System Guide
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AMS Machine Works v2.3

System Guide



EMERSON

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Where to get help

Emerson provides a variety of ways to reach your Product Support team to get the answers you need when you need them:

Phone	Toll free 1 800 833 8314 (U.S. and Canada) +1 512 832 3774 (Latin America) +63 2 8702 1111 (Asia Pacific, Europe, and Middle East)
Email	Guardian.GSC@Emerson.com
Web	http://www.emerson.com/en-us/contact-us

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1 Introduction

Software Description

AMS Machine Works is the next generation machinery condition monitoring and analysis software from Emerson. AMS Machine Works combines state-of-the-art technology, predictive maintenance techniques, and comprehensive vibration analysis tools to provide clear and accurate monitoring of the condition of the machinery in your facility.

AMS Machine Works helps to improve safety and increase profitability by providing a modern software solution capable of predicting faults before they happen and saving you from the costs associated with unplanned downtime.

What's in this installation

This version of AMS Machine Works comes with a single installer that will provide options to install all of the AMS Machine Works web modules, two databases (PostgreSQL and MongoDB), the Vibration Analyzer (VibApp), and every type of **Agent**.

Some of the components, VibApp and **Agent**, can have a distributed deployment which depends on the networking requirements.

To meet the requirements of complex network topologies you can deploy each type of **Agent** more than once on your network, but only one of each type of **Agent** is allowed on a particular server at a time.

The main measurement data storage is handled by MongoDB, which is deployed on the same server as the AMS Machine Works server by default. MongoDB can also be deployed on an external server or on a cloud server. Refer to this guide for more details.

About this manual

This guide is intended for system administrators to help plan, install, and set up the software. Emerson recommends that system administrators refer to this document when setting up the system.

Other relevant documents

- Online Help – provides instructions and reference information for using the software after installation.
  - Built into the software and accessed by clicking  in the left sidebar of the user interface.
  - Available in a PDF in the installer package in the `Documentation` folder.
  - The most current PDF version is available online through the Guardian web portal.
- Release Notes – Contains what is new and notes pertaining to the release.
- For cybersecurity information regarding AMS Machine Works and other AMS products, refer to the**AMS Product Security Documentation (AMS-SEC-PSG-001)**.
- Knowledge Base Articles (KBA) – Documents published to address known issues, frequently asked questions, history traces, system requirements, how-to information, and application-specific content.

1.1 Symbols

Note
This symbol marks passages that contain important information.

⚠ CAUTION

This symbol marks operations that can lead to malfunctions, faulty measurements, or data loss, but will not damage the device.

2 System Planning

AMS Machine Works is comprised of four main types of components:

1. AMS Machine Works Components — These are the central components of the system. See: AMS Machine Works Application Layer
2. **Agent** Components — Agent components provide a connection between measurement devices and the central system components. See: Agent Layer
3. Database Components — There are two database components used with AMS Machine Works. See: Database Components
4. Other Components — These components are installed as dependencies of the other elements of the AMS Machine Works architecture.

See: AMS Machine Works Architecture

These components can be installed on the same server, or different servers, depending on the deployment scenario, network requirements, and setup. See: Deployment Scenarios

Before installing any of the system components, plan your installation using the following resources provided in this chapter:

1. architecture information
2. recommended system deployment scenarios
3. system requirements
4. security guidelines

Follow the Planning Steps to plan your system properly.

2.1 Planning Steps

These steps guide you through the process of gathering the requirements of your installation, and gathering the information necessary for performing the installation.

Procedure

1. Determine the data sources that you want to bring into AMS Machine Works and check if they are compatible. See: Device Compatibility

   Depending on the type of data source, install the appropriate **Agent** to bring the right data source into AMS Machine Works. See: Agent Layer
2. Confirm the system will not exceed scalability limitations. See: System Scalability
3. Determine your network setup and gather connection information and authorizations.

   Note
   Your network setup affects the deployment of the AMS Machine Works components. See: Deployment Scenarios. The installations have prompts for information about the location of other services. Before you run the installation wizard on each server, you need to have all the information about:

a. Network locations where the services will be installed.

b. Log in names and the associated passwords.

c. Connection strings.

---

4. Determine any network architecture restrictions in your network.

   Your network architecture affects what firewall exceptions you need to define. See: AMS Machine Works Security

5. Determine your database requirements.

   The AMS Machine Works MongoDB database for measurements can be either **Internal** or **External**. See: Database Components

6. Check the System Requirements.
7. Check Network Port Availability requirements.
8. Plan to integrate security certificate installation with software installation. See: AMS Machine Works Security
9. Ensure any systems you plan to interface with AMS Machine Works are ready.
   a) Before interfacing Emerson Wireless Gateway devices with AMS Machine Works:
      1. Ensure that all the **devices** which connect through the Emerson Wireless Gateway are configured for data collection by using either:
         a. AMS Device Manager with AMS Wireless SNAP-ON — This software reduces commissioning and maintenance expenses while improving plant availability and reliability.
         b. AMS Wireless Configurator — This is provided with Emerson Wireless Gateway, refer to the Emerson Wireless Gateway documentation for details.
         c. AMS Trex Device Communicator

   b) Before interfacing AMS Asset Monitor devices with AMS Machine Works, access the AMS Asset Monitor Web Interface and ensure that the device has been fully configured.
      1. An AMS Machine Works interface must be set and enabled.
      2. An AMS Machine Works user must be created.

   c) Before interfacing AMS 6500 ATG systems with AMS Machine Works, ensure that the devices are configured for data collection with AMS Machine Studio.
      1. An AMS 6500 ATG Prediction Extension License must be installed for each A6500-CP or A6500-CC card.
      2. Modbus port must be set and enabled.
      3. Collection tasks must be set on the AMS 6500 ATG system.

   d) Before interfacing with AMS 2140 Machinery Health Analyzer units, ensure that the devices are configured to work with AMS Machine Works.

1. Your AMS 2140 Machinery Health Analyzer should have version 1.3.13.0 firmware, or later.

10. Determine if you need to communicate between AMS Machine Works and an external OPC UA server. See: OPC UA Server

2.2 AMS Machine Works Architecture

AMS Machine Works has a modular architecture which supports communication and deployment in complex network topologies.

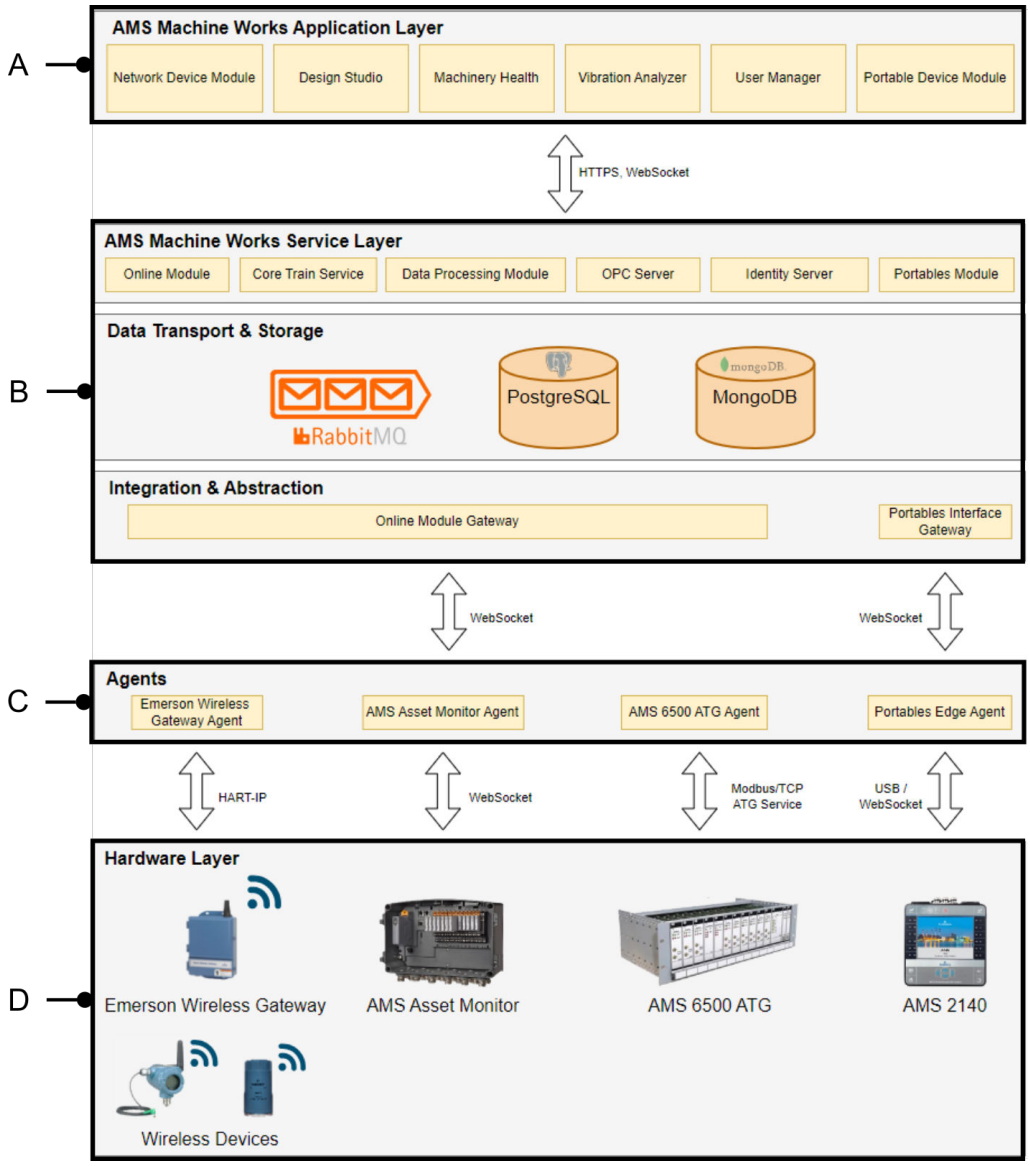
The **Internal** location is the computer or virtual machine where the AMS Machine Works Core is installed. Every other location is an **External** location. See: Deployment Scenarios

Note
One part of the **AMS Machine Works Core**, the **MongoDB** measurement database, can be installed on an **External** computer or virtual machine.

AMS Machine Works Architecture

AMS Machine Works has four main architectural layers:

Figure 2-1: AMS Machine Works Architecture Diagram



A. ***AMS Machine Works Application Layer***— *This layer contains web applications for data presentation, configuration, maintenance, security, and data integration. See: AMS Machine Works Application Layer*

B. ***AMS Machine Works Core***— *This layer processes the vibration data for health, alerts, aggregation, and calculating derived measurements. Manages machine trains, monitors alerts, and assesses the health of assets. See: AMS Machine Works Core*

   A. ***AMS Machine Works Service Layer***

      A. *Windows Services*
      B. *Third Party Components*

   B. ***Data Transport and Storage Layer***

      A. *Database Components*
      B. ***RabbitMQ***

C. ***Integration and Abstraction Layer***

C. ***Agent Layer***— *This layer connects the* ***AMS Machine Works Service Layer*** *to the* ***Hardware Layer****. Native measurements, device health, and status information data are sent to the Core Module. See: Agent Layer*

D. ***Hardware Layer***— *This layer contains all the physical devices which are installed in the site you are monitoring. See: Hardware Layer*

System Dependencies

The general version numbers of the system dependencies are:

1. MongoDB 8.0.21
2. PostgreSQL 17.9
3. RabbitMQ 4.2.5
4. Erlang 27.3.4.11
5. .NET Runtime 10.0.7

⚠ CAUTION

Emerson recommends that system administrators update these dependencies **within the general version number**.

For example, updates to MongoDB with version numbers in the range `MongoDB 8.0.xxx` would be recommended when they are above the **minimum version numbers**.

For a list of the **minimum version numbers** for these dependencies see: Third Party Components

2.2.1 AMS Machine Works Application Layer

The **AMS Machine Works Application Layer** are the browser based user interfaces to the functionality built into the **AMS Machine Works Core**. The **Application Layer** components communicate with the **Core** by using the `https` protocol.

Table 2-1: AMS Machine Works Application Layer Components

Core Component	Description
Network Device Module	The **Network Device Module** provides functionality for connecting to **Measurement Devices** through different types of **Agents**.
Design Studio	The **Design Studio** provides the functionality to define every aspect of a **Machine Train**.
Machinery Health	The **Machinery Health** provides functionality for viewing every **Machine Train**, and for highlighting each **Machine Train** that needs closer observation.
Portable Device Module	The **Portable Device Module** component provides the functionality for connecting to and managing **AMS 2140 Machinery Health Analyzer** portable units.

Table 2-1: AMS Machine Works Application Layer Components *(continued)*

Core Component	Description
User Manager	The **User Manager** provides functionality for adding, removing, and managing every **User** in the system in each type of **Role**.
Vibration Analyzer, also known as **VibApp**.	**VibApp** is a thick-client web application you can use to perform detailed analysis on vibration data stored in the measurement database. It can be installed on the AMS Machine Works Server or separately installed on any client computer that will be used for detailed analysis of vibration data.
Online Help	The **Online Help** component provides information about the operation of AMS Machine Works.
Your Account	The **Your Account** module allows you to view basic information about your account, choose a profile picture, and to reset your password

2.2.2 AMS Machine Works Core

The computer or virtual machine which has the **AMS Machine Works Core** components is called the **Internal** location. Every other location is an **External** location.

The **AMS Machine Works Core** contains three main levels:

1. **AMS Machine Works Service Layer** — This layer has specialized services and modules for interacting with the AMS Machine Works Application Layer.
2. **Data Transport and Storage Layer**
   a. **Data Transport** — AMS Machine Works uses **RabbitMQ** to provide a robust asynchronous communication between services.
   b. **Data Storage** — AMS Machine Works uses two databases:
      1. **PostgreSQL** — for storing configuration data.
      2. **MongoDB** — for storing measurement data.

      Note
      The **MongoDB** can be located on an **External** computer or virtual machine. See: Database Components
3. **Integration and Abstraction Layer** — This layer provides a stable interface between the **Agents** and the various data transport and storage technologies.

AMS Machine Works IIS Application Pools and Applications

AMS Machine Works uses the following Internet Information Services (IIS) application pools and one site, **EmersonCSI**. See: AMS Machine Works Architecture

Note
When components are installed on separate servers, the EmersonCSI base website references the DefaultAppPool application pool.

Table 2-2: AMS Machine Works IIS Application Pools and Applications

Application Pool	Applications
AMS_MW_DesignStudio	/CTBAB /design-studio
AMS_MW_EmersonCSI	Root Application
AMS_MW_HistorianNext	/HistorianNext
AMS_MW_IdSrv	/CIDS
AMS_MW_MachineryHealth	/CTVAB /machinery-health
AMS_MW_NetworkDevice	/network-device /OAB
AMS_MW_OMG	/OMG
AMS_MW_PAG	/PAG
AMS_MW_PIG	/PIG
AMS_MW_PortablesApp	/PortablesApp
AMS_MW_Status	/CSB /Status
AMS_MW_UserManager	/CUMAB /user-manager
AMS_MW_VibApp	/VibApp

Windows Services

The following **Windows Services** are part of the AMS Machine Works architecture.

The four Agent components can be installed on external systems as **External Agent Servers**, or internally on the computer used as the AMS Machine Works server.

Every component listed as an **AMS Machine Works** component is installed on the computer used as the AMS Machine Works server.

Table 2-3: AMS Machine Works Components and Associated Windows Services

Component Types	Windows Service Name
AMS Machine Works Asset Monitor Agent	Emerson MW Asset Monitor Agent
AMS Machine Works ATG Agent	Emerson MW ATG Agent
AMS Machine Works Wireless Agent	Emerson MW Wireless Agent
AMS Machine Works Portables Edge Agent	Emerson MW Portables Edge Agent
AMS Machine Works	Emerson MW Core Data Shovel Service

Table 2-3: AMS Machine Works Components and Associated Windows Services *(continued)*

Component Types	Windows Service Name
	Emerson MW Core Document Management System
	Emerson MW Core License Manager
	Emerson MW Core Machine Journal Service
	Emerson MW Core Mail Service
	Emerson MW Core Report Service
	Emerson MW Core Train Service
	Emerson MW Core Data Integration Module Guardian Service
	Emerson MW Data Integration Module OPC Server
	Emerson MW Online Device Service
	Emerson MW Portables Agent Configuration Service
	Emerson MW Portables Authorization Service
	Emerson MW Portables Device Configuration Service
	Emerson MW Portables Library Service
	Emerson MW Portables Module Integration Service
	Emerson MW Portables Route Configuration Service
	Emerson MW Route Factory
	Emerson MW Portables Transaction Orchestrator

Database Components

With this version of AMS Machine Works, two types of databases are deployed:

1. A PostgreSQL 17.9 database for storing configuration information about the AMS Machine Works application.
2. A MongoDB 8.0.21 2008R2Plus SSL (64 bit) database for storing measurement data. There are three MongoDB database deployment options:
    a. Single Server Deployment — The MongoDB database is on the same machine as the AMS Machine Works software. The AMS Machine Works installer handles the MongoDB database configuration. See: MongoDB Single Server Deployment — Internal
    b. External Server Deployment — The MongoDB database is on an external server within the same network as the AMS Machine Works server machine. See: MongoDB External Server Deployment
    c. Cloud Server Deployment — The MongoDB database, in this case MongoDB Atlas, is on an external server accessed through the internet. See: MongoDB Atlas Cloud Server Deployment

You should choose an External MongoDB Server Installation when some or all of the following conditions are met:

- Your previous installation of AMS Machine Works required either an External MongoDB Server or an External SQL Server.
- Your network administration policies require physical or logical separation of servers.
- Your data retention policies require data storage greater than can easily be supported on the computer acting as your AMS Machine Works server.
- When the 'XL' size of a single server no longer meets your needs. Processor and Memory Specifications

Database Component Names

This section describes the database and data file locations in the installation.

The software installation process deploys a database into a PostgreSQL Server instance named `PostgreSQL 17`, which is located at:

```
C: Program Files\PostgreSQL\17\
```

This database contains all the AMS Machine Works configuration data in a database named **mwcore**.

The software installation process deploys four MongoDB databases. The location can be specified during installation. The default folder is:

```
C:\EMERSONMW\Data
```

Table 2-4: Databases

Database Module	Database Name
PostgreSQL 17.9	mwcore mwdocuments mwidentity mwjournal mwmail mwonline mwopc mwreport
MongoDB 8.0.21 2008R2Plus SSL (64 bit) **Note** Depending on your configuration, your MongoDB database can be on an external server. See: External MongoDB Server Installation	EmersonMWCore
	EmersonMWcoreData
	EmersonMWLicenses
	EmersonMWOnline
	EmersonMWPortables

For more information on different recovery models see: Backup and Restore Procedures

Third Party Components

This product does not include automated update mechanisms for third-party components. Customers are advised to establish a regular review and patching process to

ensure continued security and compliance, as further described in the AMS Product Security Documentation.

⚠ CAUTION

Updating and patching third-party components with version numbers which follow the (Major.Minor.Patch) format should only be done within the major version, and must not change the major version.

The following compatibility list is for informational purposes only and does not indicate active support of such components.

An AMS Machine Works installation includes the following third party components which are dependencies of the system:

1. Microsoft .NET framework 10.0.7
    a. Microsoft .NET 10.0.7 - Windows Server Hosting
    b. Microsoft .NET Runtime - 10.0.7 (x64)
    c. Microsoft ASP.NET Core 10.0.7 - Shared Framework (x64)
    d. Microsoft ASP.NET Core 10.0.7 - Shared Framework (x86)
    e. Microsoft Windows Desktop Runtime - 10.0.7 (x64) - (When the AMS 2140 Agent is installed.)
2. Microsoft Visual C++ Redistributable 14.50.357191.0
    a. Microsoft Visual C++ 2017-2026 Redistributable (x64)
    b. Microsoft Visual C++ 2015-2022 Redistributable (x86)
3. RabbitMQ Server 4.2.5
4. Erlang OTP 27.3.4.11
5. Sentinel RMS License Manager 10.2.0
6. MongoDB 8.0.21 2008R2Plus SSL (64 bit) See: Database Components
7. PostgreSQL 17.9 See: Database Components

2.2.3 Agent Layer

The **Agent** components provide connectivity between different types of measurement devices in the **Hardware Layer** and the **AMS Machine Works Core**.

Agent components are distributable, and can be installed either on an **Internal** or an **External** server. Multiple instances of each **Agent** type can be present on your network, but only one instance of an **Agent** can exist on each physical or virtual machine. See: Deployment Scenarios

Note
To increase the system's performance, Emerson recommends that you only install the components that you need.

Table 2-5: AMS Machine Works Agent Server Components

Component [1]	Description
Emerson Wireless Gateway Agent	The Emerson Wireless Gateway Agent is a Windows service that connects to Emerson Wireless Gateway units via the **HART-IP** protocol. These units connect to wireless devices such as: • AMS 9420 Wireless Vibration Transmitter • AMS Wireless Vibration Monitor
AMS Asset Monitor Agent	The AMS Asset Monitor Agent is a Windows service that brings data into AMS Machine Works from AMS Asset Monitor units via the **Web Socket** protocol.
AMS 6500 ATG Agent	The AMS 6500 ATG Agent is a Windows service that brings data into AMS Machine Works from sensors connected to AMS 6500 ATG systems. Communications between AMS 6500 ATG units and AMS Machine Works uses two ports: 1. **Modbus TCP/IP Port** 2. **ATG Service Port**
AMS 2140 Agent	The AMS 2140 Agent is a Windows service that brings data into AMS Machine Works from portable AMS 2140 Machinery Health Analyzer units. Communications between AMS 2140 systems and AMS Machine Works can use either: 1. **CSI USB Driver** 2. **Web Socket**

1 *If an Agent is installed on an external server, the AMS Machine Works Root CA certificate must be exported and installed on the external server.*

2.2.4 Hardware Layer

AMS Machine Works supports the following hardware connections via the appropriate type of **Agent**:

- **Emerson Wireless Gateway Agent** — This **Agent** connects to **Emerson Wireless Gateway** units.
  - **Emerson Wireless Gateway** — The gateway provides connectivity to two types of wireless measurement devices:
    - **AMS 9420 Wireless Vibration Transmitters** — The AMS 9420 Wireless Vibration Transmitter is an installation-ready solution that monitors vibration and temperature in hard-to-reach locations. It also provides a variety of transmitter and sensor configurations.
    - **AMS Wireless Vibration Monitors** — The AMS Wireless Vibration Monitor is an installation-ready solution that monitors vibration and temperature in rotating equipment in hard-to-reach locations.
- **AMS Asset Monitor Agent** — This **Agent** connects to:
  - **AMS Asset Monitor** — Each **AMS Asset Monitor** system contains a custom configuration of **CHARMs**.

- **AMS 6500 ATG Agent** — This **Agent** connects to:
  - **AMS 6500 ATG** — Each **AMS 6500 ATG** system contains a custom configuration of cards.
- **AMS 2140 Agent** — This **Agent** connects to:
  - **AMS 2140** — Each portable **AMS 2140** unit can connect to a variety of sensors located in your installation.

2.3 Deployment Scenarios

AMS Machine Works is comprised of three main types of components, AMS Machine Works web components, **Agent** components, and database components. The components can be installed on the same server, or different servers, depending on the deployment scenario, network requirements, and setup.

If your deployment scenario uses proxy servers, the implementation of all proxy servers is the responsibility of your system administrator.

For more information about proxy servers and AMS Machine Works Security see: AMS Machine Works Security

To configure your **Agent Servers** to work with your network's proxy servers see: Connect to a Server

Note
For further security information, refer to the AMS Product Security Documentation (AMS-SEC-PSG-001) .

AMS Machine Works can be deployed with DeltaV, Ovation, and AMS Optics in the following combinations:

1. All software in the same Domain.
2. All software in the same Workgroup.
3. Heterogeneous mixes with some pieces of software in different domains and/or workgroups.

Note
All piece of software must be deployed on different machines.

The most common deployment scenarios are shown in network diagrams. See: Typical Deployment Scenarios

Some scenarios are not possible or unsupported. See: Unsupported Deployment Scenarios

Note
If your organization requires a different deployment scenario that is not shown, contact your Emerson representative.

2.3.1 Typical Deployment Scenarios

AMS Machine Works is typically installed in complex network environments which are separated by network firewalls, and access between levels is granted via ports, proxy servers, or a combination of both.

The different components of AMS Machine Works can be spread over different network levels according to your needs.

The diagrams presented below represent some of the most commonly used deployment scenarios, but many other deployment scenarios are theoretically possible.

