2019 05:57:07	15hr 10min 11sec
AHU9 SAF Start - Output	05-11-2019 04:59:45	05-11-2019 09:01:51	4hr 2min 6sec
AHU4 SAF Start - Output	05-11-2019 05:57:12	05-11-2019 09:01:51	3hr 4min 39sec
AHUT SAF Start - Output	05-11-2019 06:00:52	05-11-2019 09:01:51	3hr 0min 59sec
AHU1 SAF Start - Output	05-11-2019 06:03:27	05-11-2019 09:01:51	2hr 58min 24sec
AHU3 SAF Start - Output	05-11-2019 06:45:03	05-11-2019 09:01:51	2hr 16min 48sec
AHU2 SAF Start - Output	05-11-2019 07:31:37	05-11-2019 09:01:51	1hr 30min 14sec
AHU6 SAF Start - Output	05-11-2019 08:30:40	05-11-2019 09:01:51	0hr 31min 11sec

Figure 3-9: Sample Crystal Report

Edition 1.1 dated 21/04/2020

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