Figure 2-2: Single Server with Client Access from Plant LAN

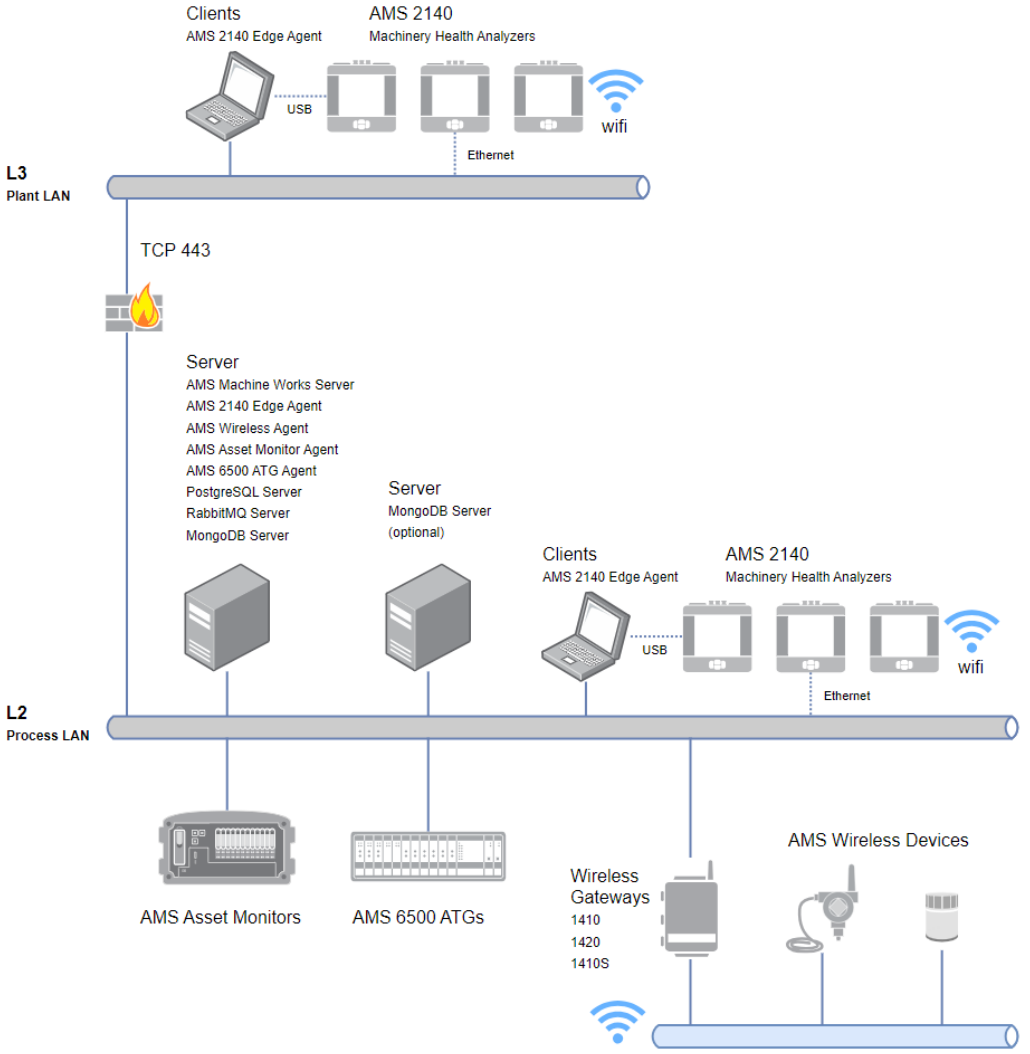


Figure 2-3: Single Server with Client Access from Business WAN

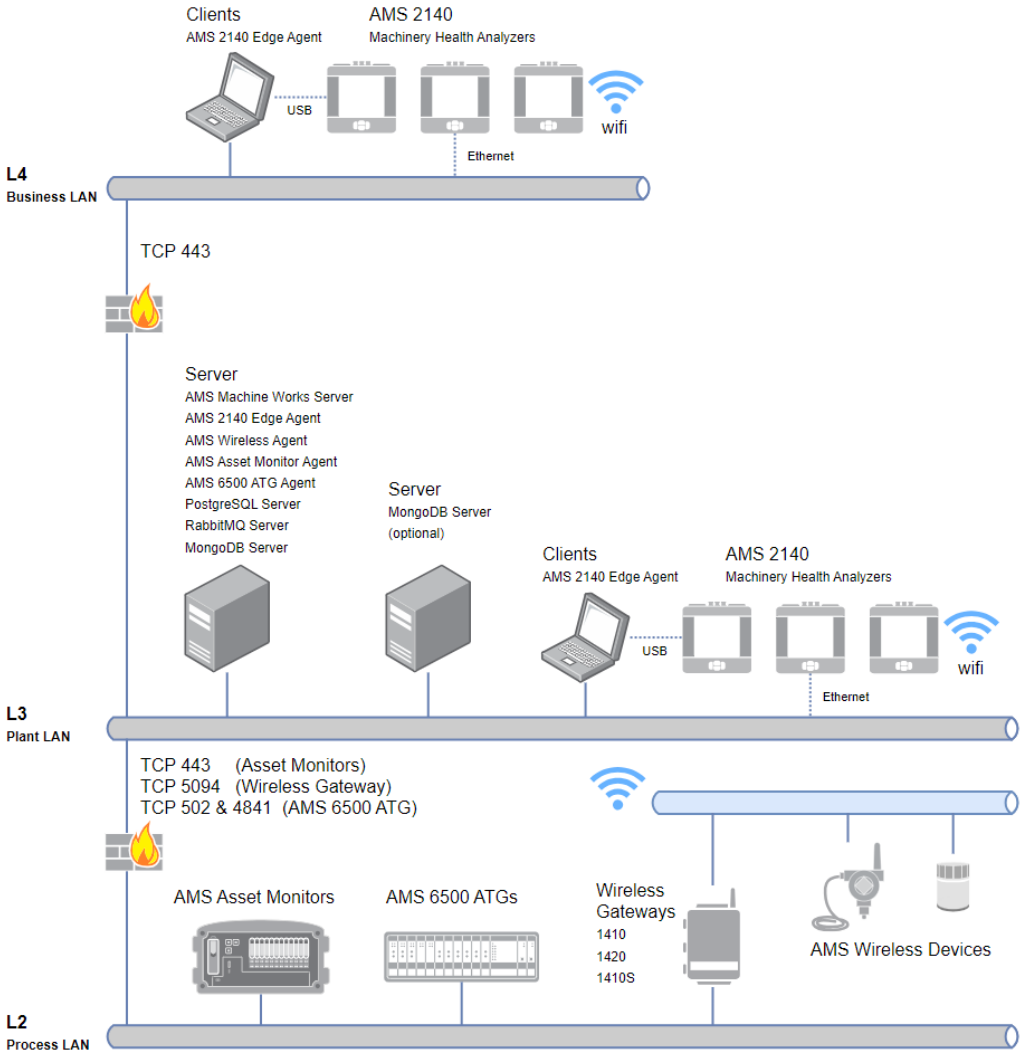


Figure 2-4: Standard Architecture

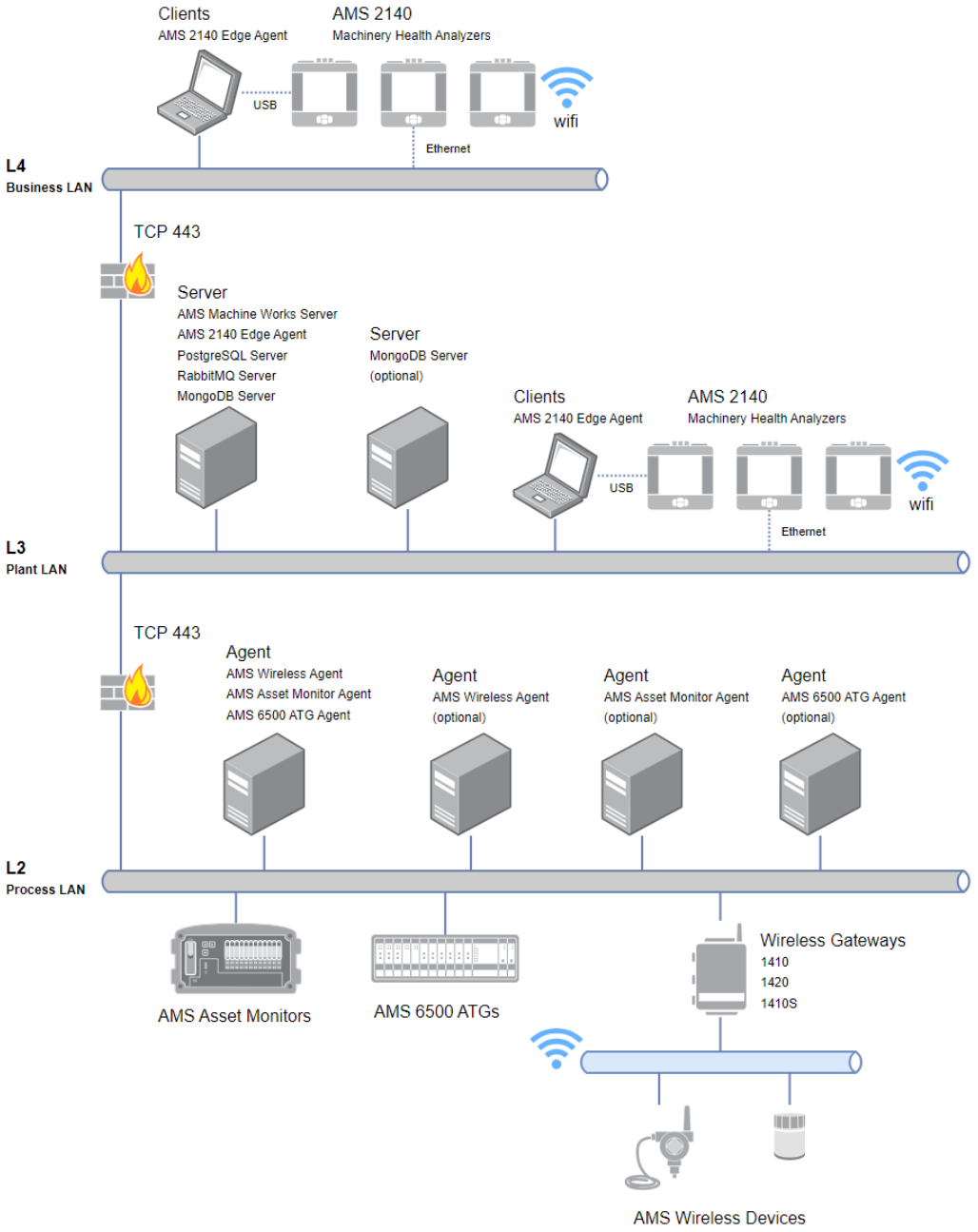
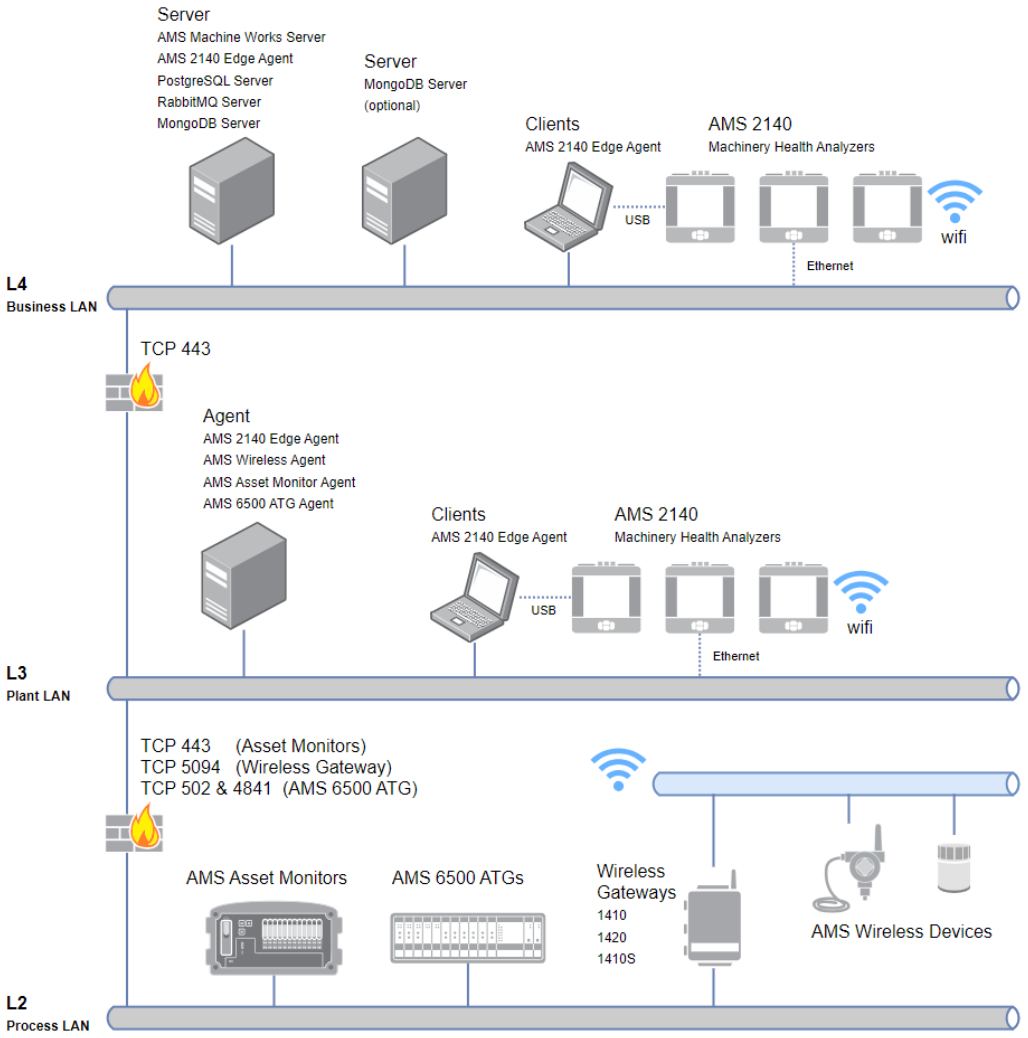


Figure 2-5: Enterprise Deployment



2.3.2 MongoDB Database Deployments

MongoDB Single Server Deployment — Internal

An internal MongoDB Database installation is the default configuration. To deploy the database on the same server as the AMS Machine Works software you should proceed with the **Internal** option when installing AMS Machine Works.

A MongoDB 8.0.21 2008R2Plus SSL (64 bit) database will be automatically installed and configured.

Before you begin the installation process you should verify that a MongoDB database is not currently installed on that machine. See: AMS Machine Works Server Installation

Note
Installation will fail if a version of the MongoDB database already exists on the machine.

When the MongoDB is created the following actions are completed by the installer:

- A MongoDB 8.0.21 2008R2Plus SSL (64 bit) database is created and configured by default.
- The MongoDB database is configured to use port 27018.
- A MongoDB database administrator user is created.
- A MongoDB database user is created for AMS Machine Works services to use for communicating with the MongoDB database server.

MongoDB External Server Deployment

An external Mongo DB database server deployment requires that a MongoDB database server has previously been fully configured, and network access is available. You must choose the **External** option in the installer. External installation requires specific server configuration and database management to be performed by your database administrator.

When you choose to use an external MongoDB deployment these configuration and management steps include:

- Creating a MongoDB database user on the external server machine with the appropriate privileges for AMS Machine Works services to use for communicating with the MongoDB database server. See: External MongoDB Server Installation
- Ensuring network connectivity between the AMS Machine Works server and MongoDB database server.
- Providing a certificate file for the MongoDB database.

Note
Depending on the database configuration, the connection string entered during the software installation process will have different parameters.

MongoDB Atlas Cloud Server Deployment

A MongoDB Atlas cloud server deployment requires that a MongoDB Atlas cloud database server has previously been fully configured, and network access is available. You should choose the **External** option in the installer. External installation requires specific server configuration and database management to be performed by your database administrator.

When you choose to use an external MongoDB Atlas cloud deployment these configuration and management steps include:

- Creating a MongoDB database user on the external cloud server machine with the appropriate privileges for AMS Machine Works services to use for communicating with the MongoDB Atlas cloud database server. See: External MongoDB Server Installation
- Ensuring network connectivity between the AMS Machine Works server and the MongoDB Atlas cloud server.
- Adding the IP address of the AMS Machine Works server to the Access List of the MongoDB Atlas cloud server.

Note
Depending on the database configuration, the connection string entered during the software installation process will have different parameters.

2.3.3 Unsupported Deployment Scenarios

The following installation scenarios are not supported with AMS Machine Works v2.3:

- **AMS Machine Works v2.3 cannot be installed by a Non-administrator.** - The installation always requires administrator privileges.
- **AMS Machine Works v2.3 cannot be installed partially by one user, and the rest as a different user.** - The installation has to be completed by one user with administrator privileges.
- **AMS Machine Works v2.3 cannot be installed by procedures other than those found in the AMS Machine Works v2.3 System Guide.** - The Installation procedures detailed in this System Guide are the only guaranteed method of installing AMS Machine Works v2.3.
- **AMS Machine Works v2.3 cannot be installed on a FIPS enabled machine, (FIPS Compliance).** - FIPS is not supported in AMS Machine Works v2.3.
- **Upgrading a demo version of the software to a full version is not supported.** - A demo software version cannot be upgraded to a full AMS Machine Works v2.3 version. A new installation is required.
- **AMS Machine Works v2.3 cannot be installed with any version of AMS Machinery Manager.**
- **AMS Machine Works v2.3 cannot be installed on the same server as AMS Optics.** - AMS Optics and AMS Machine Works have to be installed on separate servers.

2.4 System Requirements

AMS Machine Works has been tested to ensure acceptable performance levels for Small, Medium, Large, and Extra-Large deployments within the scope of software and hardware combinations outlined in this section.

MongoDB Certified Support

The MongoDB company has an internal certification process which is used to create their **Platform Support Matrix**.

MongoDB 8.0.x is **only officially certified to work with Windows Server 2022 Standard or Datacenter**.

Windows Server 2025 Standard or Datacenter is in the certification process at the time of writing.

Windows Server 2019 Standard or Datacenter is not officially certified.

Note
Emerson has performed testing on AMS Machine Works with MongoDB 8.0.x and Windows Server Standard and Datacenter versions 2019, 2022, and 2025.

At the time of writing there are no known issues **with the performance of AMS Machine Works** directly caused by the use of **uncertified combinations of MongoDB 8.0.x and Windows Server Standard or Datacenter versions 2019 and 2025**.

AMS Machine Works Server

Note
Use system specifications marked "recommended" for deployments including AMS Asset Monitor, Emerson Wireless Gateway, and other devices.

Operating system	Windows Server 2025 Standard or Datacenter Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard or Datacenter
CPU architecture	64-bit
Internet Information Services (IIS)	v10 (supplied with OS)
Browsers	Google Chrome (latest version) Microsoft Edge (latest version)
Processor[1]	Large and Extra-Large Systems — 3.2 GHz, 8-core processor, Intel Xeon-scalable (Gold) or faster (recommended) Small and Medium Systems — 2.4 GHz, 6-core processor, Intel Xeon-scalable (Gold) or faster (minimum)
RAM[1]	Large — 64 GB Medium Systems — 32 to 64 GB Small Systems — 32 GB
Hard drive[2]	SSD hard drive (recommended) SAS hard drive (10K RPM) (minimum)
Available disk space	1 TB (recommended) 500 GB (minimum) 100 GB (for wireless-only setup)
Screen resolution	4K UHD (3840 x 2160 pixels) SXGA (1280 x 1024 pixels) (minimum)
Network	2 x 1 GB NIC (use 2 NICs to isolate Level 3 traffic from Level 2 traffic) (recommended) 1 x 1 GB NIC (supported)

1 *Refer to Processor and Memory Specifications for more details.*
2 *Refer to Storage Type Requirements by System Profile for more details.*

AMS Machine Works Agent Server

Operating system	Windows Server 2025 Standard or Datacenter Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard or Datacenter Portable Device Agent only: 1. Windows 10 2. Windows 11
CPU architecture	64-bit
Internet Information Services (IIS)	v10 (supplied with OS)
Processor[1]	Multiple Agent Systems — 2.4 GHz, 6-core processor Intel Xeon-scalable or faster Single Agent Systems — 2.4 GHz, 4-core processor Intel Xeon-scalable or faster
RAM[1]	Multiple Agent Systems — 32 GB Single Agent Systems — 16 GB
Hard drive[2]	SSD hard drive (recommended) SAS hard drive (10K RPM) (minimum)
Available disk space	10 GB (Emerson Wireless Gateway Agent) 10 GB (AMS Asset Monitor Agent) (AMS 6500 ATG Agent) (Portable Device Agent)
Network	2 x 1 GB NIC (use 2 NICs to isolate Level 3 traffic from Level 2 traffic) (recommended) 1 x 1 GB NIC (supported)

1 *Refer to Processor and Memory Specifications for more details.*
2 *Refer to Storage Type Requirements by System Profile for more details.*

AMS Machine Works Vibration Analyzer Client

Operating system	Windows Server 2025 Standard or Datacenter Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard or Datacenter Windows 11 Windows 10 Pro Windows 10 Enterprise
CPU architecture	64-bit
Internet Information Services (IIS)	v10 (supplied with OS)
Processor	2.2 GHz, 4-core processor Intel Xeon, Intel Core i5 6th Gen (i5 6400T) or better

RAM	16 GB (recommended) 8 GB (minimum)
Hard drive	SAS hard drive (10K RPM)
Available disk space	100 GB
Screen resolution	4K UHD (3840 x 2160 pixels) SXGA (1280 x 1024 pixels) (minimum)

External MongoDB Server

1

Operating system	Windows Server 2025 Standard or Datacenter Windows Server 2022 Standard or Datacenter Windows Server 2019 Standard or Datacenter
CPU architecture	64-bit
Internet Information Services (IIS)	v10 (supplied with OS)
MongoDB Server[1]	(Recommended) MongoDB 8.0.21 2008R2Plus SSL (64 bit)
Processor	2.4 GHz, 4-core processor, Intel Xeon-scalable or faster
RAM	Large and Extra-Large Systems — 64 GB Small and Medium Systems — 32 GB
Hard drive	SSD hard drive, separated for OS and Data
Available disk space	Refer to Storage Capacity Requirements by System Profile
Network	2 x 1 GB NIC

1 See: External MongoDB Server Installation

Additional specifications

Ethernet	One or more Ethernet Network Interface Card (NIC) 2 x 1 GB NIC (use 2 NICs to isolate Level 3 traffic from Level 2 traffic) (recommended) 1 x 1 GB NIC (supported)
Internet connectivity	A high-speed internet connection is recommended to download installations, patches, and register software. (Alternatively, you can download the software, patches, and registration file to the server using a storage device.)
Supported virtualization	• VMware 6 to VMware 8 • Hyper-V 2019, Hyper-V 2022

1 External MongoDB Server requirements will scale upwards from these values as the processing requirements and storage capacity grows.

Supported antivirus software	• Symantec™ Endpoint Protection • McAfee™ Endpoint • Norton™ Security with Backup • CrowdStrike

⚠ CAUTION

Computers with system components installed must have:

- their **system clocks synchronized**.
- their **date/time in the same format**.

Communication can be blocked if there are system clock discrepancies. (Many third-party tools are available to synchronize system clocks.) System clocks do not need to be synchronized for PCs with browser-only access.

Anti-virus exclusion list

To optimize performance, exclude the following applications, files, and folders in your anti-virus software.

Note
Files with these extensions should be excluded in the locations listed in the table:

bak, bcp, c, cft, chk, cmtx, csv, dll, dri, edb, idx, jrs, ldf, log, mdf, ndf, obj, out, pdb, pol, prc, pre, sch, sql, sqlaudit, sdb, trc, trg, trn, xel, xem, xml

Component	Item	Path (default locations)
AMS Machine Works Web Services and Service Layer (embedded)	Applications (*.exe)	`C:\Windows\System32\inetsrv\w3wp.exe` `C:\Windows\SysWOW64\inetsrv\w3wp.exe`

	Program Files	`C:\Program Files\Emerson\AMS Machine Works\*`
		`C:\EMERSONMW\*`
		`C:\Program Files (x86)\Emerson\*`
		`C:\inetpub\wwwroot\EmersonCSI\*`

	Log files	`C:\inetpub\wwwroot\EmersonCSI\Logs\*` `C:\inetpub\wwwroot\EmersonCSI\WebLogs\*`
	Cachecow	`C:\Windows\Temp\ARES\Cache\*`
MongoDB	Program Files	`C:\Program Files\MongoDB\Server\8.0\bin\*`
AMS Asset Monitor Agent	Program Files	`C:\Program Files\Emerson\AMS Machine Works\AMA\*`
Emerson Wireless Agent	Program Files	`C:\Program Files\Emerson\AMS Machine Works\EWA\*`

Component	Item	Path (default locations)
AMS 6500 ATG Agent	Program Files	C:\Program Files\Emerson\AMS Machine Works\ATGA*
AMS 2140 Machinery Health Analyzer Agent	Program Files	C:\Program Files\Emerson\AMS Machine Works\PEA*
PostgreSQL	Applications (*.exe)	C:\Program Files\PostgreSQL\17\bin\pg_ctl.exe
	Program Files	C:\Program Files\PostgreSQL\17*
OPC UA	Applications (*.exe)	
	Program Files	C:\ProgramData\Emerson\AMSMachineWorks\Data\DOPC\pki\server\trusted\certs* C:\ProgramData\Emerson\AMSMachineWorks\Data\DOPC\pki\user\trusted\certs*
RabbitMQ	Applications	C:\Program Files\Erlang OTP\erts-15.2.7.8\bin\erlsrv.exe
	Program Files	C:\Program Files\RabbitMQ Server\rabbitmq_server-4.2.5*
Windows	Windows exclusion for Windows Update	C:\Windows\SoftwareDistribution\DataStore* C:\Windows\System32\GroupPolicy\User* C:\Windows\System32\GroupPolicy\Machine*

2.4.1 System Scalability

Table 2-6: AMS Machine Works System Scalability

Components	AMS Machine Works
Server Specifications	
Assets	2000 machine trains with network devices
Concurrent AMS Machine Works users	15
Concurrent VibApp users	10
Devices[1]	
AMS 9420 Wireless Vibration Transmitter	600 devices maximum per system connected across 50 Emerson Wireless Gateways 600 devices maximum per AMS Machine Works Wireless Agent
AMS Asset Monitor	400 AMS Asset Monitors maximum per system and per AMS Asset Monitor Agent
AMS Wireless Vibration Monitor	5000 devices maximum per system connected across 120 Emerson Wireless Gateways One AMS Machine Works Wireless Agent can be installed per server.
AMS 6500 ATG	100 Single Rack Systems[2]
AMS 2140 Machinery Health Analyzer	Maximum number of concurrent users: 15 Maximum number of simultaneous data transfers: 2
Devices per Emerson Wireless Gateway	
AMS 9420 Wireless Vibration Transmitter	• 1420 — max. 50 devices • 1410B — max. 50 devices • 1410S — max. 50 devices • Theoretical maximum in ideal conditions: 100 devices per 1410S (Dual Antenna)[3] With 50 devices connected through Antenna One, plus 50 devices connected through Antenna Two.
AMS Wireless Vibration Monitor	• 1420 — max. 50 devices • 1410B — max. 50 devices • 1410S — max. 200 devices • Theoretical maximum in ideal conditions: 400 devices per 1410S (Dual Antenna)[3] With 200 devices connected through Antenna One, plus 200 devices connected through Antenna Two.
Devices per 3rd Party Gateway	
Centero	20 AMS Wireless Vibration Monitors[4]
Honeywell	20 AMS Wireless Vibration Monitors per access point (5 access points per gateway)[4]
OPC UA	
Number of Assets	2000 Assets
Number of Export Tags[5]	20000 OPC UA Tags

Table 2-6: AMS Machine Works System Scalability *(continued)*

Components	AMS Machine Works
Number of Import Tags[6]	1000 OPC UA Tags
Number of Clients	2 Clients

1 *Refer to Update Rates.*
2 *1. 11 Universal Measurement Cards*
2. 22 Channels
3 *Based on testing with 400 devices connected to a Dual Antenna 1410S Emerson Wireless Gateway in the following configuration:*
1. Antenna One: AMS Wireless Vibration Monitor — 155 units, AMS 9420 — 45 units
2. Antenna Two: AMS Wireless Vibration Monitor — 189 units, AMS 9420 — 11 units
Collection Schedules as tested:
1. AMS Wireless Vibration Monitor: Scalars 144 times/day, Spectra 4 times/day, Thumbnails 4 times/day, Waveforms 1/day.
2. AMS 9420: Scalars 3 times/day, Energy Bands 3 times/day, Burst Variables 144 times/day, Waveforms & Spectra 1 time/day.
4 *Emerson recommends connecting AMS 9420 Wireless Vibration Transmitters to AMS Machine Works only through Emerson Wireless Gateways. The use of Centero or Honelwell gateway devices for this purpose is not supported at this time.*
5 *Export tags are automatically defined OPC UA tags which allow data to be read from AMS Machine Works.*
6 *Import tags are manually defined OPC UA tags which allow data to be written into AMS Machine Works.*

Processor and Memory Specifications

Depending on your system profile and scale, your processor and memory needs will change for each machine. Refer to the tables for resources, after selecting the number of servers described in Number of Agent Servers per System Profile. If the system will include an AMS Asset Monitor Agent Server or other device types, then the specifications should reflect the higher value of Table 2-7, Table 2-8, and Table 2-9

Table 2-7: Processor specifications for system profiles with an Emerson Wireless Gateway Agent Server

System Profile	AMS Machine Works Server			Emerson Wireless Gateway Agent Server		
	Processor	Cores	RAM (minimum)	Processors	Cores	RAM (minimum)
Small (S)	2.4 GHz	6	32 GB	2.4 GHz	4	16 GB
Medium (M)	2.4 GHz	6	32 GB	2.4 GHz	4	16 GB
Large (L)	3.2 GHz	8	32 GB 64 GB[1]	2.4 GHz	4 [2] 6[1]	16 GB

Table 2-7: Processor specifications for system profiles with an Emerson Wireless Gateway Agent Server *(continued)*

System Profile	AMS Machine Works Server			Emerson Wireless Gateway Agent Server		
	Processor	Cores	RAM (minimum)	Processors	Cores	RAM (minimum)
Extra Large (XL)	3.2 GHz	8	64 GB	2.4 GHz	4[2] 6[1]	16 GB

1 *Recommended*
2 *Minimum*

Table 2-8: Processor specifications for system profiles with an AMS Asset Monitor Agent Server

System Profile	AMS Machine Works Server			AMS Asset Monitor Agent Server		
	Processor	Cores	RAM (minimum)	Processors	Core	RAM (minimum)
Small (S)	2.4 GHz	6	32 GB	2.4 GHz	4	16 GB
Medium (M)	3.2 GHz	8	32 GB	2.4 GHz	4	16 GB
Large (L)	3.2 GHz	8	32 GB 64 GB[1]	2.4 GHz	4	16 GB

1 *Recommended*

Table 2-9: Processor specifications for system profiles with an AMS 6500 ATG Agent Server

System Profile	AMS Machine Works Server			AMS 6500 ATG Agent Server		
	Processor	Cores	RAM (minimum)	Processors	Cores	RAM (minimum)
Small (S)	2.4 GHz	6	32 GB	2.4 GHz	4	16 GB
Medium (M)	2.4 GHz	6	32 GB	2.4 GHz	4	16 GB
Large (L)	3.2 GHz	8	32 GB 64 GB[1]	2.4 GHz	4[2] 6[1]	16 GB
Extra Large (XL)	3.2 GHz	8	64 GB	2.4 GHz	4[23] 6[1]	16 GB

1 *Recommended*
2 *Minimum*
3 *Minimum*

Number of Agent Servers per System Profile

When planning your system, consider the number of devices you will add over time, and set up the appropriate number of AMS Machine Works Agent servers. Also, consider the number of measurements each device will take to plan how many vibration tags you need for your system. A vibration tag is a data point that collects spectral and waveform data. All other data is not considered a tag and does not count against the total number of tags required for the system. The maximum number of vibration tags is 20 000. The tables in this section are based on Update Rates.

Note
Consult your Emerson representative about device limits and **Agent** server requirements for a system with a combination of monitoring devices.

Note
The tables in this section assume a distributed deployment, which has 2 servers, one for AMS Machine Works, and one for an **External** MongoDB server. See: MongoDB Database Deployments

AMS Asset Monitor

Table 2-10: AMS Asset Monitor Agent Servers required per amount of AMS Asset Monitors

System Profile	AMS Asset Monitors	Vibration tags (maximum)	AMS Asset Monitor Agent Servers
Small (S)	0-80	960	1
Medium (M)	81-160	1920	1
Large (L)	161-300	3600	1
Extra Large (XL)	301-400	4800	1

Note

- One AMS Asset Monitor Agent Server can support up to 400 AMS Asset Monitors.
- One AMS Asset Monitor has a maximum of 12 vibration CHARMs.
- One vibration CHARM constitutes one vibration tag, including installed spare CHARMs.
- The maximum number of AMS Asset Monitors supported in AMS Machine Works is 400.

Emerson Wireless Gateway

Table 2-11: Number of AMS Wireless Vibration Monitors and Vibration Tag Consumption by System Profile

System Profile	AMS Wireless Vibration Monitors	Vibration Tag Consumption	Emerson Wireless Gateway Agent Servers
Small (S)	1-600	3-1800	1
Medium (M)	601-1200	1803-3600	1

Table 2-11: Number of AMS Wireless Vibration Monitors and Vibration Tag Consumption by System Profile *(continued)*

System Profile	AMS Wireless Vibration Monitors	Vibration Tag Consumption	Emerson Wireless Gateway Agent Servers
Large (L)	1201-2400	3603-7200	1
Extra Large (XL)	2401-5000	7203-15000	1[1]

1 *More Emerson Wireless Gateway Agent Servers might be required to meet network topology requirements such as devices being located in separate locations with their own local networks.*

Note

- One AMS Wireless Vibration Monitor uses three vibration tags, one per axis.
- The maximum number of AMS Wireless Vibration Monitors supported in AMS Machine Works is 5000.

Table 2-12: Emerson Wireless Gateway Agent Servers required per amount of AMS 9420 Units

System Profile	AMS 9420s	Vibration tags (maximum)	Emerson Wireless Gateway Agent Servers
Small (S)	0-600	1200	1

Note

- One Emerson Wireless Gateway Agent server can accommodate connections to up to 600 AMS 9420 units.
- One AMS 9420 constitutes a maximum of two vibration tags, one per sensor.
- The maximum number of AMS 9420s supported in AMS Machine Works is 600.

AMS 6500 ATG

Table 2-13: AMS 6500 ATG Agent Servers required per System Profile

System Profile	AMS 6500 ATG (single rack)[1]	Vibration tags (maximum)[2]	AMS 6500 ATG Agent Servers[3]
Small (S)	1-5	22-110	1
Medium (M)	6-20	132-440	1
Large (L)	21-50	462-1100	1
Extra Large (XL)	51-100	1122-2200	1

1 *1. 11 Universal Measurement Cards*

2. 22 Channels

2 *Assuming:*

1. 11 Universal Measurement Cards

2. *22 Channels*

3 *More AMS 6500 ATG Agent Servers might be required to meet network topology requirements such as devices being located in separate locations with their own local networks.*

AMS 2140

AMS Machine Works does not have a technical limit for the number of AMS 2140 Agent servers, but our recommend maximum is 10. The number of AMS 2140 Agents is set by the network topology requirements.

Storage Type Requirements by System Profile

The type of hard disk, either magnetic or solid state drive is recommended based on your system profile. While the amount of data you can store is limited by disk size, the write speed is a very important factor for system performance. All systems are recommended to use a solid-state drive with mixed use and write optimized settings for improved performance.

Table 2-14: Storage Requirements for Emerson Wireless Gateway Agent Servers with AMS 9420 and AMS Wireless Vibration Monitor

System Profile	Magnetic Drive SAS (10K RPM)	Solid-State Drive Mixed Use / Write Optimized
Small (S)	Acceptable	Recommended
Medium (M)	Acceptable	Recommended
Large (L)	Not Recommended	Recommended
Extra Large (XL)	Not Recommended	Recommended

Table 2-15: Storage Requirements for AMS Asset Monitor

System Profile	Magnetic Drive SAS (10K RPM)	Solid State Drive Mixed Use / Write Optimized
Small (S)	Acceptable	Recommended
Medium (M)	Not Recommended	Recommended
Large (L)	Not Recommended	Recommended
Extra Large (XL)	Not Recommended	Recommended

Table 2-16: Storage Requirements for AMS 6500 ATG

System Profile	Magnetic Drive SAS (10K RPM)	Solid State Drive Mixed Use / Write Optimized
Small (S)	Acceptable	Recommended
Medium (M)	Not Recommended	Recommended
Large (L)	Not Recommended	Recommended
Extra Large (XL)	Not Recommended	Recommended

Table 2-17: Storage Requirements for AMS 2140

System Profile	Magnetic Drive SAS (10K RPM)	Solid State Drive Mixed Use / Write Optimized
Small (S)	Acceptable	Recommended
Medium (M)	Not Recommended	Recommended
Large (L)	Not Recommended	Recommended
Extra Large (XL)	Not Recommended	Recommended

Storage Capacity Requirements by System Profile

There are two types of databases used with AMS Machine Works:

1. Configuration settings, which are stored in a PostgreSQL database.
2. Measurement data storage, which is stored in a MongoDB database.

The measurement data storage grows over time, and grows faster as the update rates of the measurement devices increase. The storage requirements given below are based on the use of the recommended update rates for each type of measurement device.

See: Update Rates

Table 2-18: Long term storage capacity requirements for Wireless systems with AMS 9420 and AMS Wireless Vibration Monitor

System Profile	AMS 9420	AMS Wireless Vibration Monitor	Data Storage		
			1-3 Years	3-5 Years	5-10 Years
Small (S)	0-500	0-600	500 GB	850 GB	1.6 TB
Medium (M)	501-600	601-1200	1.0 TB	1.7 TB	3.5 TB
Large (L)	-	1201-1800	2.0 TB	3.4 TB	7.0 TB
Extra Large (XL)	-	1801-4000	4.0 TB	6.8 TB	14.0 TB

Table 2-19: Long term storage capacity requirements for AMS Asset Monitor

System Profile	AMS Asset Monitor	Data Storage		
		1-3 Years	3-5 Years	5-10 Years
Small (S)	<81	1.0 TB	2.5 TB	5.0 TB
Medium (M)	81-160	2.5 TB	4.0 TB	7.5 TB
Large (L)	161-300	4.0 TB	6.4 TB	12.0 TB
Extra Large (XL)	301-400	5.0 TB	8.0 TB	15.0 TB

Table 2-20: Long term storage capacity requirements for AMS 6500 ATG

System Profile	AMS 6500 ATG[1]	Data Storage		
		1-3 Years	3-5 Years	5-10 Years
Small (S)	1-5	0.5 - 1.5 TB	1.5 - 2.5 TB	2.5 - 5.0 TB

Table 2-20: Long term storage capacity requirements for AMS 6500 ATG *(continued)*

System Profile	AMS 6500 ATG[1]	Data Storage		
		1-3 Years	3-5 Years	5-10 Years
Medium (M)	6-20	2.0 - 6.0 TB	6.0 - 10 TB	10 - 20 TB
Large (L)	21-50	2.5 - 7.5 TB	7.5 - 12.5 TB	12.5 - 25 TB
Extra Large (XL)	51-100	5.0 - 15.0 TB	15.0 - 25 TB	25.0 - 50.0 TB

1 *Based on the recommended update rates.*

Table 2-21: Long term storage capacity requirements for AMS 2140

System Profile	AMS 2140	Data Storage		
		1-3 Years	3-5 Years	5-10 Years
Small (S)		1.0 TB	2.5 TB	5.0 TB
Medium (M)		2.5 TB	4.0 TB	7.5 TB
Large (L)		4.0 TB	6.4 TB	12.0 TB
Extra Large (XL)		5.0 TB	8.0 TB	15.0 TB

2.4.2 Update Rates

Every type of measurement device produces more data for storage as the **Update Rate** increases. The recommended storage requirements for each type of device according to the **Update Rate** are given in the following sections.

AMS Asset Monitor Update Rates

Data update rates are configured in each AMS Asset Monitor individually with

Table 2-22: AMS Asset Monitor Data Storage and Update Rates

		Update Rates			
		Fastest[1]	Slowest	Default	Recommended
Data Type	**Scalars**	1 min	1 hour	30 min	15 min
	Waveform / Spectrum	1 hour	1 month	Disabled	1 day

1 *Using the fastest rate should only be used with a single AMS Asset Monitor at a time.*

AMS Wireless Vibration Monitor Update Rates

These are the AMS Wireless Vibration Monitor scalability limitations:

- Overall AMS Machine Works System Maximum Device Limit: 5000 devices
- Maximum number of devices supported at the fastest rates: 200 devices

Table 2-23: AMS Wireless Vibration Monitor Update Rates

		Update Rates[1]				
		Fastest[2]	**Slowest**	**Default[3]**	**Recommended[1]**	**Recommended Rates with 3rd Party Gateways[4]**
Data Type	**Scalars[5]**	1 min[6]	22 hours	1 hour	1 hour	1 hour
	Thumbnails	6 hours	31 days	Disabled	6 hours	Not tested
	Spectra	6 hours	31 days	Disabled	1 day	1 day
	Waveforms	1 day	31 days	Disabled	7 days	7 days

1 *Applies to all the applicable measurements across all channels per device. For example, for spectra, it will be all available spectra (X, Y, Z) per channel.*
2 *Use only with a maximum of 200 devices, and never more than 10 devices from the same gateway.*
3 *The rate is set when the device is discovered, but the values listed here are the factory defaults for this type of device. These can be modified with the AMS Device Manager.*
4 *Store on Demand is not supported with 3rd Party Gateways*
5 *With AMS Machine Works, setting an update rate for scalars of over an hour is only possible by using the AMS Device Manager to modify the device directly. (Slowest: 22 hours)*
6 *Not recommended. Depending on your network reliability and speed, there may be some gaps in data collection. Only use this setting temporarily, and only when absolutely required.*

AMS 9420 Wireless Vibration Transmitter Update Rates

These are the AMS 9420 Wireless Vibration Transmitter data performance and scalability limitations:

- Overall AMS Machine Works System Maximum Device Limit: 600 devices
- Maximum number of devices supported at the fastest rates: 60 devices

Note
Connections to AMS 9420 Wireless Vibration Transmitters must be made through Emerson Wireless Gateways, 3rd party gateways are not supported.

Table 2-24: AMS 9420 Wireless Vibration Transmitter Update Rates

		Update Rates[1]			
		Fastest[2]	**Slowest**	**Default**	**Recommended[1]**
Data Type	**Burst Variables**	1 min[3]	1 day	1 hour	1 hour
	Scalars[4]	8 hours	31 days	Disabled	Disabled[5]
	Energy Bands	8 hours	31 days	Disabled	8 hours
	Waveforms & Spectra	1 day	31 days	Disabled	7 days

1 *Applies to all the applicable measurements across all channels per device.*
2 *Use only with a maximum of 60 devices, and never more than 10 devices from the same gateway.*
3 *Not recommended. Depending on your network reliability and speed, there may be some gaps in data collection. Only use this setting temporarily, and only when absolutely required.*
4 *Scalars are published at rate which is stored in the device. This rate can be set by the AMS Machine Works software.*
5 *In most cases Scalar collection contains the same parameters as Burst Variables collection and can be kept disabled. However, some older firmware versions of an AMS 9420 may not publish all scalar parameters. In that case, the remaining parameters can be collected using Scalar collection with an appropriate schedule.*

AMS 6500 ATG Update Rates

Collection tasks for AMS 6500 ATG units are configured in AMS Machine Studio.

Table 2-25: AMS 6500 ATG Update Rates

Data Type	**Update Rates**			
	Shortest	**Default**	**Longest**	**Recommended**
Primary Scalar	1 sec	(disabled)	1 month	60 sec
Secondary Scalar	15 sec	(disabled)	1 month	600 sec
Diagnostics	600 sec	900 sec	168 hours	600 sec
Transient Waveform[1]	60 min	24 hours	1 month	8 hours

1 *Transient Waveforms can be collected on demand, or collection can be triggered by a store on alert setting. These factors can increase the amount of data collected.*

2.4.3 Compatibility

AMS Machine Works supports interactions between a wide range of devices, agents, Emerson software and hardware, and 3rd party software.

Device Compatibility

This version of AMS Machine Works supports the following types of **devices** with specific versions of firmware.

Wireless Gateway

- **Emerson Wireless Gateway** — Supported model numbers:
  - Rosemount 1420 Smart Wireless Gateway hardware version 4.0 with firmware versions 4.x.xx, or later, are supported.
  - Rosemount 1410 Smart Wireless Gateway hardware version 4.0 with firmware versions 4.6.64, or later, are supported.
- **Honeywell OneWireless Gateway** — Firmware versions 330.3.08.0 or later are supported.
- **Centero Intrepid WirelessHART Gateway** — Firmware versions 3.4.10 or later are supported.

AMS Wireless Vibration Monitor

- Supported model numbers:
  - AMS Machine Works supports the AMS Wireless Vibration Monitor Hardware Rev 3.
  - AMS Machine Works supports the AMS Wireless Vibration Monitor Hardware Rev 1.

AMS 9420 Wireless Vibration Transmitter

The following versions of the AMS 9420 are supported:

1. AMS 9420 Wireless Vibration Transmitter — Device Revision 4

Note
You can view the revision information from a Field Communicator or from AMS Device Manager. See the AMS 9420 Reference Manual for more information.

AMS Asset Monitor

- Supported firmware version numbers:
  - AMS Machine Works supports AMS Asset Monitor v2.1.x devices.
  - AMS Machine Works supports AMS Asset Monitor v3.0.8 to v3.0.x devices.
  - AMS Machine Works supports AMS Asset Monitor v3.1 to v3.1.x devices.

Note
If a device was added to AMS Machine Works with unsupported firmware, the recommended best practice is to remove the device, upgrade the firmware, and then add the device to AMS Machine Works again.

AMS 6500 ATG

- Supported AMS 6500 ATG Cards:
  - A6500-CC v3.3.0
  - A6500-CP v1.0.0
  - A6500-UM v3.5.0 — Latest SIL certified firmware version: v3.4.0

Note
When using v3.4.0 firmware, interval band analytics are not supported.

- A6500-TP v3.2.0 — Latest SIL certified firmware version: v3.2.0
- A6500-RC: not supported

AMS Machine Works supports AMS Machine Studio v4.1.

Note
AMS Machine Studio v4.1.0 is required to configure the A6500-CP v1.0.0 card.

AMS 2140 Machinery Health Analyzer

- Supported firmware versions:
  - AMS 2140 with firmware version 1.3.13.0, or later.

Note
To use Stand Alone Data Transfer (SADT) with your AMS 2140 Machinery Health Analyzer refer to knowledge base article: **NK-2500-0559**

OPC UA Software Compatibility

All OPC UA compliant clients are supported, and the following software versions have been tested.

Table 2-26: Tested OPC UA Software

Item	Tested versions
OPC UA Clients	OPC UA Expert v1.4.4 or latest
	Integration Objects
	Prosys

Emerson Software Co-Deployment

The Emerson Software Co-Deployment table lists the supported combinations of some Emerson products. Even when is it theoretically possible, Emerson does not recommend deploying AMS Machine Works on the same computer with these applications.

Co-deployment means having both pieces of software installed on the same network.

Table 2-27: Emerson Software Co-Deployment

Legend:✓Supported - X Not Supported - N/A Not Applicable

AMS Machine Works Application Components	AMS Optics	AMS Machinery Manager	AMS Device Manager	DeltaV	Ovation	Plantweb Insight
AMS Machine Works Server	✓ *Both can not be installed on the same server.*	X	X	X	✓ Only on Approved Architecture.	N/A
Emerson Wireless Gateway Agent	✓ *Both can not be installed on the same server.*	X	X	✓ Can be installed on a DeltaV Application Station.	N/A	N/A
AMS Asset Monitor Agent	✓ *Both can not be installed on the same server.*	X	X	X	N/A	N/A
AMS 6500 ATG Agent	✓ *Both can not be installed on the same server.*	X	X	X	N/A	N/A
AMS Portables Agent	✓ *Both can not be installed on the same server.*	X	X	X	N/A	N/A

2.5 AMS Machine Works Security

Emerson recommends working with qualified IT personnel to ensure that your installation complies with both the network security policy for your plant and industry best practices.

Note
For more detailed information about cybersecurity refer to the **AMS Product Security Documentation (AMS-SEC-PSG-001)**.

Proxy Server Requirements

It is the customer's sole responsibility to configure any proxy servers in their network.

AMS Machine Works is compatible with using reverse proxy servers between the External Agent Servers and the AMS Machine Works Server.

To enable network communication between the AMS Machine Work Server and Agent Server(s) through the proxy server, the proxy server **must have** the following items configured:

1. The minimum set of HTTP headers to forward: `Upgrade`, `Connection`, and `Host`.
2. (Optional) To enable API Filtering:
    a. With Asset Monitor Agents, Emerson Wireless Gateway Agents, and AMS 6500 ATG Agents: API requests must be forwarded to /omg/.
    b. With AMS 2140 Agents: API requests must be forwarded to /pig/.

⚠ CAUTION

Proxy Server configuration of the customer's network must be performed by the customer's network administrators.

Emerson is not responsible for proxy server configuration.

Each **External Agent Server** must be configured to work with your proxy server. See: Connect to a Server

Security Verification

1. (Optional) If your deployment scenario uses proxy servers, verify that your proxy servers match the Proxy Server Requirements listed above.
2. Verify that your network has the required Network Port Availability.

After verifying that all of the security and communication requirements have been met, continue your planning process.

2.5.1 Network Port Availability

- During default installation, IIS is automatically installed and configured to use the Default Site. `(Ports: 80 and 443)`
- Clients and servers utilizing the Vibration Analyzer application must ensure that Port 8888 is available, as it is specifically designated for authentication.
- If `ports: 80 and 443` are already in use by a previous installation of IIS you can either:
    1. If the Default Site is unused, you can delete the Default Site.
    2. Configure the Default Site to use other ports.

    See: Installation Troubleshooting
- During default installation of a **Portables Agent Server**, `port: 10077` is set for communication with AMS 2140 Machinery Health Analyzer units. You can choose another port if `port: 10077` is in use.
- You can also use non-default ports if your existing system and network requires it. Your network administrator must configure firewall rules to allow traffic to pass through the non-default ports. It is best practice to use port numbers above 1024 and to use non-restricted ports.

3 Installation Procedures

AMS Machine Works is a modular system which can be installed on a single server, or distributed across various network topologies. See: Typical Deployment Scenarios

For more information on unsupported scenarios refer to Unsupported Deployment Scenarios. If a scenario you are looking for is not listed in that section, work with your Emerson representative to review your preferred deployment scenario and determine if it is possible.

Note
There is a migration path from AMS Machine Works v1.8 to AMS Machine Works v2.0. See: Update from versions before AMS Machine Works v2.2

The installation process has three phases for a new installation:

1. Pre-Installation Steps — These are the steps that you must follow to properly prepare for installing AMS Machine Works.
2. Install Servers — These steps will enable you to configure any of the Typical Deployment Scenarios.
    a. Install an AMS Machine Works Server — AMS Machine Works Server Installation
    b. (Optional) Install an External Agent Server — Agent Server Installation
    c. (Optional) Install an External MongoDB Server — External MongoDB Server Installation
3. Post-Installation Steps — These are the steps that you must follow to properly start, register, and initially configure your AMS Machine Works server.

3.1 Pre-Installation Steps

The pre-installation steps should be performed after you have finished your System Planning, and before you perform any installation steps.

Prerequisites

Design and plan your system. See: Planning Steps.

Procedure

1. (Optional) If you are using an **External MongoDB Server**, ensure that you have administrator privileges on that machine.
    a) Perform your External MongoDB Server Installation **BEFORE** installing the **AMS Machine Works Server**.
    b) Import the public key certificate from the **External MongoDB Server**, and install it.
2. (Optional) If you are using **External Agent Servers**, ensure that you have administrator privileges on all the machines.

Note
Perform your Agent Server Installation **AFTER** installing the **AMS Machine Works Server**.

3. Server Installation Pre-Check
4. Stop Automatic Updates
5. Locate the Installer

3.1.1 Server Installation Pre-Check

Prior to beginning the installation process, you must ensure that the server is properly prepared for an AMS Machine Works installation.

Procedure

1. **Server names:**
   The server names for the AMS Machine Works Server and any associated AMS Machine Works Agent Server(s) must meet the following criteria:
   - It must be at least 1 character, but not more than 14.
   - It cannot contain any of the following characters:
     - backslash ****
     - slash mark **/**
     - colon **:**
     - asterisk *
     - question mark **?**
     - quotation mark "
     - less than sign **<**
     - greater than sign **>**
     - vertical bar **|**
     - underscores **_**
     - comma **,**
     - tilde **~**
     - semicolon **;**
     - exclamation mark **!**
     - at sign **@**
     - number sign **#**
     - dollar sign **$**
     - percent **%**
     - caret **^**
     - ampersand **&**

- apostrophe '
- period **.**
- parentheses **( )**
- braces **{ }**
- white space **(blank)**

2. Check the **Properties** for all the drives you intend to install any element of AMS Machine Works on. These drives cannot have the **Compress this drive to save space** option checked.

⚠ CAUTION

AMS Machine Works does not support installations on compressed drives.

3. **Check Server Time:**
   Make sure that the time and time-zones are correct before proceeding.

⚠ CAUTION

If you have multiple servers, make sure all the times and time-zones match.

4. **Administrator Account:**

   Make sure that the user account being used for installation is an Administrator on every server associated with this AMS Machine Works installation.

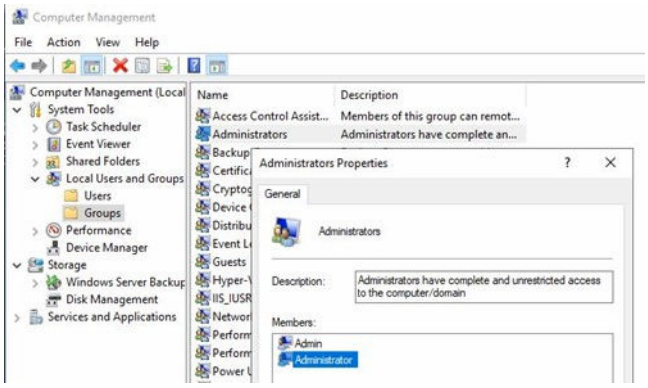
   a. AMS Machine Works Server
   b. MongoDB Server — (Optional) Only necessary if you are using an External MongoDB Server.
   c. AMS Machine Works Agent Server(s) — (Optional) Only necessary if you are using External Agent Server(s).

   To check the user, select **Computer Management** → **Local Users and Groups** → **Groups** → **Administrators**.

   Verify that the user performing this installation is a member of this group.

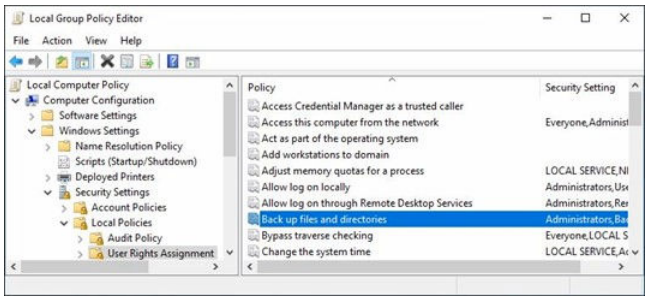
Note
Alternatively, the user can be added to a Domain Group which is part of the Administrators Group. If you are unsure, check with your Network Administrator.

Figure 3-1: Administrator Properties



5. **Group Policies:**
   a) Open the **Local Group Policy Editor** and select: **Local Computer Policy → Computer Configuration → Windows Settings → Security Settings → Local Policies → User Rights Assignment**
   b) Ensure that the user has the following rights:
      1. **Backup files and directories**
      2. **Debug programs**
      3. **Manage auditing and security log**

Figure 3-2: Local Group Policy Editor

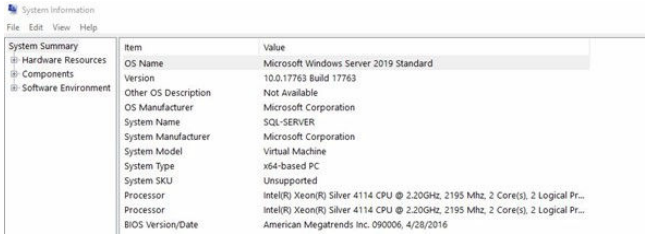


6. **Hardware Details:**
   a) Open **System Information → System Summary**:
   b) Check **Processor**, and confirm that the number of Processors and Cores meets the minimum requirements for your installation size.

      Note
      If you have multiple processors the cores will be added together.

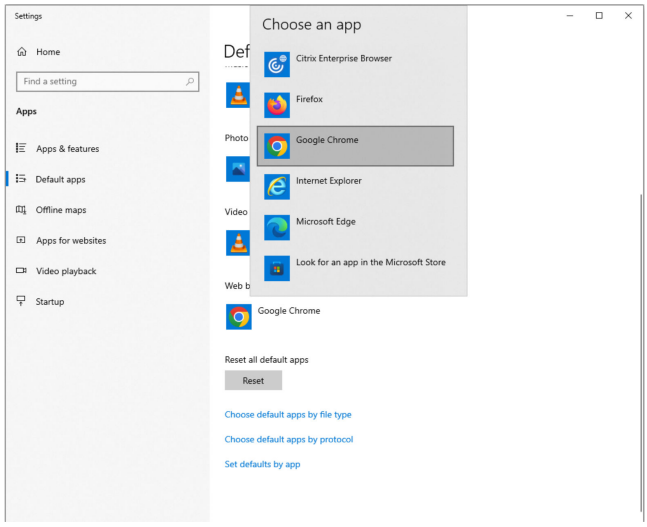
   c) Check **Installed Physical Memory (RAM)**, and confirm that the amount meets the minimum requirements for your installation size.

Figure 3-3: System Summary



7. Choose a **Default Web Browser**. Select **System Settings** → **Default apps** → **Web browser**
   - **Google Chrome**
   - **Microsoft Edge**

Figure 3-4: Choose a Default Web Browser



⚠ CAUTION

Only **Google Chrome** and **Microsoft Edge** are supported. Use of other browsers may have unknown effects.

8. (Optional) Run the Pre-Installation Checklist Tool to automatically check for other problems. See: Pre-Installation Checklist Tool

3.1.2 Stop Automatic Updates

The installation process for AMS Machine Works proceeds in stages and requires some reboots. All automatic updates for other software, including **Windows Update**, should be stopped or disabled for the duration of the installation process to ensure the stability and security of your system.

Your IT department might not permit you to stop or disable **Windows Update** or other automatic update services on your server. If it is not possible to stop or disable automatic updates, Emmerson recommends that you first check for updates and apply them before installing AMS Machine Works.

Prerequisites

Determine if your IT department allows automatic updates to be temporarily disabled.

Procedure

1. Make a list of the update services you plan to stop.
2. Use the update services prior to stopping them.
3. Verify that your system is stable.
4. Stop every update service that you can.
   Make a **Stopped Update Services List** of the update services that you were able to pause. You will use this list after the installation is complete in the post-installation step Restart Automatic Updates.

Postrequisites

Proceed to Locate the Installer.

3.1.3 Locate the Installer

To avoid errors and unnecessary updates you must ensure that you have the most recent version of the AMS Machine Works installation package.

Procedure

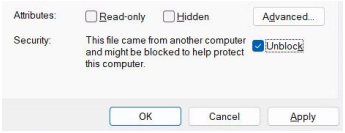
1. Log into the server you want to install AMS Machine Works on with an Administrator account.
2. Find your installation package from local media or online:
   - Locate the installer on some local device.
   - Locate the correct version in your Guardian account at: https://guardian.emerson.com/

   ⚠ CAUTION

   You must keep the installer package that you used to install AMS Machine Works, because you must use this exact version of the installer to **Uninstall** or **Modify** your installation.

3. Before extracting, right-click on the file and select **Properties**. Check the **Unblock** checkbox, and click **Apply**.

Figure 3-5: File Properties



4. Extract the AMS Machine Works installation files to a top level folder.

⚠ CAUTION

Long file path names can result in errors during installation. (Max length: 256 characters)

3.2 AMS Machine Works Server Installation

This is a general overview of the **AMS Machine Works Server** installation process.

Procedure

1. (Optional) If your system will use an **External MongoDB Server** you must perform this installation first. External MongoDB Server Installation
2. Launch Installer
3. Software License Agreement
4. Choose AMS Machine Works Server Installation
5. Enter a Server Name
6. Choose an Internal or an External MongoDB Server
7. Provide Passwords or Connection String
8. Select which Agents to Install
9. Choose the Installation Drive
10. Confirm Installation
11. Complete the Reboot Cycle

3.2.1 Launch Installer

The `Installer_2.3.0.XXX` package must be properly decompressed, unblocked, and located before you run it.

Prerequisites

Complete all the Pre-Installation Steps.

⚠ CAUTION

Run `setup.exe` from a folder close to the root of your file system. Long path names can result in the installer failing.

⚠ CAUTION

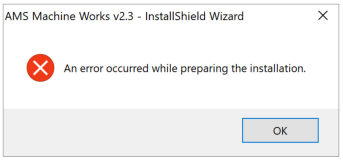
It is strongly recommended that you pause Windows Automatic Updates during the installation process. Failure to do so may lead to inconsistent results. See: Stop Automatic Updates

Procedure

1. Right-click on `setup.exe`, and click **Run as administrator**.
2. Respond to various potential errors and warnings.
   a) A **Blocked** file will usually result in an error.

Note

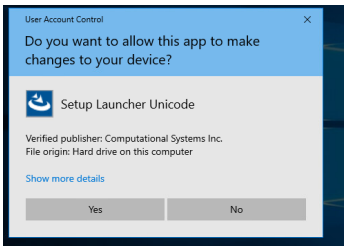
Figure 3-6: Error pop-up



To recover from this error, delete the extracted folder, **Unblock** the zip file, and re-extract the installation files. See: Locate the Installer

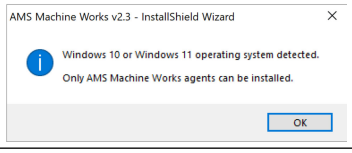
   b) If the **User Access Control** window appears, click **Yes** to allow `setup.exe` to install.

Figure 3-7: User Access Control



   c) A Windows 10 or 11 operating system is present if you see the following popup.

Figure 3-8: Warnings: Windows 10 or Windows 11 operating system detected.

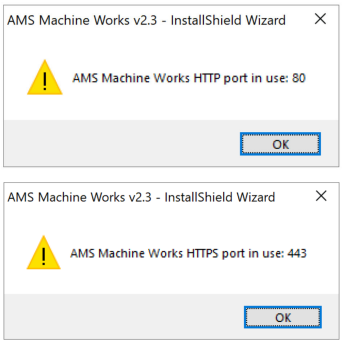


1. AMS Machine Works server only runs on a Windows Server class operating system. If you have Windows 10 or Windows 11 installed, an AMS Machine Works server installation cannot proceed.
2. AMS Machine Works Agent installations can proceed on Windows 10 and 11.

Note
See: System Requirements

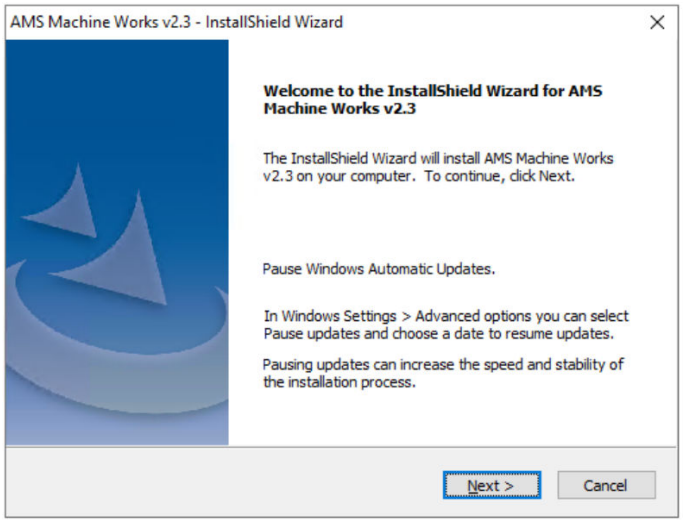
d) AMS Machine Works uses port 80 and port 443 by default. If these ports are in use you must configure different ports. See: Network Port Availability

Figure 3-9: Warnings: AMS Machine Works Web Services Ports in Use



3. Click **Next** to continue.

Figure 3-10: AMS Machine Works v2.3 – InstallShield Wizard



4. Continue to the next step: Software License Agreement

3.2.2 Software License Agreement

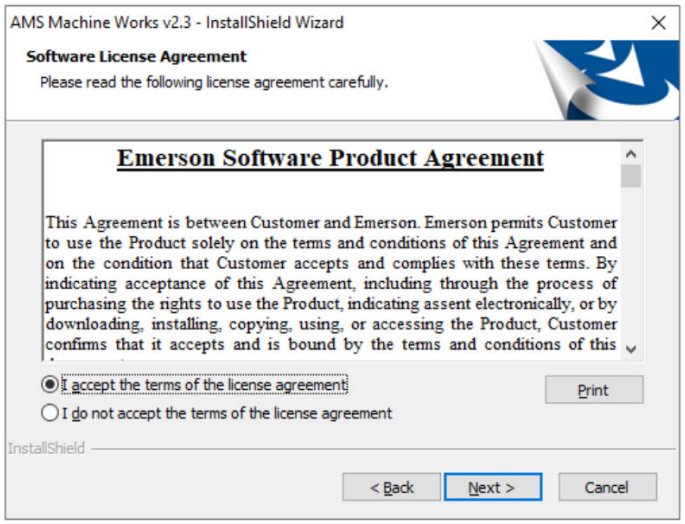
Prerequisites

You must complete the previous step, Launch Installer, before you can begin the installation process.

Procedure

1. Read the **Software License Agreement**.
2. (Optional) Click **Print** to print a copy of the **Software License Agreement** for your records.
3. Click the checkbox next to **I accept the terms of the license agreement**.

Figure 3-11: InstallShield Wizard - License Agreement



4. Click **Next** to continue.

Postrequisites

Depending on which scenario you are using, the next step to this is either:

1. (Scenario One) When performing an AMS Machine Works Server installation: Choose AMS Machine Works Server Installation
2. (Scenario Two) When performing an Agent Server installation: Choose Agent Server Installation

3.2.3 Choose AMS Machine Works Server Installation

The AMS Machine Works Server installation process produces a fully functional system. The system can be located on one server, or distributed across multiple servers.

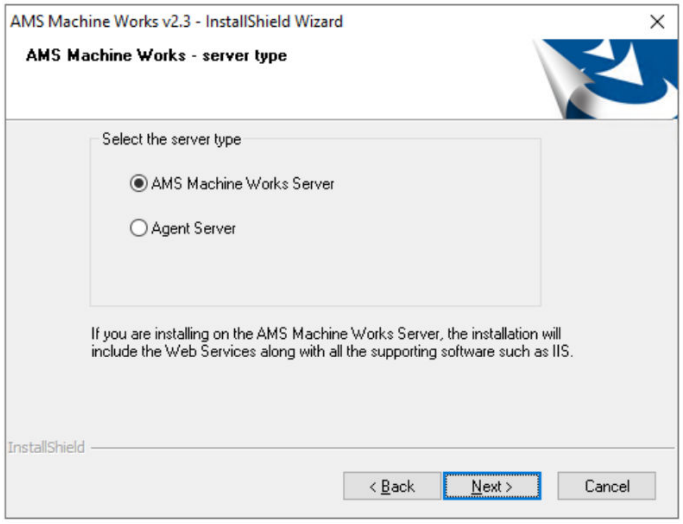
Prerequisites

You must complete the previous step: Software License Agreement

Procedure

1. Select AMS Machine Works Server for a new installation, then click **Next** to continue.

Figure 3-12: InstallShield Wizard - Select which type of server to install.



Note
If the **AMS Machine Works Server** option is unavailable (gray), it means that this system does not meet the operating system requirements for an **AMS Machine Works Server**.

See: System Requirements

You can proceed with an Agent Server Installation. See: Choose Agent Server Installation

2. Click **Next** to continue to the next step: Enter a Server Name

3.2.4 Enter a Server Name

The **Server Name** is how other elements of the system can refer to the main **AMS Machine Works Server**.

There are three different formats for giving the **Server Name**:

1. The local Computer Name given in the computer's settings.
2. The IP address of the computer.
3. The fully qualified domain name, FQDN.

Note
If you have a FQDN (Fully Qualified Domain Name) network, you must enter the **Full computer name** for the AMS Machine Works server here. On the AMS Machine Works server select **This PC** → **Properties** to find this information.

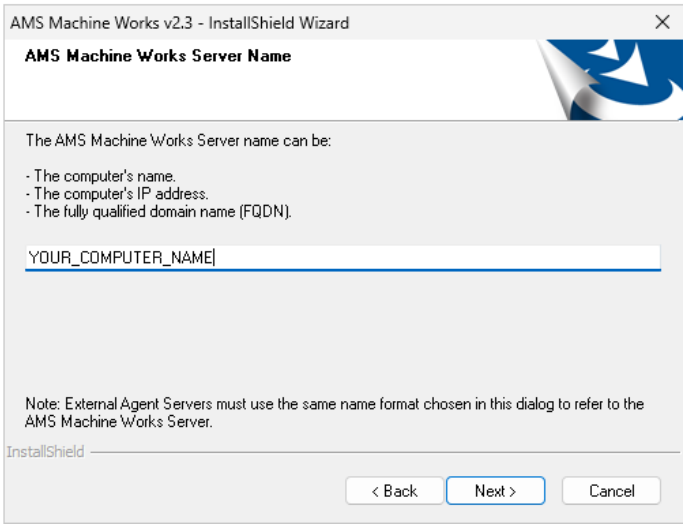
Prerequisites

You must complete the previous step: Choose AMS Machine Works Server Installation

Procedure

1. (Default: Automatically filled with your computer's name.) Enter a name for your AMS Machine Works Server.

Figure 3-13: InstallShield Wizard - Name the Server



⚠ CAUTION

External Agent Servers must use the same name format chosen in this dialog to refer to the AMS Machine Works Server.

2. Click **Next** to continue to the next step: Choose an Internal or an External MongoDB Server

3.2.5 Choose an Internal or an External MongoDB Server

In this step you must choose which type of **MongoDB** installation to use:

1. Internal Scenario **Internal MongoDB** — (Default) The **MongoDB** database will be installed on the same server as AMS Machine Works.
2. External Scenario **External MongoDB** — The **MongoDB** database must be pre-installed on a remote server, or in the cloud.

Prerequisites

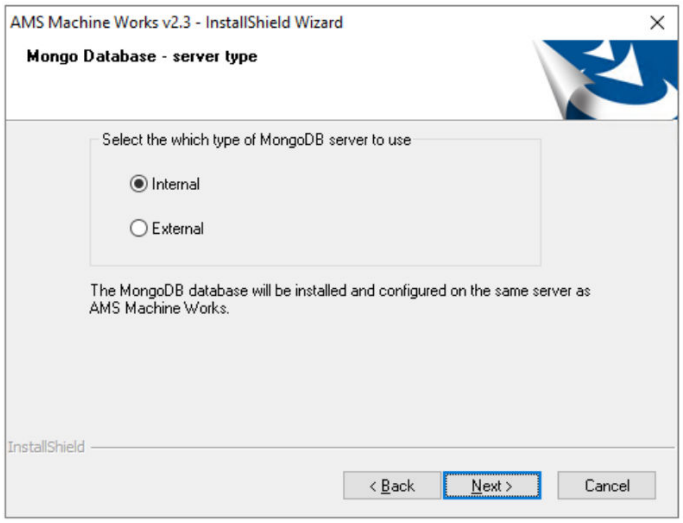
⚠ CAUTION

When you choose an External MongoDB installation, the External MongoDB Server Installation must be complete before proceeding to the next step.

Procedure

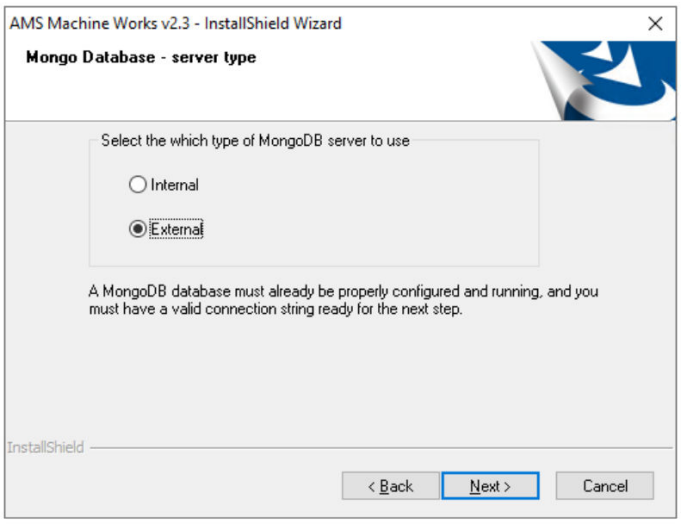
1. (Internal Scenario) (Default) Select **Internal** to proceed with the default configuration and install the **MongoDB** on the same server as AMS Machine Works.

Figure 3-14: InstallShield Wizard - Select Internal



2. (External Scenario) Select **External** to proceed with connecting to an **External MongoDB**

Figure 3-15: InstallShield Wizard - Select External



3. Click **Next** to proceed to the next step, Provide Passwords or Connection String.

Postrequisites

⚠ CAUTION

When you choose an External MongoDB installation, on a remote server, or in the cloud, the External MongoDB Server Installation must be complete before proceeding to the next step.

3.2.6 Provide Passwords or Connection String

In the previous step, Choose an Internal or an External MongoDB Server, you choose between two deployment scenarios; using an **Internal MongoDB Server**, or using an **External MongoDB Server**.

Depending on which scenario you chose, you must perform different steps in this task:

1. **Internal MongoDB Server — (Internal MongoDB Scenario)** Enter the MongoDB passwords.
2. **External MongoDB Server — (External MongoDB Scenario)** Enter and test the MongoDB connection string.

Note
To use an **External MongoDB Server**, it must be installed **before** this step can be completed. See: External MongoDB Server Installation

Prerequisites

You must complete the previous step, Choose an Internal or an External MongoDB Server, before proceeding.

Procedure

1. **(Internal MongoDB Scenario)** Enter the passwords you need for the two **Internal MongoDB** accounts, **admin**, and **mwservice**.

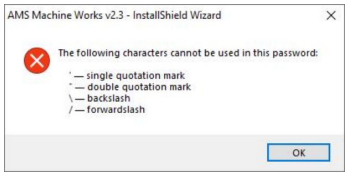
⚠ CAUTION

All **MongoDB** passwords:

a. Must meet the **Local Security Policy** of the server.

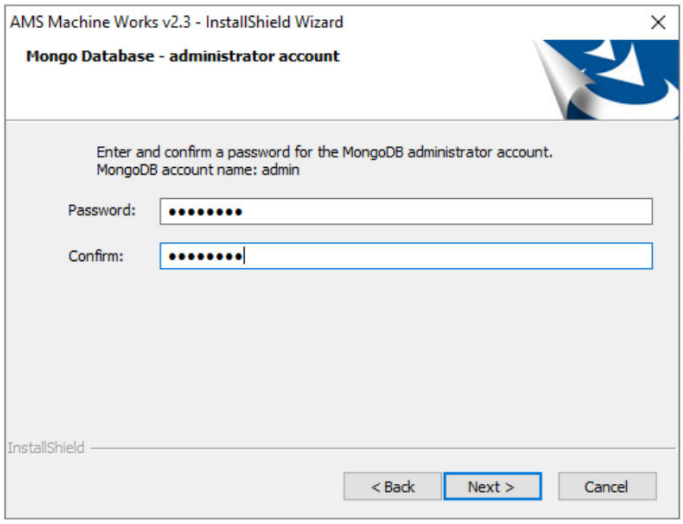
b. Must not contain the following special characters:
   - ' — Single quotation mark.
   - " — Double quotation mark.
   - \ — Backslash.
   - / — Forward slash.

Figure 3-16: Password Error



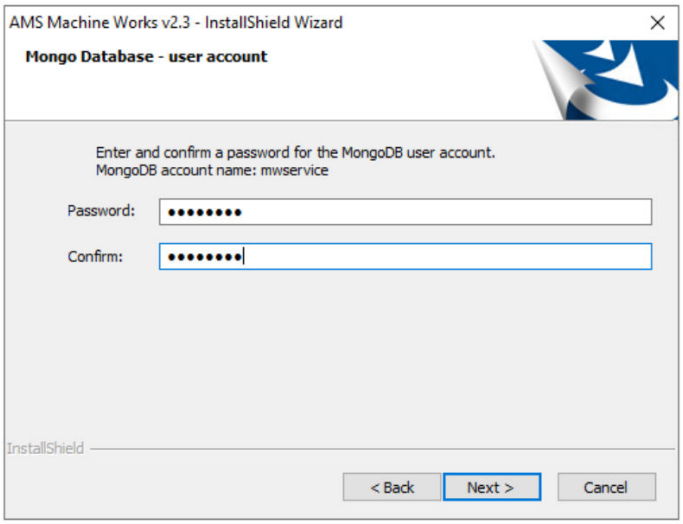
a) Enter a MongoDB password for the **admin** user twice, and then click **Next** to continue.

Figure 3-17: InstallShield Wizard - Enter the MongoDB admin password.



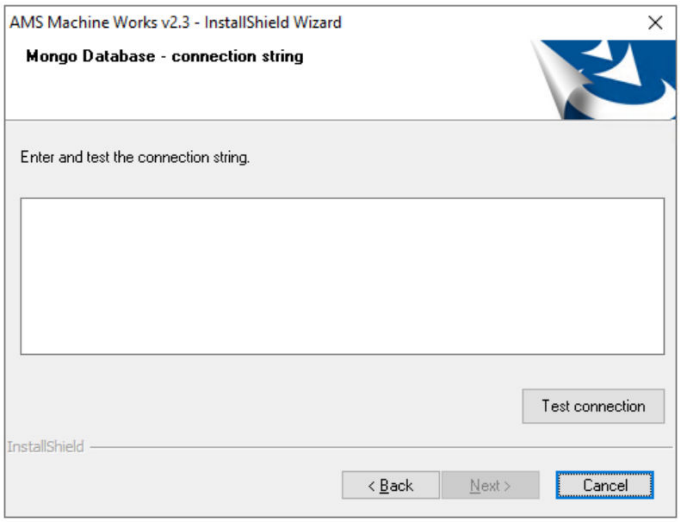
b) Enter a MongoDB password for the **mwservice** user twice, and then click **Next** to continue.

Figure 3-18: InstallShield Wizard - Enter MongoDB mwservice password.



2. **(External MongoDB Scenario)** Enter the **External MongoDB** connection string. See: External MongoDB Server Installation
   a) Enter the External MongoDB connection string.

Figure 3-19: InstallShield Wizard - Enter the External MongoDB connection string.



Note
The recommended connection string to the **External MongoDB** is through the **mwservice** user configured during the External MongoDB Server Installation process. This user only has read and write privileges configured.

In general, the connection string follows the form:

```
mongodb://<user>:<password>@<servername>:<port>/?
authSource=admin&tls=true
```

Emerson recommends:

```
mongodb://mwservice:<password>@<servername>:27018/?
authSource=admin&tls=true
```

Where:

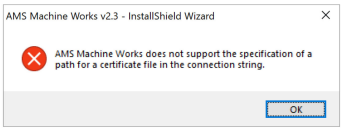
1. <password> is the password set for the **mwservice** user during the External MongoDB Server Installation.
2. <servername> is the name of the **External MongoDB** server.

3. Click **Test Connection** to test the connection string.
   a) Paths for certificate files are not supported in AMS Machine Works, restructure your connection string.

⚠ CAUTION

Connection strings that specify a certificate file will not work with AMS Machine Works. The certificate files must be installed manually. See: External MongoDB Server Installation

Figure 3-20: Not supported: Paths for Certificate Files



   b) Your connection string can fail for a variety of other reasons.

Figure 3-21: External MongoDB connection: Failed

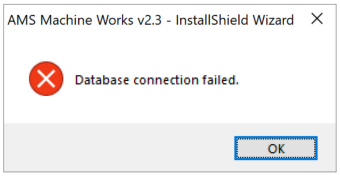
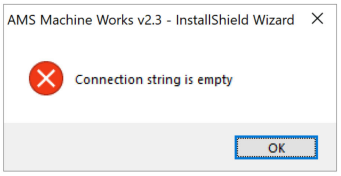


Figure 3-22: Connection string empty.

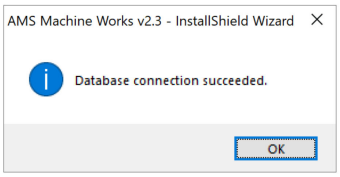


Note
The connection can fail for a variety of reasons, for example:

- Server name wrong.
- Server powered down.
- No network connection.
- Wrong user name and password combination.

c) Your connection succeeded and you can proceed.

Figure 3-23: External MongoDB connection: Success



4. Enter the passwords you need for the two **PostgreSQL** database accounts **postgres**, and **mwservice**.

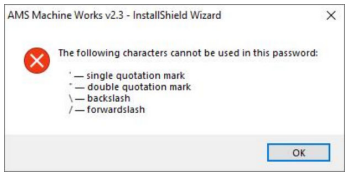
⚠ CAUTION

All **PostgreSQL** passwords:

a. Must meet the **Local Security Policy** of the server.

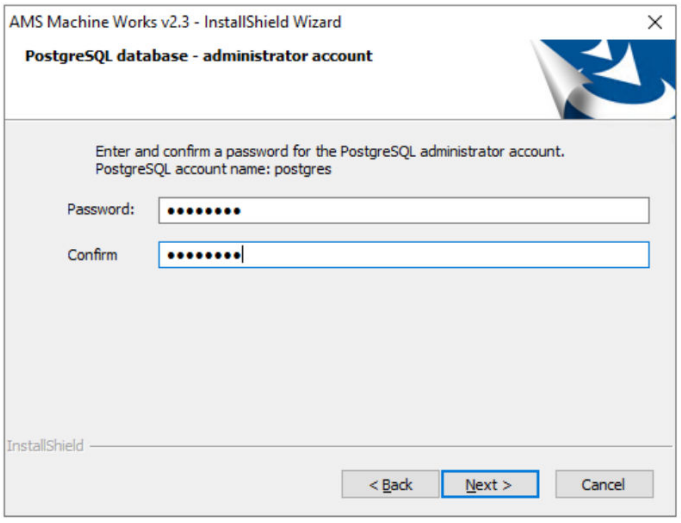
b. Must not contain the following special characters:
   - ' — Single quotation mark.
   - " — Double quotation mark.
   - \ — Backslash.
   - / — Forward slash.

Figure 3-24: Password Error



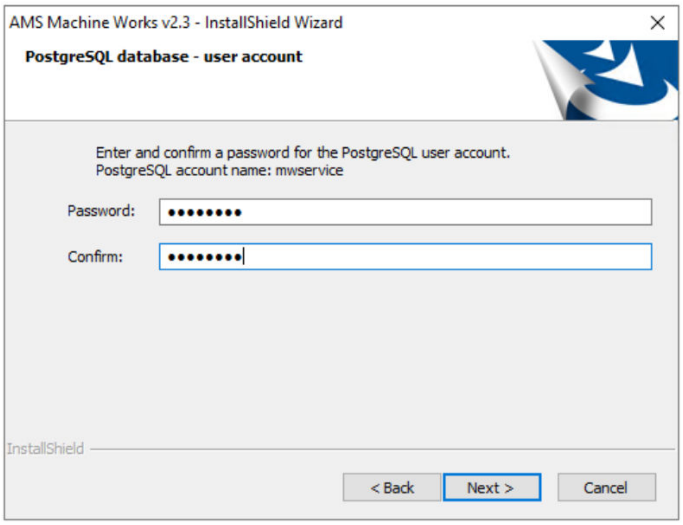
a) For the administrator account, **postgres**, enter a PostgreSQL password twice, and then click **Next** to continue.

Figure 3-25: InstallShield Wizard - Enter PostgreSQL administrator password.



b) For the user account, **mwservice**, enter a PostgreSQL password twice, and then click **Next** to continue.

Figure 3-26: InstallShield Wizard - Enter PostgreSQL mwservice password.



Postrequisites

Proceed to the next step, Choose the Installation Drive.

3.2.7 Select which Agents to Install

An **Agent** can be installed internally as part of a full **AMS Machine Works Server** installation, or performed later as an external **Agent Server** installation.

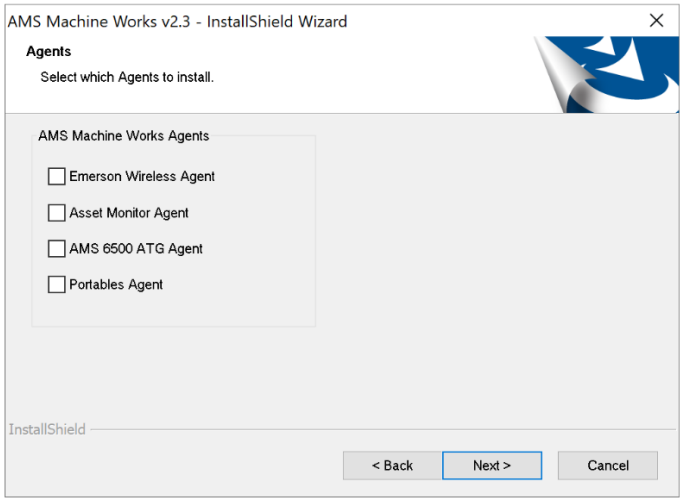
Prerequisites

The previous step is: Choose the Installation Drive

Procedure

1. Select every type of **Agent** which you will need to access the devices on your network.

Figure 3-27: InstallShield Wizard - Agent Selection



Note
You must install each specific type of **Agent** to be able to access those device types.

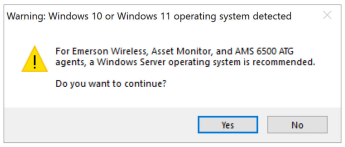
Note
If an option is gray, that **Agent** is already present on that machine.

Note
If you are performing an external **Agent Server** installation, you must select at least one type of **Agent** to install.

   a) Select every **Agent** that you want to install, and then click **Next** to proceed.

2. (Only applies to External Agent Server installations.) If the computer is running Windows 10 or Windows 11, a confirmation dialog appears.

Figure 3-28: Warning: Windows 10 or Windows 11 operating system detected.



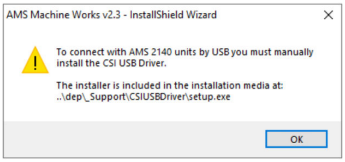
Note
A Windows Server class operating system is recommended for all AMS Machine Works components.

Portable Edge Agents are designed to run on Windows 10 and Windows 11.

- (Default) Click **Yes** to continue.
- Click **No** to exit the installation process. See: System Requirements

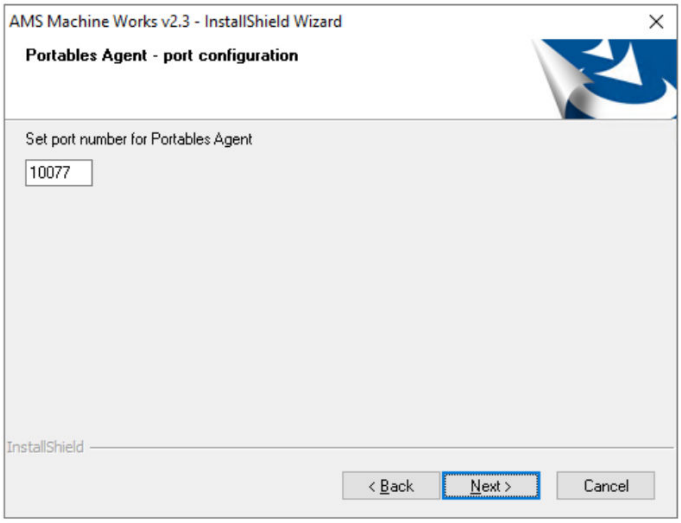
3. (Optional) If you require USB to connect to your AMS 2140 Machinery Health Analyzer to AMS Machine Works, you must have the `CSI USB Driver` installed. You must perform the following post-installation step: Install CSI USB Drivers

Figure 3-29: CSI USB Driver required for Portables Agent



a) When you are installing a **Portables Agent** you must specify which port to communicate on. (Default port: 10077)

Figure 3-30: InstallShield Wizard - Portables Agent Port Configuration



4. Click **Next** to continue to the next step: Confirm Installation

3.2.8 Choose the Installation Drive

We recommend installing AMS Machine Works on a different drive than the boot drive.

Depending on which installation scenario you are using, different components will be installed on the drive that you select in this step:

1. Scenario One — **AMS Machine Works Server** installation.
    a. (Optional) If your installation is using an **Internal MongoDB** database for measurement data, it will be stored on this drive.
    b. Your PostgreSQL database with configuration information.
    c. The AMS Machine Works Server
2. Scenario Two — **Agent Server** installation.
    a. One of each type of **Agent Server**. (Total number of **Agent Servers**: Min. One **Agent Server**, Max. Four **Agent Servers**.)

Note
For more information about the recommended disk space see: Storage Capacity Requirements by System Profile.

Prerequisites

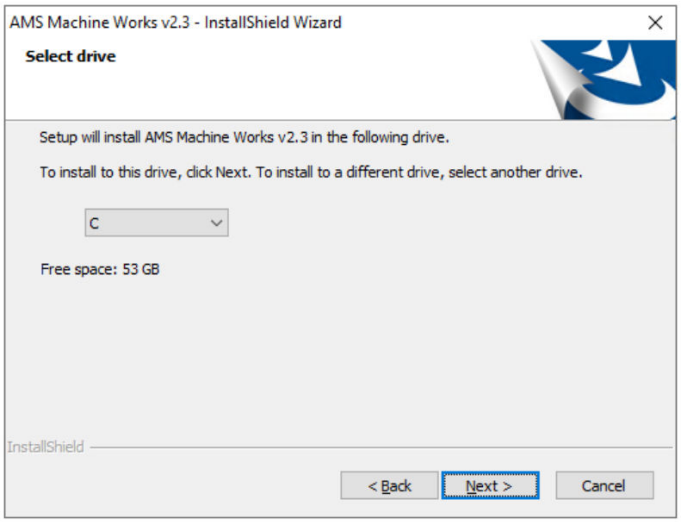
The step previous to this is:

1. Scenario One — **AMS Machine Works Server** installation: Provide Passwords or Connection String
2. Scenario Two — **Agent Server** installation: Connect to a Server

Procedure

1. Select which drive to install on.

Figure 3-31: InstallShield Wizard - Select which drive to install on.



2. Click **Next** to continue to the next step: Select which Agents to Install

3.2.9 Confirm Installation

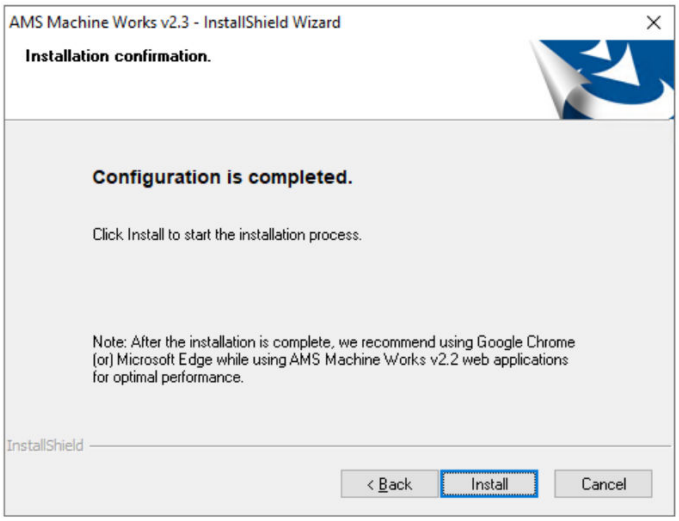
Prerequisites

You must complete the previous step, Select which Agents to Install, before you can begin the installation process.

Procedure

The configuration is complete, click **Install** to start the installation process.

Figure 3-32: InstallShield Wizard - Configuration is complete, begin the installation process.



Postrequisites

Once the installation process begins your machine may need to reboot several times. See: Complete the Reboot Cycle

3.2.10 Complete the Reboot Cycle

The installation process might require one or more reboots, continue to reboot your system as instructed by the installer.

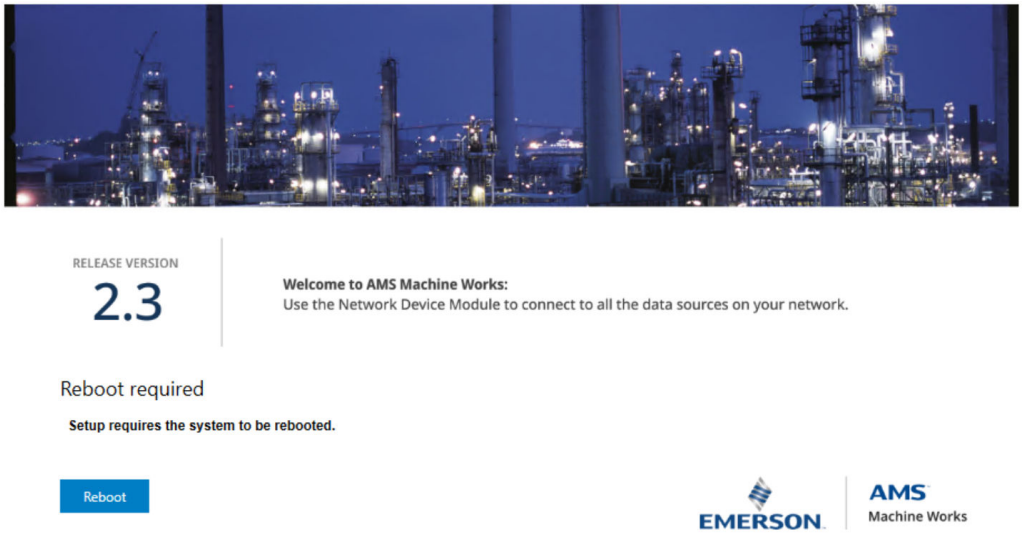
Prerequisites

You must complete the previous step, Confirm Installation, before the installation reboot cycle begins.

Procedure

1. The installer has been fully configured, and is ready to begin the installation process and reboot cycle. Click **Reboot** to proceed.

Figure 3-33: AMS Machine Works 2.3 — Setup Configured / First Reboot



2. The installer goes through the tasks you have configured for your installation. The number of reboots that are required depends on your Windows configuration. Click **Reboot** to proceed.

Figure 3-34: AMS Machine Works 2.3 — Installation in Progress



3. When the installation is complete you will be prompted to reboot one last time. Click **Reboot** to proceed.

Figure 3-35: AMS Machine Works 2.3 — Installation Complete / Final Reboot



Postrequisites

The installation is now complete, continue to Post-Installation Steps.

3.3 Agent Server Installation

This is a general overview of the **Agent Server** installation process. An **Agent Server** of each type can be added anywhere on your network where one is not present, even on the main **AMS Machine Works Server**. Multiple copies of an **Agent Server** can be present on your network, but only one of each type is allowed on a particular machine.

Prerequisites

1. An **AMS Machine Works Server** must be installed and operating on your network before you can perform an **Agent Server** installation.
2. Export the certificate from the AMS Machine Works Server to the Agent Server. See: Add AMS Machine Works Certificates

Procedure

1. Launch Installer
2. Software License Agreement
3. Choose Agent Server Installation
4. Connect to a Server
5. Select which Agents to Install
6. Choose the Installation Drive
7. Confirm Installation
8. Complete the Reboot Cycle

3.3.1 Launch Installer

The `Installer_2.3.0.XXX` package must be properly decompressed, unblocked, and located before you run it.

Prerequisites

Complete all the Pre-Installation Steps.

⚠ CAUTION

Run `setup.exe` from a folder close to the root of your file system. Long path names can result in the installer failing.

⚠ CAUTION

It is strongly recommended that you pause Windows Automatic Updates during the installation process. Failure to do so may lead to inconsistent results. See: Stop Automatic Updates

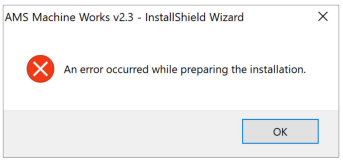
Procedure

1. Right-click on `setup.exe`, and click **Run as administrator**.
2. Respond to various potential errors and warnings.

a) A **Blocked** file will usually result in an error.

Note

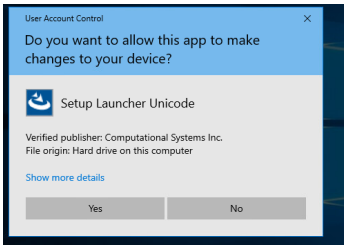
Figure 3-36: Error pop-up



To recover from this error, delete the extracted folder, **Unblock** the zip file, and re-extract the installation files. See: Locate the Installer

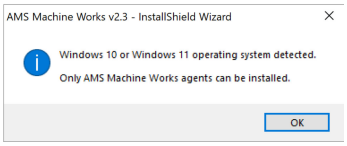
b) If the **User Access Control** window appears, click **Yes** to allow `setup.exe` to install.

Figure 3-37: User Access Control



c) A Windows 10 or 11 operating system is present if you see the following popup.

Figure 3-38: Warnings: Windows 10 or Windows 11 operating system detected.

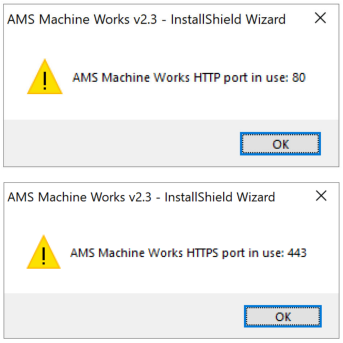


1. AMS Machine Works server only runs on a Windows Server class operating system. If you have Windows 10 or Windows 11 installed, an AMS Machine Works server installation cannot proceed.
2. AMS Machine Works Agent installations can proceed on Windows 10 and 11.

Note
See: System Requirements

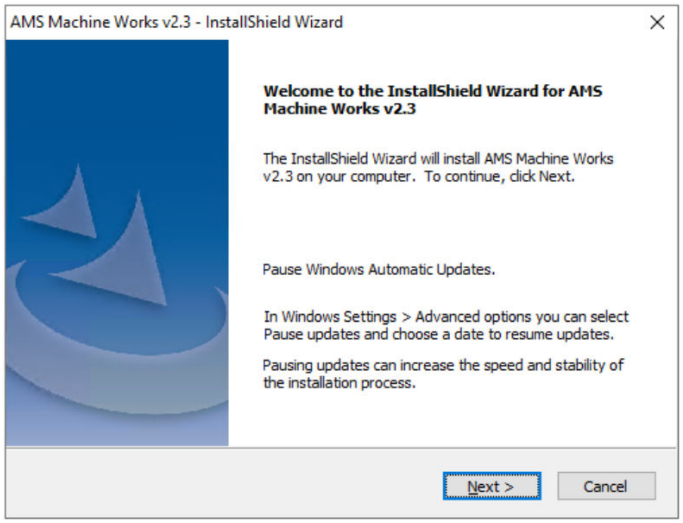
d) AMS Machine Works uses port 80 and port 443 by default. If these ports are in use you must configure different ports. See: Network Port Availability

Figure 3-39: Warnings: AMS Machine Works Web Services Ports in Use



3. Click **Next** to continue.

Figure 3-40: AMS Machine Works v2.3 – InstallShield Wizard



4. Continue to the next step: Software License Agreement

3.3.2 Software License Agreement

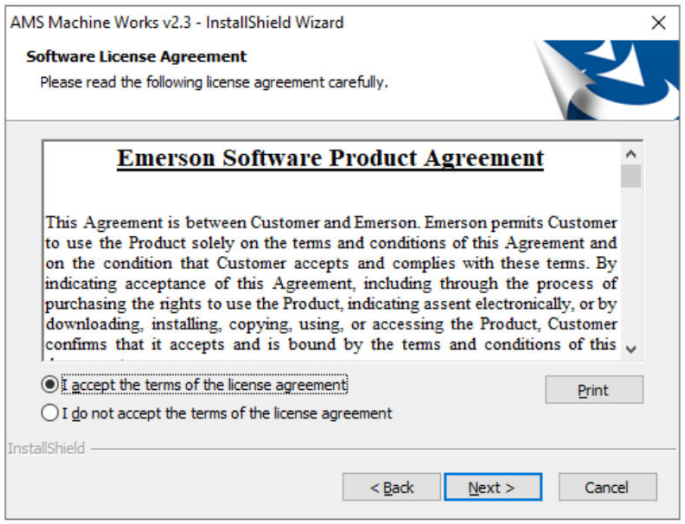
Prerequisites

You must complete the previous step, Launch Installer, before you can begin the installation process.

Procedure

1. Read the **Software License Agreement**.
2. (Optional) Click **Print** to print a copy of the **Software License Agreement** for your records.
3. Click the checkbox next to **I accept the terms of the license agreement**.

Figure 3-41: InstallShield Wizard - License Agreement



4. Click **Next** to continue.

Postrequisites

Depending on which scenario you are using, the next step to this is either:

1. (Scenario One) When performing an AMS Machine Works Server installation: Choose AMS Machine Works Server Installation
2. (Scenario Two) When performing an Agent Server installation: Choose Agent Server Installation

3.3.3 Choose Agent Server Installation

The **Agent Server** installation process produces a server with from one to four types of **Agent**. An **Agent Server** installation can be located anywhere in your network.

Note
If you are adding another **Agent** to an existing installation, select **Agent Server**.

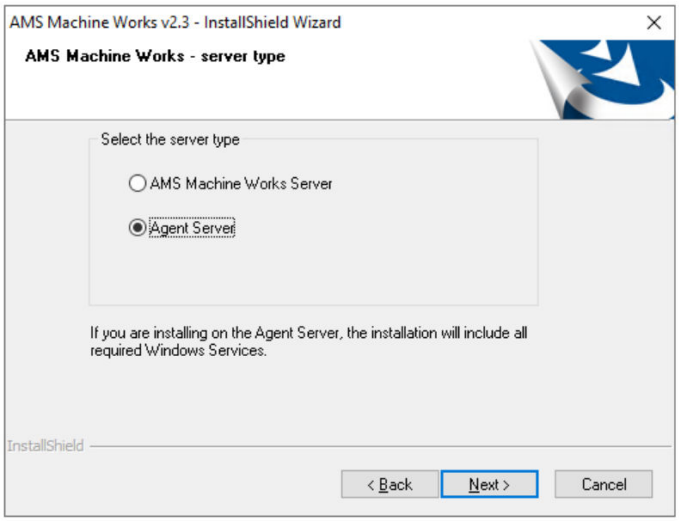
Prerequisites

You must complete the previous step: Software License Agreement

Procedure

1. Select **Agent Server** for a new installation.

Figure 3-42: InstallShield Wizard - Select the Agent Server installation option.



2. Click **Next** to continue to the next step: Connect to a Server

3.3.4 Connect to a Server

The **Server Name** is how other elements of the system can refer to the main **AMS Machine Works Server**.

The **Server Name** can be either:

1. The name of the **AMS Machine Works Server**.
2. The name of a **Proxy Server**. See: AMS Machine Works Security

There are three different formats for giving the **Server Name**:

1. The Computer Name listed in the computer's settings.

   Note
   On the server select: **Settings** → **System** → **About** → **Device name**

2. The fully qualified domain name, FQDN, is the computer.

   Note
   If you have a FQDN (Fully Qualified Domain Name) network, you must enter the **Full computer name** in this step.

   On the server select: **Settings** → **System** → **About** → **Full device name**

3. The IP address of the computer.

   Note
   On the server select: **Settings** → **Network & Internet** → **Ethernet**

Prerequisites

1. You must complete the previous step: Choose Agent Server Installation
2. An **AMS Machine Works Server** must be installed on another server on your network.
3. (Optional) If there is a **Proxy Server** in use, it must configured before proceeding with this step.

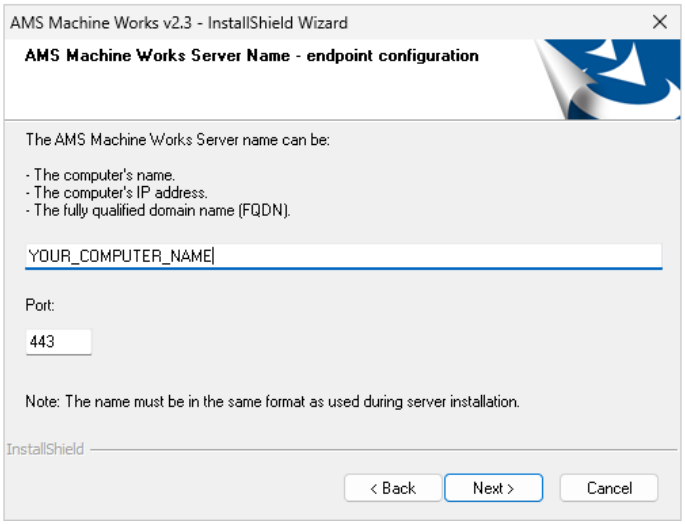
⚠ WARNING

The **Proxy Server** must meet the AMS Machine Works Security requirements.

Procedure

1. Enter the **Server Name** and **Port** number of the server you want to connect to.

Figure 3-43: InstallShield Wizard - Enter the AMS Machine Works Server Name



⚠ CAUTION

The **Server Name** must be entered in the same format as used during the AMS Machine Works server installation process. See: Enter a Server Name.

Note
The default **Port** is `443`. If this port is unavailable consult the Network Port Availability section.

- For an **Agent Server** on the same LAN as the **AMS Machine Works Server** — Enter the `AMS_Machine_Works_Server_Name`
- When a **Proxy Server** is between the **Agent Server** and the **AMS Machine Works Server** — Enter your `Proxy_Server_Name`

2. Click **Next** to continue to the next step: Set the Data Retention Policy

⚠ WARNING

If you have entered incorrect information in this step the **Agent Server** will not function properly, and you will have to:

a. Uninstall the **Agent Server**. See: Uninstall AMS Machine Works v2.3

b. Install the **Agent Server** again. See: Agent Server Installation

3.3.5 Select which Agents to Install

An **Agent** can be installed internally as part of a full **AMS Machine Works Server** installation, or performed later as an external **Agent Server** installation.

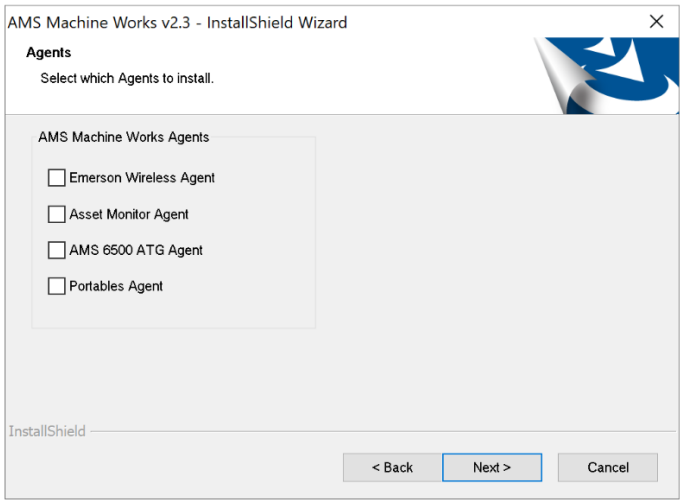
Prerequisites

The previous step is: Choose the Installation Drive

Procedure

1. Select every type of **Agent** which you will need to access the devices on your network.

Figure 3-44: InstallShield Wizard - Agent Selection



Note
You must install each specific type of **Agent** to be able to access those device types.

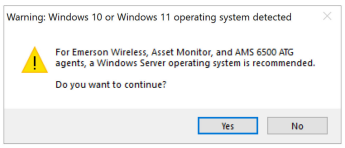
Note
If an option is gray, that **Agent** is already present on that machine.

Note
If you are performing an external **Agent Server** installation, you must select at least one type of **Agent** to install.

a) Select every **Agent** that you want to install, and then click **Next** to proceed.

2. (Only applies to External Agent Server installations.) If the computer is running Windows 10 or Windows 11, a confirmation dialog appears.

Figure 3-45: Warning: Windows 10 or Windows 11 operating system detected.



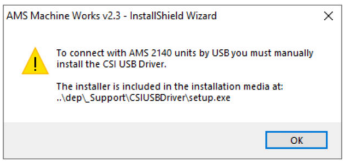
Note
A Windows Server class operating system is recommended for all AMS Machine Works components.

Portable Edge Agents are designed to run on Windows 10 and Windows 11.

- (Default) Click **Yes** to continue.
- Click **No** to exit the installation process. See: System Requirements

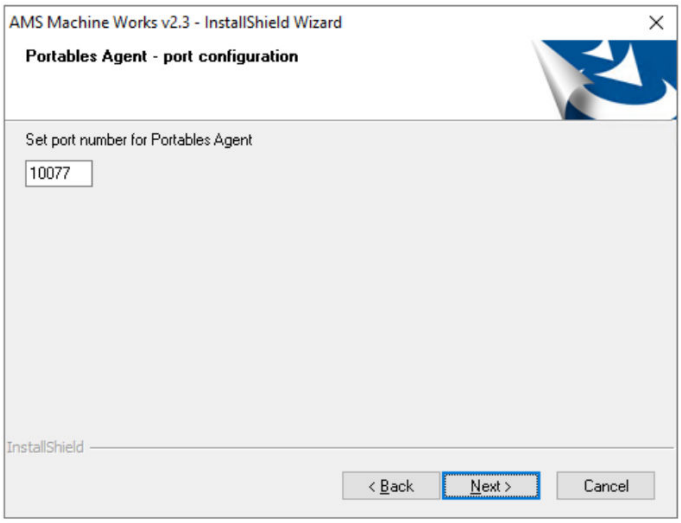
3. (Optional) If you require USB to connect to your AMS 2140 Machinery Health Analyzer to AMS Machine Works, you must have the `CSI USB Driver` installed. You must perform the following post-installation step: Install CSI USB Drivers

Figure 3-46: CSI USB Driver required for Portables Agent



a) When you are installing a **Portables Agent** you must specify which port to communicate on. (Default port: 10077)

Figure 3-47: InstallShield Wizard - Portables Agent Port Configuration



4. Click **Next** to continue to the next step: Confirm Installation

3.3.6 Choose the Installation Drive

We recommend installing AMS Machine Works on a different drive than the boot drive.

Depending on which installation scenario you are using, different components will be installed on the drive that you select in this step:

1. Scenario One — **AMS Machine Works Server** installation.
    a. (Optional) If your installation is using an **Internal MongoDB** database for measurement data, it will be stored on this drive.
    b. Your PostgreSQL database with configuration information.
    c. The AMS Machine Works Server
2. Scenario Two — **Agent Server** installation.
    a. One of each type of **Agent Server**. (Total number of **Agent Servers**: Min. One **Agent Server**, Max. Four **Agent Servers**.)

Note
For more information about the recommended disk space see: Storage Capacity Requirements by System Profile.

Prerequisites

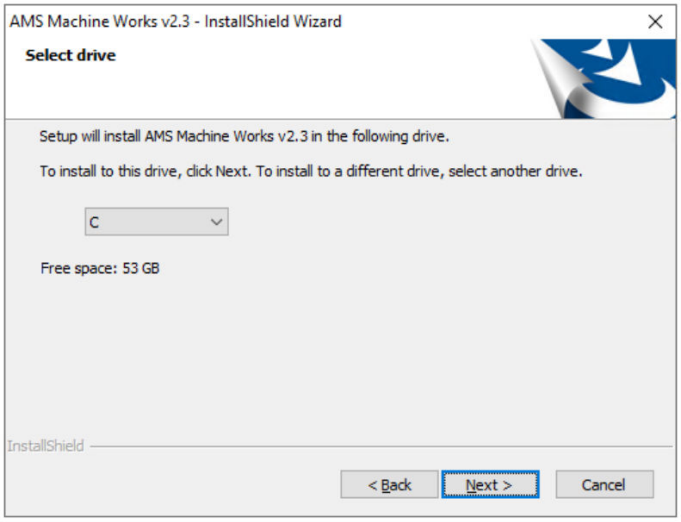
The step previous to this is:

1. Scenario One — **AMS Machine Works Server** installation: Provide Passwords or Connection String
2. Scenario Two — **Agent Server** installation: Connect to a Server

Procedure

1. Select which drive to install on.

Figure 3-48: InstallShield Wizard - Select which drive to install on.



2. Click **Next** to continue to the next step: Select which Agents to Install

3.3.7 Confirm Installation

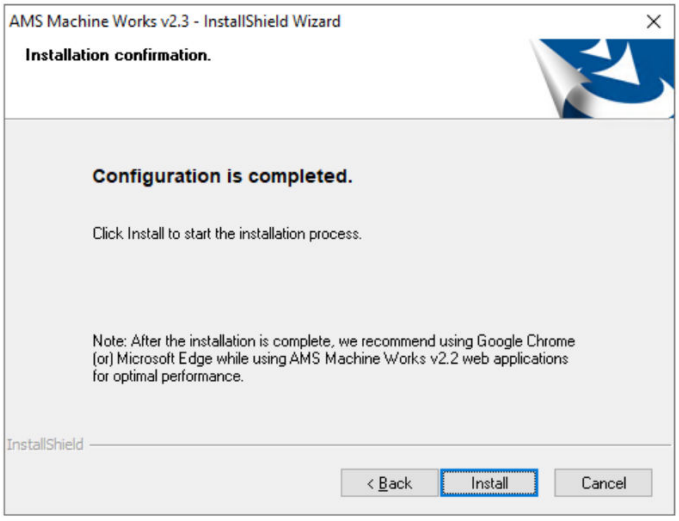
Prerequisites

You must complete the previous step, Select which Agents to Install, before you can begin the installation process.

Procedure

The configuration is complete, click **Install** to start the installation process.

Figure 3-49: InstallShield Wizard - Configuration is complete, begin the installation process.



Postrequisites

Once the installation process begins your machine may need to reboot several times. See: Complete the Reboot Cycle

3.3.8 Complete the Reboot Cycle

The installation process might require one or more reboots, continue to reboot your system as instructed by the installer.

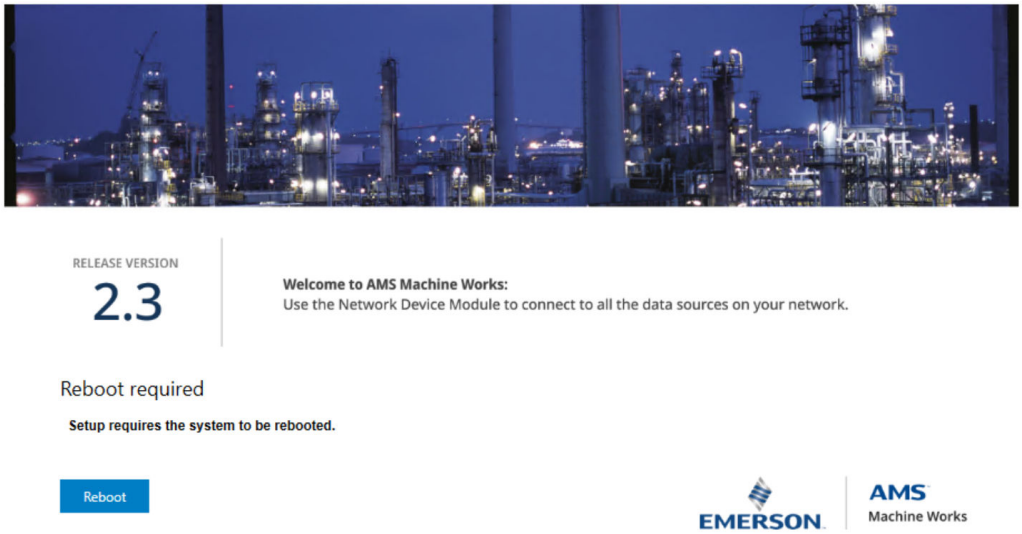
Prerequisites

You must complete the previous step, Confirm Installation, before the installation reboot cycle begins.

Procedure

1. The installer has been fully configured, and is ready to begin the installation process and reboot cycle. Click **Reboot** to proceed.

Figure 3-50: AMS Machine Works 2.3 — Setup Configured / First Reboot



2. The installer goes through the tasks you have configured for your installation. The number of reboots that are required depends on your Windows configuration. Click **Reboot** to proceed.

Figure 3-51: AMS Machine Works 2.3 — Installation in Progress



3. When the installation is complete you will be prompted to reboot one last time. Click **Reboot** to proceed.

Figure 3-52: AMS Machine Works 2.3 — Installation Complete / Final Reboot



Postrequisites

The installation is now complete, continue to Post-Installation Steps.

3.4 External MongoDB Server Installation

This procedure provides instructions for installing a new **External MongoDB Server**.

The default installation is to have an **Internal** MongoDB database which is automatically configured. If you need to install an **External** MongoDB Database Server, follow these steps.

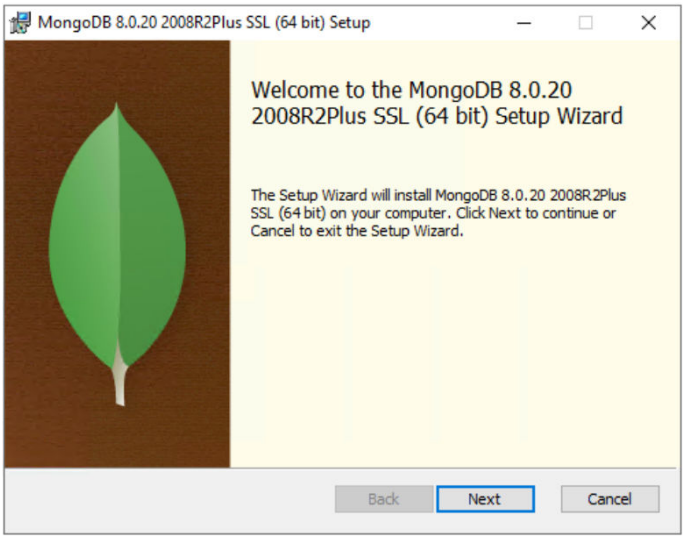
Prerequisites

1. Ensure that the machine meets the minimum specification for an **External MongoDB Server**.
2. Ensure that the machine does not have a previous installation of MongoDB.
3. Ensure that the machine is on the same LAN as the AMS Machine Works Server.
4. Get the MongoDB installer from one of the following locations:
    a. (Minimum version) MongoDB 8.0.21
        1. AMS Machine Works installer package — `..\dep\_Support\MongoDB\mongodb-windows-x86_64-8.0.21-signed.msi`
        2. Online — Download the installation file for MongoDB 8.0.21 to the machine. https://fastdl.mongodb.org/windows/mongodb-windows-x86_64-8.0.21-signed.msi

Procedure

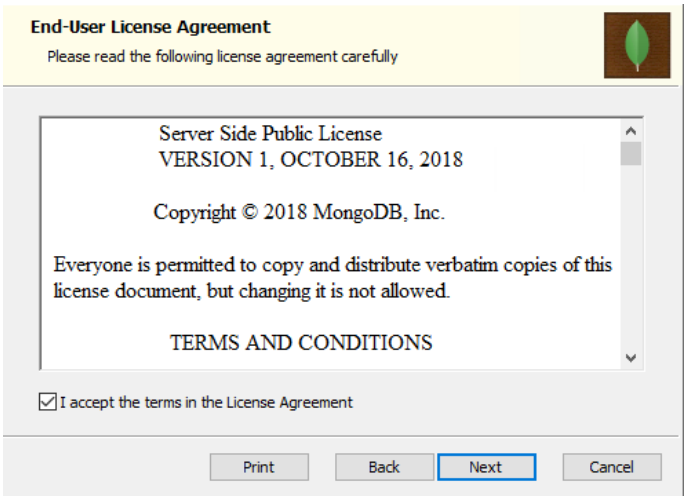
1. Run the MongoDB installer, and then click **Next**.

Figure 3-53: Welcome Screen



2. Accept the terms in the License Agreement, and then click **Next**.

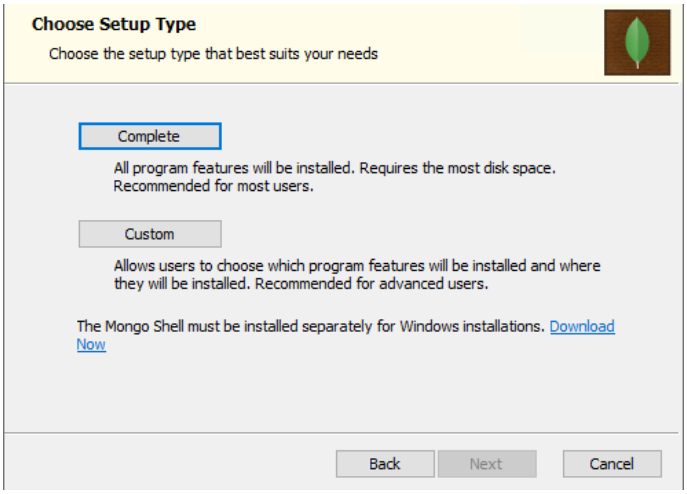
Figure 3-54: License Agreement



3. Choose the Setup Type for your MongoDB, and then click **Next**.

Note
The **Complete** option is recommended. For **Custom** options contact your System Administrator.

Figure 3-55: Choose Setup Type



4. Configure the **MongoDB Server**, and then click **Next**.

Note

Recommendation:

a. Accept the default options to install MongoD as a service named MongoDB.

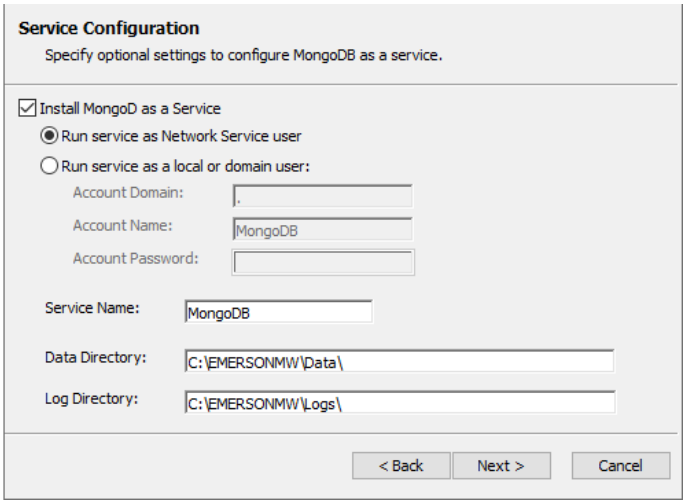
b. Run the MongoDB service as a Network Service user.

c. (Recommended) Install the Data Directory and the Log Directory on a drive other than `C:`, and establish a backup schedule for this drive.

- `<Installation_Drive_Name>:\<Custom_1>\<Custom_2>\..\<Custom_N>\Data`
- `<Installation_Drive_Name>:\<Custom_1>\<Custom_2>\..\<Custom_N>\Logs`

For other configuration options contact your System Administrator.

Figure 3-56: Service Configuration



5. Select **Install MongoDB Compass**

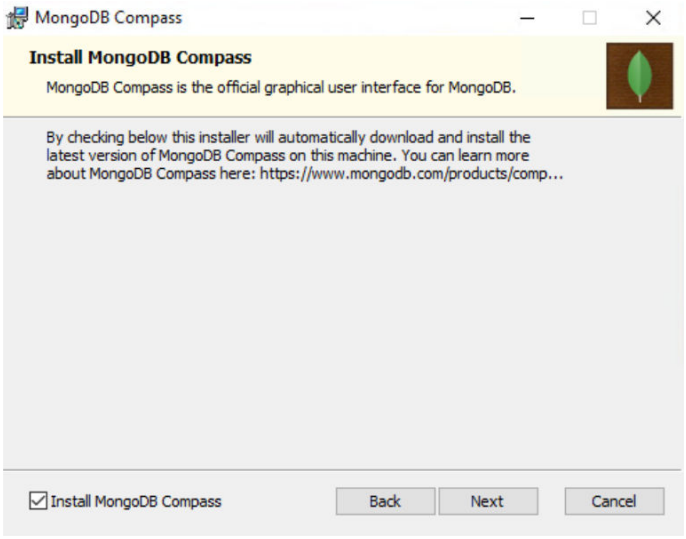
Note
Installing MongoDB Compass is recommended for preparing, configuring, and managing the database.

Note
If the automatic installation of MongoDB Compass fails, for example because of corporate security policies, then you must install it manually. The installer is located at: `..\dep\_Support\MongoDB\mongodb-compass-1.49.5-win32-x64.exe`.

If you want to perform additional installations of MongoDB Compass, for example on the AMS Machine Works server, you can manually perform this installation in multiple places.

6. Click **Next** to continue..

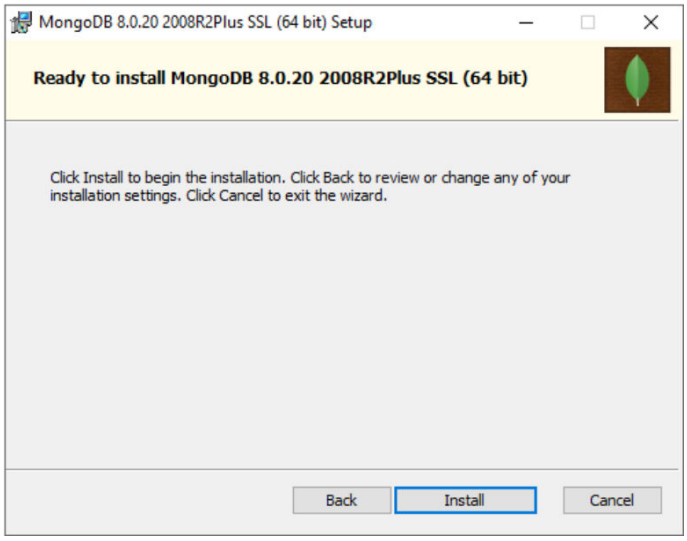
Figure 3-57: Install MongoDB Compass



7. Confirm your installation choices, and then click **Install**.

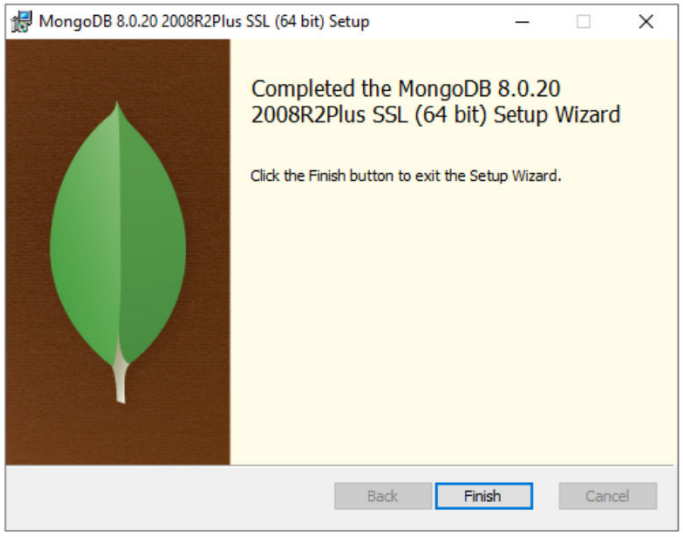
Note
You can use the **Back** and **Next** keys to review your choices and then return to this screen.

Figure 3-58: Install this Configuration



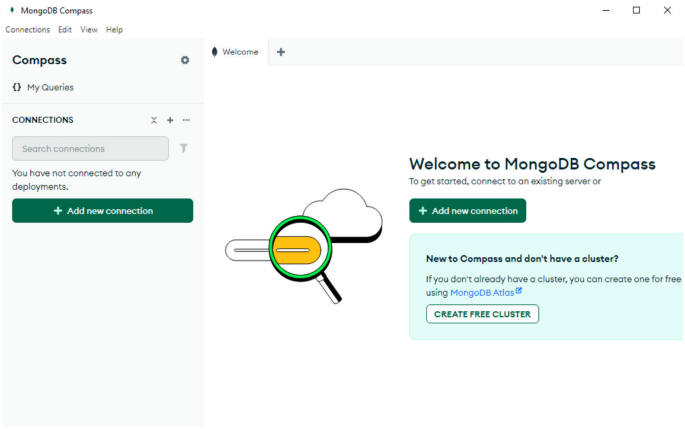
8. When the installation is complete click **Finish**.

Figure 3-59: Finish Installation



9. Run MongoDB Compass.

Figure 3-60: Run MongoDB Compass



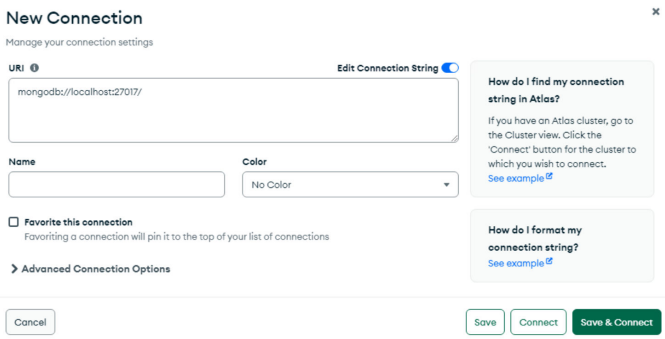
Note

If you did not install MongoDB Compass as was recommended in one of the previous steps:

- Either contact your System Administrator about how to proceed.
- Or download and install MongoDB Compass now.

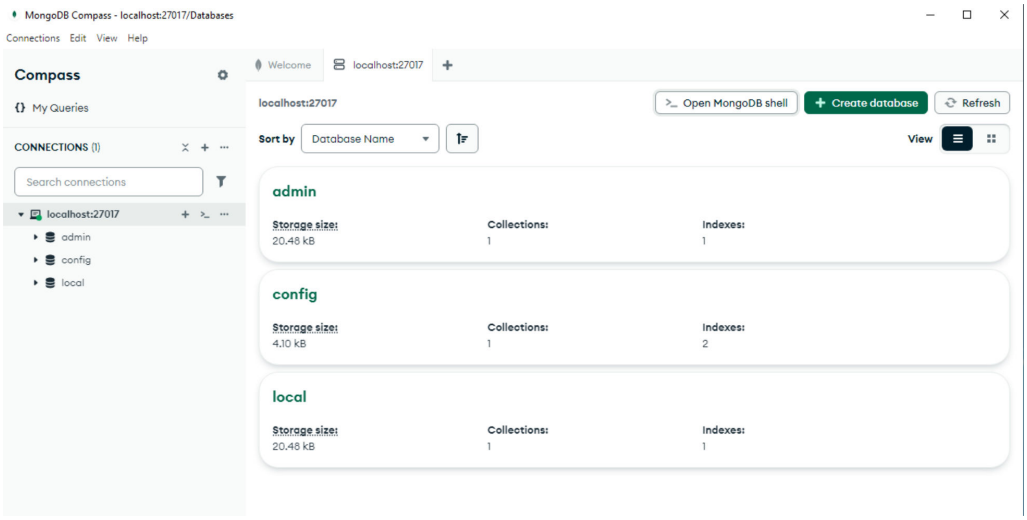
10. Click **+ Add new connection → Save & Connect**.

Figure 3-61: New Connection



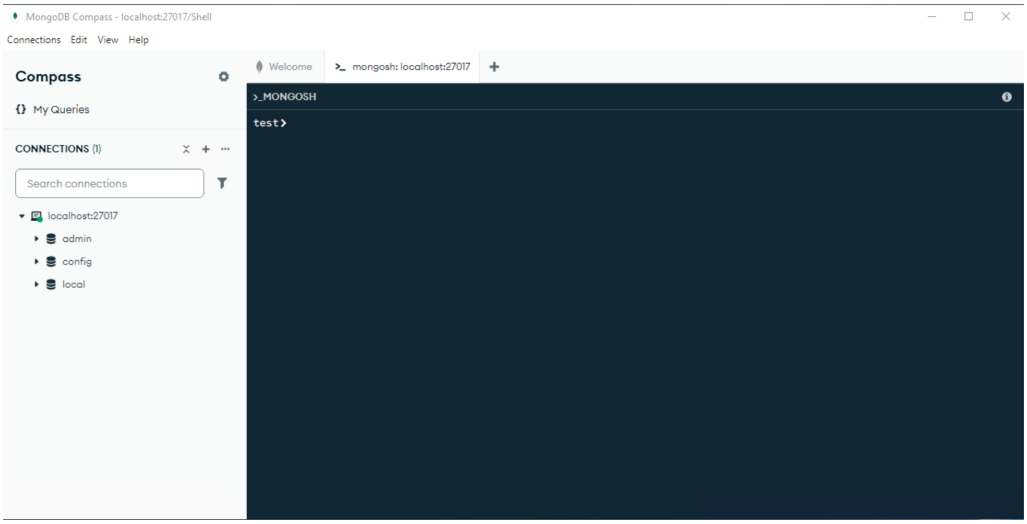
11. Click on the connection: **localhost:27017**

Figure 3-62: Access the MongoDB Shell



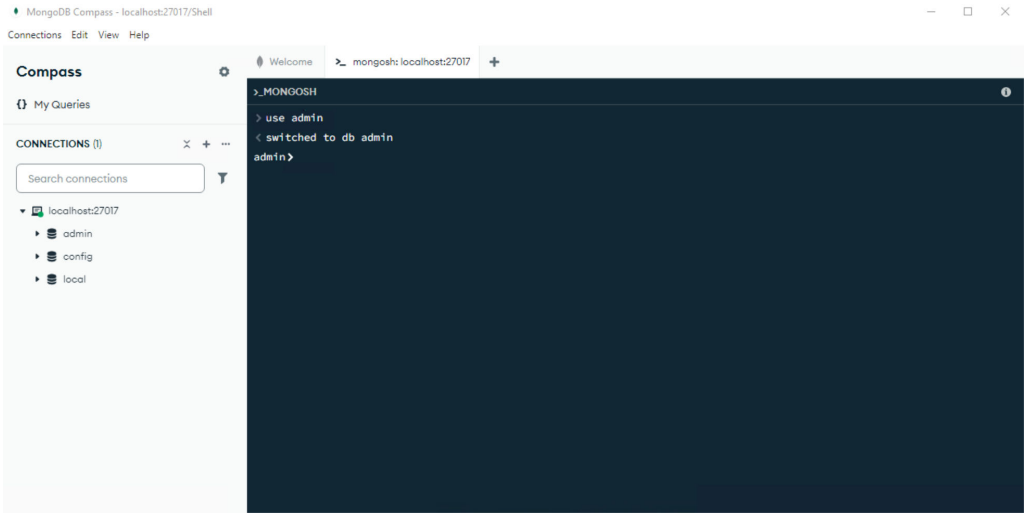
12. Click on **>_ Open MongoDB shell** at the top of the window to expand the MongoDB command line interface.

Figure 3-63: Access the MongoDB Shell



13. Switch to the Admin database by entering the command: `use admin`.

Figure 3-64: Enter the 'use admin' Command



14. Enter and modify the text below to create an **admin** user for managing the MongoDB.

```
db.createUser(
  {
    user: "admin",
    pwd: "Password123",
    roles: [
        { role: 'readWriteAnyDatabase', db: 'admin' },
        { role: 'userAdminAnyDatabase', db: 'admin' },
        { role: 'dbAdminAnyDatabase', db: 'admin' },
        { role: 'root', db: 'admin' }
```

```
            ]
    }
)
```

Note
Text entered into the MongoDB shell is case sensitive.

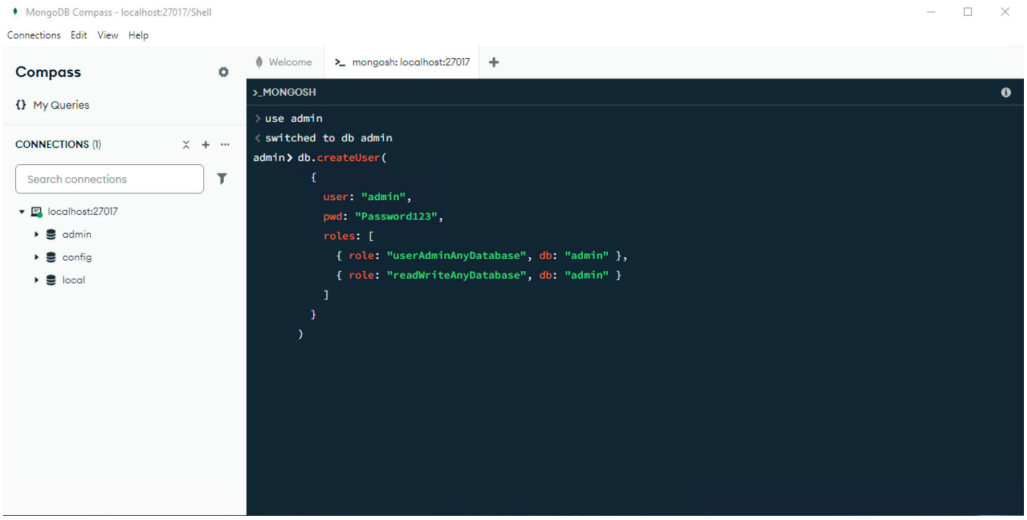
Note
The example password, "Password123", should be replaced with a password which meets your organization's security policies.

⚠ CAUTION

To ensure compatibility, MongoDB passwords should not contain the following special characters:

%, /, :, @, <blank space>

Figure 3-65: Create an Admin User to Manage the MongoDB



15. Enter and modify the text below to create a database user for the AMS Machine Works services, the **mwservice** user.

Note
This user requires `readWrite` privileges for the following databases:

- EmersonMWcoreData
- EmersonMWOnline
- EmersonMWPortables
- EmersonMWLicense

```
db.createUser(
  {
    user: "mwservice",
```

```
    pwd: "Password123",
    roles: [
      { role: "readWrite", db: "EmersonMWcoreData" },
      { role: "readWrite", db: "EmersonMWOnline" },
      { role: "readWrite", db: "EmersonMWPortables" },
      { role: "readWrite", db: "EmersonMWLicense" }
    ]
  }
)
```

Note
Text entered into the MongoDB shell is case sensitive.

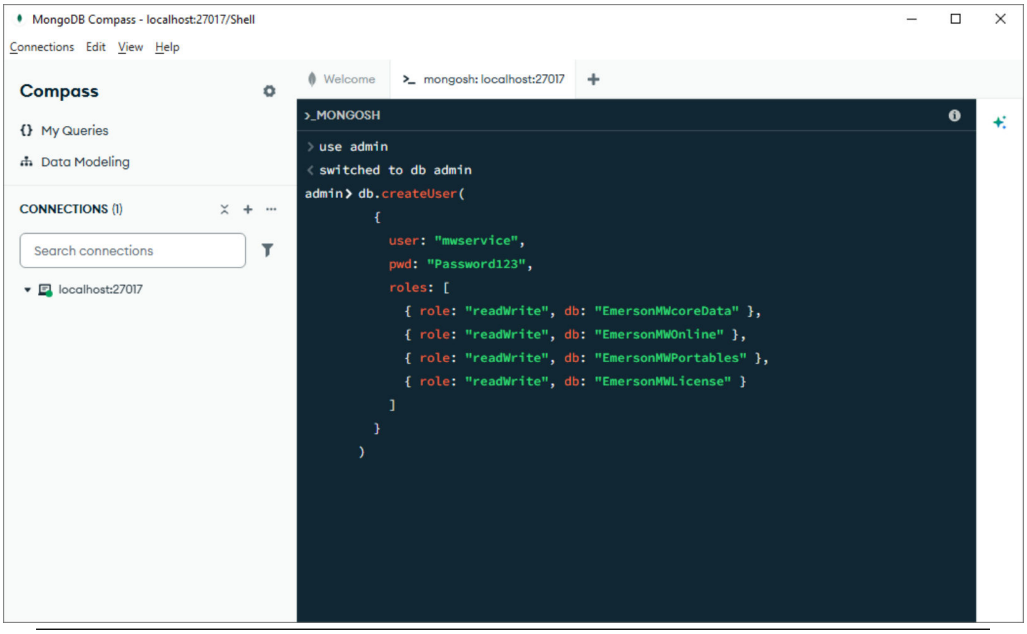
Note
The example password, "Password123", should be replaced with a password which meets your organization's security policies.

⚠ CAUTION

To ensure compatibility, MongoDB passwords should not contain the following special characters:

%, /, :, @, <blank space>

Figure 3-66: Create a Database User for AMS Machine Works Services



16. Open the default `mongod.cfg` file.
    a. The default location of the file for MongoDB 8.0.21: `C:\Program Files\MongoDB\Server\8.0\bin`

Figure 3-67: Example MongoDB Configuration File for MongoDB 8.0.21 — mongod.cfg

```
# mongod.conf

# for documentation of all options, see:
#   http://docs.mongodb.org/manual/reference/configuration-
options/

# Where and how to store data.
storage:
  dbPath: C:\Program Files\MongoDB\Server\8.0\data

# where to write logging data.
systemLog:
  destination: file
  logAppend: true
  path:  C:\Program Files\MongoDB\Server\8.0\log\mongod.log

# network interfaces
net:
  port: 27017
  bindIp: 127.0.0.1

#processManagement:

#security:

#operationProfiling:

#replication:

#sharding:

## Enterprise-Only Options:

#auditLog:
```

17. Modify the `# network interfaces` and `#security` sections of the `mongod.cfg` file.

Figure 3-68: Recommended Configuration

 # network interfaces section

```
# network interfaces
net:
  port: 27018
  bindIp: 0.0.0.0
  tls:
   mode: preferTLS
   certificateKeyFile: C:\Program Files\MongoDB\Server
\8.0\bin\<Your_MongoDB_Server_Cert>.pem
   CAFile: C:\Program Files\MongoDB\Server\8.0\bin
\<Your_CA_Server_Cert>.pem
   allowConnectionsWithoutCertificates: true
```

#security section

```
security:
    authorization: enabled
```

Note

- <Your_MongoDB_Server_Cert>.pem file must be provided by a Certification Authority.
- <Your_CA_Server_Cert>.pem file must be provided by a Certification Authority.
- Remember to remove the comment symbol,

  ```
  #
  ```

  , in front of

  ```
  security:
  ```

  or an error will occur.
- Do not use the **Tab** key to indent the configuration file, only use the **Space** key. Using the **Tab** key will result in a configuration error.
- The default **port** is recommended to be changed from 27017 to another port number.
- Setting the **bindIp** to 0.0.0.0 allows it to bind an IP address other than localhost.
- If **authorization** is not enabled, any user can access the MongoDB database.

Note

The MongoDB Atlas cloud solution also requires a user that has the proper permissions for the Emerson databases. The MongoDB Atlas cloud solution has a graphical interface for configuring these options. These options should be configured to the same values as shown above. Please seek the assistance of your System Administrator, and refer to your MongoDB Atlas cloud documentation for how to perform these steps.

In general, the connection string follows the form:

```
mongodb://<user>:<password>@<servername>:<port>/?
authSource=admin&tls=true
```

Emerson recommends:

```
mongodb://mwservice:<password>@<servername>:27018/?
authSource=admin&tls=true
```

Where:

a. <password> is the password set for the **mwservice** user.

b. <servername> is the name of the **External MongoDB** server.

⚠ CAUTION

Connection strings that specify a .pem file will not work with AMS Machine Works. The .pem files must be installed manually.

18. Obtain a certificate from your trusted Certificate Authority and copy it to the following locations:
    a) C:\Program Files\MongoDB\Server\8.0\bin \<Your_MongoDB_Server_Cert>.pem
    b) C:\Program Files\MongoDB\Server\8.0\bin\<Your_CA_Server_Cert>.pem

⚠ CAUTION

MongoDB no longer supports a configuration that enables TLS without explicitly specifying a chain of trust.

Note
If your installation uses another path for the certificates, this change must be used in your `mongod.cfg` file.

19. Restart the **MongoDB Server (MongoDB)** service.
    The MongoDB server is now correctly configured and running.

3.5 Post-Installation Steps

After installation is complete, there are some additional setup and configuration steps to perform before the system is ready to be used.

Step 1 contains a complete list of post-installation steps, and step 2 contains a shortened list of post-installation steps highlighting just the steps that are necessary after an External Agent Server installation.

Procedure

1. For AMS Machine Works Server installations perform the following steps:
    a) For AMS Machine Works to function properly certain Windows services must be running. See: Check Windows Services

b) For AMS Machine Works to function properly certain internal services must be running. See: Check Service Status

c) For AMS Machine Works to function properly the ports which are used for communication cannot be in use by other applications. See: Deconflict Ports

d) To ensure the stability of the installation process you previously must have paused the automatic update services on your server. You must now Restart Automatic Updates.

e) To enable the use of the domain user accounts on your server to access AMS Machine Works installation you must Enable Domain User Login

f) (Optional) If your AMS Machine Works installation uses External Agent Servers you must Add AMS Machine Works Certificates

g) (Optional) If your system has a proxy server between the AMS Machine works server and an external agent server, then you must configure the external agent server. See: Configure an Agent Server to Connect to a Proxy Server

h) When you launch AMS Machine Works for the first time, log in with the default password and then set a custom password. See: First Launch of AMS Machine Works

i) (Optional) You should set a backup policy and a data retention policy See: Set the Data Retention Policy

j) (Optional) If you need to use an OPC UA client, ensure that you have an OPC UA license in the **User Manager** module of AMS Machine Works. See: OPC UA Server

k) To use the password reset and notifications features SMTP must be configured. See: Configure SMTP Settings

l) (Optional) Enable **Notifications** in **User Manager** module so that your users can receive email reports. See: Configure Notifications

m) Configure the data retention policy for your system. See: Set the Data Retention Policy

n) Monitor the performance of your system to ensure that you do not enter a **critical overload** or have **data loss**. See: Monitor DSS Processing Capacity

o) Create a backup schedule to avoid or lessen the impact of data storage failures. See: Create Backups

p) AMS Machine Works is integrated with a sophisticated analysis tool, the Vibration Analyzer, or VibApp. install this application to aid your data analysis. See: Install the Vibration Analyzer - VibApp

q) (Optional) If your AMS Machine works system needs to communicate with AMS 2140 Machinery Health Analyzer handheld units via a USB connection, you must install the CSI USB Driver on the system(s) you will use to connect to AMS Machine Works. See: Install CSI USB Drivers

2. For Agent Server installations only the following steps are necessary:

a) For AMS Machine Works to function properly certain Windows services must be running. See: Check Windows Services

b) For AMS Machine Works to function properly the ports which are used for communication cannot be in use by other applications. See: Deconflict Ports

c) To ensure the stability of the installation process you previously must have paused the automatic update services on your server. You must now Restart Automatic Updates.

d) (Optional) If your AMS Machine Works installation uses External Agent Servers you must Add AMS Machine Works Certificates

You are now ready to start using AMS Machine Works.

3.5.1 Check Windows Services

All of the **Services** associated with AMS Machine Works must be running for the system to function properly. You can check the **Services** in two ways:

1. In the Windows **Services** application.
2. In the **Service Status** page. See: Check Service Status

Prerequisites

Open the **Services** application included with your operating system.

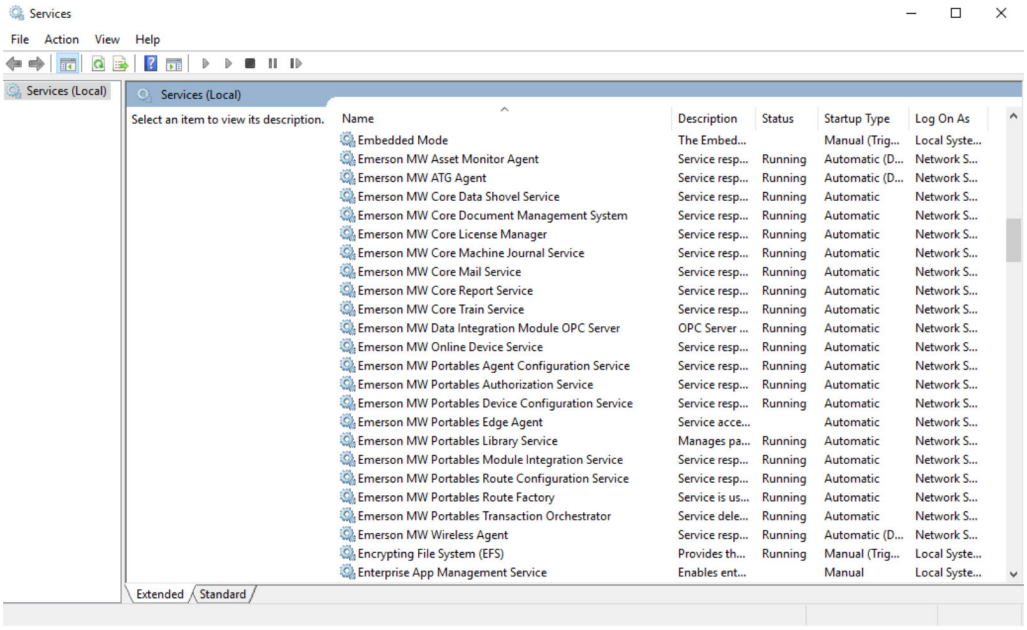
Procedure

1. After rebooting your system and logging in, wait for about 5 to 7 minutes so that all the services have some time to start. Next, open Windows Services and check that the service is running for each **Agent** that you installed.

Note
The following services have a **delayed start** setting:

- Emerson MW Asset Monitor Agent
- Emerson MW Wireless Agent
- Emerson MW ATG Agent

Figure 3-69: Windows Services



2. Check that the following services are running:
    a. Emerson MW Core Data Shovel Service
    b. Emerson MW Core Document Management Service
    c. Emerson MW Core License Manager
    d. Emerson MW Core Machine Journal Service
    e. Emerson MW Core Mail Service
    f. Emerson MW Core Report Service
    g. Emerson MW Core Train Service
    h. Emerson MW Data Integration Module OPC Server
    i. Emerson MW Online Device Service
    j. Emerson MW Portables Agent Configuration Service
    k. Emerson MW Portables Authorization Service
    l. Emerson MW Portables Device Configuration Service
    m. Emerson MW Portables Library Service
    n. Emerson MW Portables Module Integration Service
    o. Emerson MW Portables Route Configuration Service
    p. Emerson MW Portables Route Factory
    q. Emerson MW Portables Transaction Orchestrator
    r. Agent Services:

1. Emerson MW Asset Monitor Agent
2. Emerson MW ATG Agent
3. Emerson MW Portables Edge Agent
4. Emerson MW Wireless Agent

Note

1. Agent Services will only be present if they have been installed on this computer or virtual machine.
2. Agent Services will only be running after they have been registered in the **Network Device Module**, for most agents, or in the **Portable Device Module** for the Emerson MW Portable Edge Agent.

s. MongoDB Services:
   1. MongoDB Server (MongoDB)

t. PostgreSQL Services:
   1. postgresql-x64-17-PostgreSQL Server 17

u. RabbitMQ services:
   1. RabbitMQ

v. Sentinel RMS License Manager Services:
   1. Sentinel RMS License Manager

3.5.2 Check Service Status

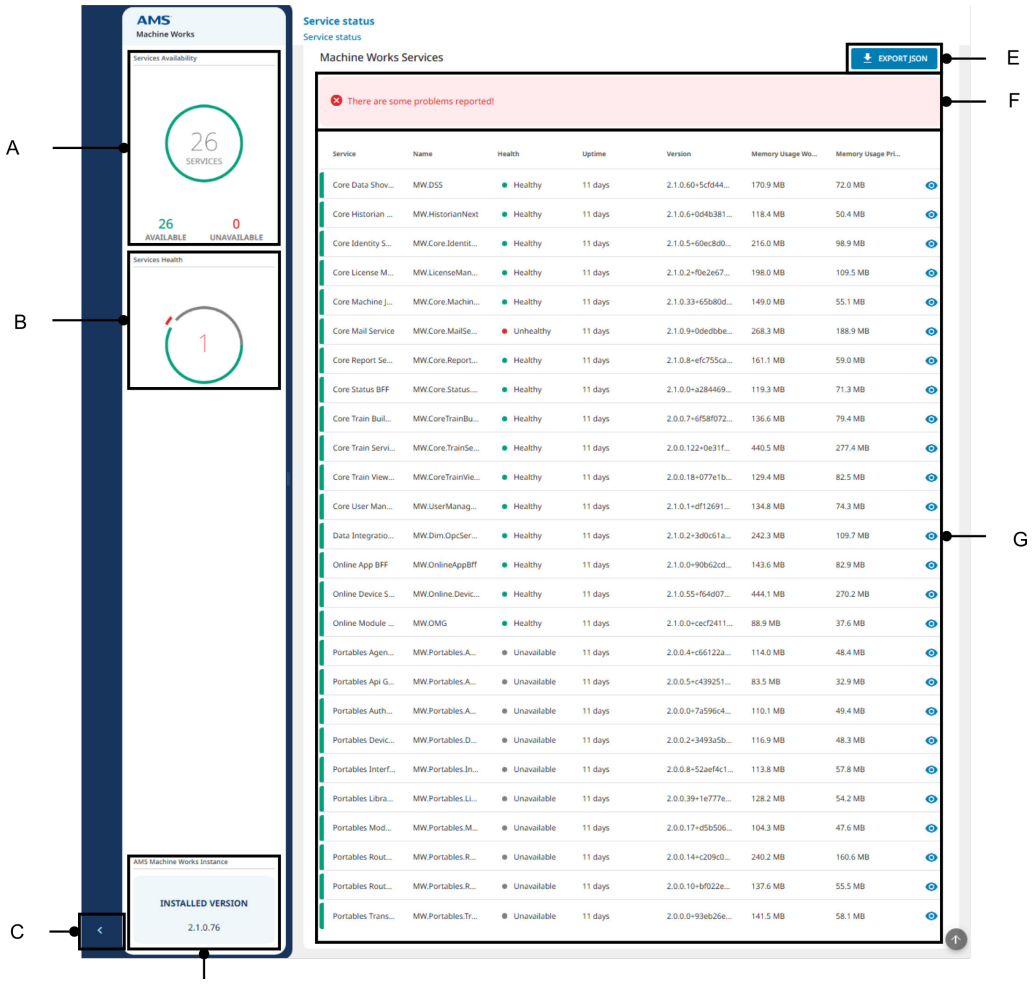
The **Service Status** page shows every **Windows Service** or **IIS Application Pool** that is used in AMS Machine Works.

There are several KPI (Key Performance Indicator) graphical displays which enable users to quickly understand the overall status of the services.

Prerequisites

1. AMS Machine Works must be installed.
2. Allow time for **Services** with a delayed start configured to start.
3. Log in to AMS Machine Works.
4. Open the **Service Status** page by one of the following methods:
   - Click the **Service Status** icon.
   - Enter the URL: `https://<YOUR_AMS_MACHINE_WORKS_SERVER_NAME>/status/`

Figure 3-70: Status Overview



A. ***Service Availability KPI*** *display — The center of the doughnut diagram displays the total number of AMS Machine Works services running on the server. Green represents the available services, and red indicates the unavailable services.*

B. ***Service Health KPI*** *display — The center of the doughnut diagram displays the total number of unhealthy AMS Machine Works services running on the server.*

   A. *Green represents the* ***Healthy*** *services.*

   B. *(Disregard) Grey indicates the incorrectly indicates* ***Unavailable*** *services.*

   C. *Red indicates the* ***Unhealthy*** *services.*

C. ***Open / Close*** *control for the tray — (Default:* ***Closed****) Click this control to see the KPIs.*

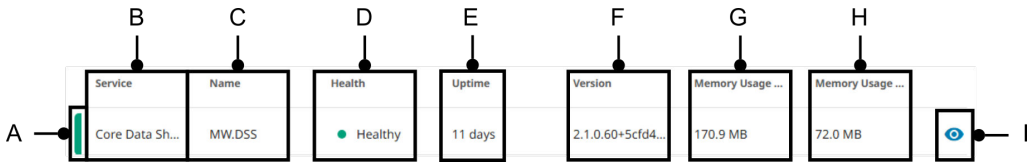
D. ***Installed Version*** *display — The build number of this AMS Machine Works installation.*

E. ***Export JSON*** *button — Click the* ***Export JSON*** *button to save the* `mwstatus.json` *file into the* `Downloads` *director on the system where your browser is running. This file is useful for Emerson Product Support. Consult the AMS Machine Works System Guide topic "Sending Log Files to Emerson Product Support".*

F. ***Status Information*** *— This area contains any warning messages.*

G. ***Service List*** *— Every* ***Windows Service*** *or* ***IIS Application Pool*** *is listed here.*

Figure 3-71: Status List



A. ***Status Indicator*** *— This color indicates the Availability (Green) / Unavailability (Red).*
B. ***Service*** *— The architectural name of the service.*
C. ***Name*** *— The name of the* ***Windows Service*** *or* ***IIS Application Pool****.*
D. ***Health*** *— A service is considered healthy if it is improperly configured.*

> ***Note***
> *Services with names beginning with* `Portables` *incorrectly report that they are* ***Unavailable****. Disregard this information and refer to the color of the* ***Status Indicator*** *for these services.*

E. ***Uptime*** *— The amount of time that the service has been running.*
F. ***Version*** *— The version number for each service. Format:* `x.x.x.<44 character identifier>`*.*
G. ***Memory Usage Working Set*** *— This column indicates how much memory the service will require.*
H. ***Memory Usage Private Set*** *— This column indicates how much memory the service needs exclusive access to.*
I. ***Status Details*** *control — Click the eye icon to open the* ***Status Details*** *sidepanel.*

> ***Note***
> *The* ***Status Details*** *sidepanel has information which is useful for Emerson Product Support. To export this information use the* ***Export JSON*** *button.*
> *Consult the AMS Machine Works System Guide topic "Sending Log Files to Emerson Product Support".*

Procedure

1. Check the **Status Information** area at the top of the window to determine if any problems exist.
2. (Optional) Click the **Open / Close** control for the tray to see the KPI displays and version number.
3. (Optional) When a service is **Unhealthy** and you need to contact Emerson Customer Support:
   a) Click **Export JSON** to download the status information for every service into the `mwstatus.json` file in the **Downloads** folder of the computer where your browser is running.
   b) Contact Emerson Customer Support and send them the `mwstatus.json` file. Consult the AMS Machine Works System Guide topic "Sending Log Files to Emerson Product Support".

3.5.3 Deconflict Ports

The default ports for AMS Machine Works are 80 and 443.

Port 8888 is required for the Vibration Analyzer, VibApp, application to operate.

If these ports are not available, or in use by another application, you must change which ports you will use.

Prerequisites

Note the numbers of some available ports.

Procedure

1. (Optional) If Port 8888 is in use by another application, that application must be reconfigured to use another port.
2. Launch the Internet Information Services (IIS) Manager.
3. In the **Connections** pane expand **Your_Server_Name**.
4. In the **Connections** pane expand the **Sites** under **Your_Server_Name**.
5. In the **Connections** pane, right click **EmersonCSI** → **Edit Bindings...**.
6. (Optional) If port 80 is in use:
    a) In the **Site Bindings** window, select port 80 and click **Edit** .
    b) In the **Edit Site Binding** window, enter another port number, and then click **OK**.
7. (Optional) If port 443 is in use:
    a) In the **Site Bindings** window, select port 443 and click **Edit** .
    b) In the **Edit Site Binding** window, enter another port number, and then click **OK**.

AMS Machine Works should now operate normally with deconflicted ports.

3.5.4 Restart Automatic Updates

Emerson recommends stopping automatic updates before installation. See: Stop Automatic Updates

Prerequisites

Locate the **Stopped Update Services List** you made in the Stop Automatic Updates task.

Procedure

1. Restart the services in your **Stopped Update Services List**.
   The automatic update services that you paused should now be running again.
2. Verify that the services are running.

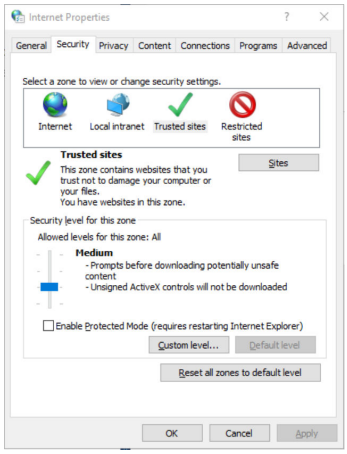
3.5.5 Enable Domain User Login

You can use the domain user accounts on the server computer to log in to AMS Machine Works.

Prerequisites

1. Log on to the computer with the same **Administrator** account that you used to install AMS Machine Works.
2. Open **Windows → Internet Properties → Security Tab → Trusted Sites**

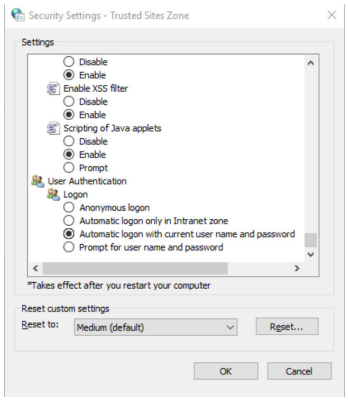
Figure 3-72: Internet Properties Dialog



Procedure

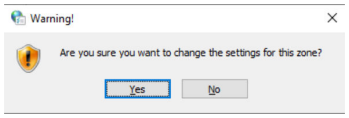
1. Click **Custom Level**.

Figure 3-73: Security Settings — Trusted Sites Zone



2. Scroll down to the **User Authentication section**.
3. Select **Automatic logon will current user name and password**.
4. Click **OK**.

Figure 3-74: Confirm Change — Warning!



5. Click **Yes**.
6. In the **Internet Properties** dialog, click **Apply**.
7. To close the **Internet Properties** dialog, click **OK**.
   You should now be able to log in to AMS Machine Works with Domain User accounts.

3.5.6 Add AMS Machine Works Certificates

A certificate is required for secure communication. You must add a certificate from your AMS Machine Works installation to every **External Agent Server** that you create.

AMS Machine Works supports the use of TLS 1.3, and uses this standard by default.

Windows Server versions prior to Windows 2022, and other supported operating systems, can only use TLS 1.2. The TLS protocol automatically negotiates the highest mutually supported version of the protocol to use.

The AMS 2140 Health Analyzer only supports TLS 1.1. (See the AMS Machine Works User Guide for more details.)

Prerequisites

1. You will need **Administrator** access on all the affected machines.
2. In Windows open: **Manage computer certificates**.

Procedure

1. To open the **Certificate Export Wizard** choose: **Trusted Root Certification Authorities → Certificates → AMS Machine Works Root CA → All Tasks → Export...**
2. In the **Certificate Export Wizard**, choose: **Next → No, do not export the private key → DER encoded binary X.509 (.CER) → Next**.
3. Click **Browse** and then choose a location and enter a **File name** for the certificate.
4. Choose: **Save**
5. Choose: **Next**
6. Review the certificate's settings.
   - If the settings are not correct, click **Cancel**.
   - If the settings are correct, click **Finish**.
7. Install AMS Machine Works server certificate where necessary. See: AMS Machine Works Security
   A certificate is necessary on every **External Agent Server**.

Note
This includes computers or virtual machines used to connect with AMS 2140 Health Analyzer units. See the User Guide for more details.

Postrequisites

Note
For further security information, refer to the AMS Product Security Documentation (AMS-SEC-PSG-001) .

3.5.7 Configure an Agent Server to Connect to a Proxy Server

For each **Agent** which is separated from the AMS Machine Works Server by a proxy server you must manually edit the configuration file for that **Agent**.

Prerequisites

1. An Agent Server must be installed on an external **Host** system.

   Note
   The **Host** information is listed here:

   Network Device Module → Agents → Agent List → Host Column

2. The proxy server must be between the Agent Server **Host** system and the AMS Machine Works Server. Take note of: YOUR_AMS_MACHINE WORKS_SERVER_NAME
3. You must know the name or IP address of the proxy server. Take note of: YOUR_PROXY_SERVER_NAME

Procedure

1. On the affected Agent Server **Host** system, stop the correct **Windows Service** for every **Agent**.
   - For an **Asset Monitor Agent**: Stop the **Emerson MW Asset Monitor Agent** service.
   - For an **Emerson Wireless Gateway Agent**: Stop the **Emerson MW Wireless Agent** service.
   - For an **AMS 6500 ATG Agent**: Stop the **Emerson MW ATG Agent** service.
   - For an **AMS 2140 Agent**: Stop the **Emerson MW Portables Edge Agent** service.
2. On the affected Agent Server **Host** system, edit the configuration file for every **Agent**.
   - For an **Asset Monitor Agent**:
     In the file system on **Host** system navigate to: `C:\Program Files\Emerson \AMS Machine Works\AMA\appsettings.json`
   - For an **Emerson Wireless Gateway Agent**:

In the file system on **Host** system navigate to: `C:\Program Files\Emerson \AMS Machine Works\EWA\appsettings.json`

- For an **AMS 6500 ATG Agent**:
  In the file system on **Host** system navigate to: `C:\Program Files\Emerson \AMS Machine Works\ATGA\appsettings.json`
- For an **AMS 2140 Agent**:
  In the file system on **Host** system navigate to: `C:\Program Files\Emerson \AMS Machine Works\PEA\mwkpakmkmddkgswktcto.mb`

3. For **Asset Monitor Agent**, **Emerson Wireless Gateway Agent**, and **AMS 6500 ATG Agent** configuration files edit the `appsettings.json` file in the following way:
   a) Open the `appsettings.json` file in a plaintext editor.
   b) Search for the section starting with `edgeGatewayCommunication`.
   c) Find the line containing `"omgUrl": "https://YOUR_AMS_MACHINE WORKS_SERVER_NAME:443/omg/",`
   d) Replace `YOUR_AMS_MACHINE WORKS_SERVER_NAME` with `YOUR_PROXY_SERVER_NAME`.
   e) Save the `appsettings.json` file as plain text.
4. For an **AMS 2140 Agent** edit the `mwkpakmkmddkgswktcto.mb` file in the following way:
   a) Open the `mwkpakmkmddkgswktcto.mb` file in an editor capable of Base64 encoding and decoding.

   ⚠ CAUTION

   If you do not have access to an editor with this capability, or if your computer administration policies do not allow you to use unapproved software, contact Customer Support.

   b) Use the Base64 Decode function in your editor.
   c) Search for the line containing `InterfaceGatewayServerAddress`.
   d) Find the section containing: `"https://YOUR_AMS_MACHINE WORKS_SERVER_NAME:443/PIG/",`
   e) Replace `YOUR_AMS_MACHINE WORKS_SERVER_NAME` with `YOUR_PROXY_SERVER_NAME`.
   f) Use the Base64 Encode function in your editor.
   g) Save the `mwkpakmkmddkgswktcto.mb` file as plain text.
5. On the affected Agent Server **Host** system, start the correct **Windows Service** for the **Agent**.

- For an **Asset Monitor Agent**: Start the **Emerson MW Asset Monitor Agent** service.
- For an **Emerson Wireless Gateway Agent**: Start the **Emerson MW Wireless Agent** service.
- For an **AMS 6500 ATG Agent**: Start the **Emerson MW ATG Agent** service.
- For an **AMS 2140 Agent**: Start the **Emerson MW Portables Edge Agent** service.

6. Repeat this process for every affected Agent Server **Host** system.

3.5.8 First Launch of AMS Machine Works

After installation, you can launch AMS Machine Works using the desktop shortcut. You will be asked to log in to the **Administrator** account.

Prerequisites

- Use Google Chrome for optimal performance. AMS Machine Works web applications use web technologies that are no longer supported in Internet Explorer 11. See: Troubleshooting
- Security certificates must be installed. See: AMS Machine Works Security
- If you are launching AMS Machine Works for the first time after an **update**, you must clear all browser caches before reconnecting to AMS Machine Works. See: Update from versions before AMS Machine Works v2.2

Procedure

1. Open a web browser. (Recommended: Google Chrome or Microsoft Edge)
2. In the web browser address field, enter the URL for the **User Manager**: For example, `https://[server]/user-manager`

   Where `[server]` is the computer name of the AMS Machine Works server.[2]
3. If this is the first time you have launched AMS Machine Works from a client computer, install the certificate.

   Install the AMS Machine Works certificate so you can perform actions such as adding asset sources. See: AMS Machine Works Security
4. Open the **User Manager** in the web browser then enter the initial credentials:
   - Username : **admin**
   - Password : (default) **Emerson#1**
5. To ensure the security of your AMS Machine Works installation you must change the **admin** password and fully configure the **admin** account.
   a) Configure the **Password Policy Settings** in the **User Manager**.
   b) Change the **admin** password in the **Your Account** module while logged in to the **admin** account.

2 *If a port number is required, also include the port number, for example,* `https://[server]:443/user-manager`.

c) Set the **First Name** and **Last Name** for the **admin** account.

d) Set the **email** address for the **admin** account.

Note
Refer to the **Your Account** section of the AMS Machine Works User Guide for details.

6. You must register your AMS Machine Works license. Refer to the **User Guide Online Help** for instructions.
7. You must configure the **SMTP Settings** for the **Notifications** system to work. Refer to the **User Guide Online Help** for instructions.

Note
The **Core Mail Service** will have an **Unhealthy** status until the **SMTP Settings** have a valid configuration.

3.5.9 Configure SMTP Settings

The **SMTP Settings** must be configured for the following features to be enabled:

- **Password Reset**
- **Notifications**

Procedure

Consult the AMS Machine Works User Guide section: Configure SMTP Settings

3.5.10 Configure Notifications

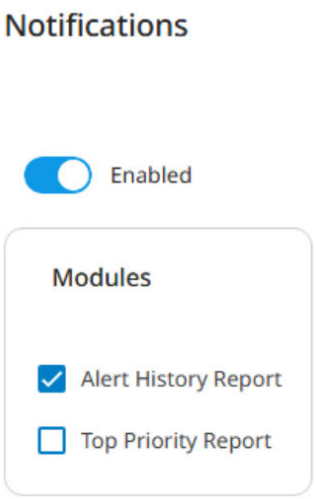
Notifications must be enabled in the **User Manager** module so that your users can receive email reports.

The **Notification** system must be **Enabled** and at least one **Report** must be checked for the system to work.

Prerequisites

1. You must be logged in as the **Administrator**.
2. Open the controls: **User Manager** → **Configurations** → **Notifications**

Figure 3-75: Notifications: Default Configuration



- **Enabled** — By default **Notifications** are **Enabled**.
- **Module Selection** — By default the **Alert History Report** is selected, and the **Top Priority Report** is not selected.

Procedure

1. (Optional) Click this toggle to turn the entire **Notifications** system status between **Enabled** and **Disabled**.
2. (Optional) Check every kind of report to send when **Notifications** are **Enabled**.

3.5.11 Set the Data Retention Policy

Once your AMS Machine Works installation is fully installed and running, implement your organization's data retention policy.

There are two types of data:

1. **Block Data** — **Block Data** is removed when the retention period ends.
2. **Scalar Data** — **Scalar Data** is thinned when the retention period ends.

> **Note**
> **Scalar Data** can be removed entirely if you set the **Resolution** to `2880`.

Data retention tasks can be performed in two ways:

1. Manually at any time. — Use the **Ad Hoc Retention** button.
2. By a scheduled task. — Use the **New Retention Task** button.

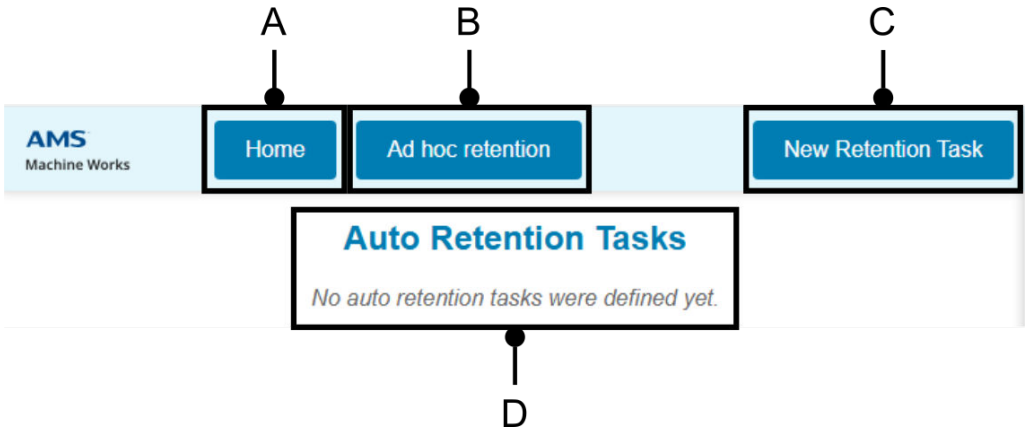
Prerequisites

1. Contact your System Administrator to determine your organization's data retention policy.

2. AMS Machine Works must be installed and running.
3. You must be logged into the machine where AMS Machine Works is installed.
4. The browser you are using to access AMS Machine Works must be running on the AMS Machine Works server.
5. Open the **Auto Retention Tasks** page in your browser:
   - Double-click the **AMS Data Retention Tool** icon on the desktop.
   - Enter the URL in your browser: `http://localhost:5006/status/dashboard.html`

   Note
   The URL must begin with **http**, **https** is not supported.

Figure 3-76: Data Retention Home Screen



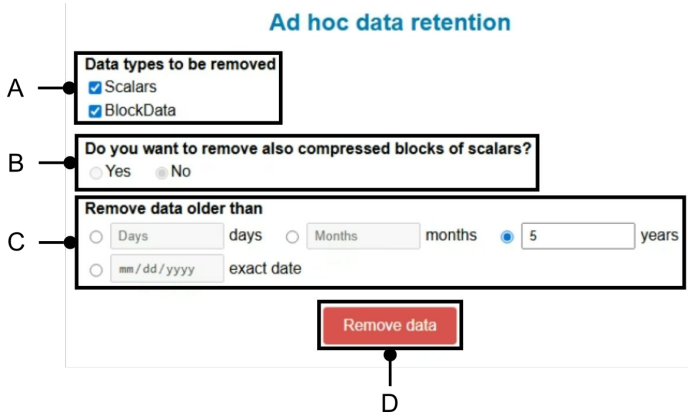
*A. **Home** button — Click the **Home** button to return to the landing page.*
*B. **Ad hoc retention** button — Click the **Ad hoc retention** button to go to the **Ad hoc data retention** page.*
*C. **New Retention Task** button — Click the **New Retention Task** button to open the **Create Data Retention Task** sidepanel.*
*D. **Auto Retention Tasks** list — This area lists all the currently defined **Auto Retention Tasks**. The tasks are listed in the order that they were created.*

Procedure

Ad Hoc Retention Control
Ad Hoc data retention control can be performed at any time by a user which has login access to the server which AMS Machine Works is installed on.

1. (Optional) On the **Data Retention Home Screen**, click the **Ad Hoc Retention** button to immediately perform one data retention task:

Figure 3-77: Ad Hoc Retention



A. ***Data Type Selection*** — *Select at least one type of data to set a retention limit for.*
B. ***Remove Compressed Scalar Blocks*** — *(Unconfigurable) (Default: No) Only visible when the* ***Scalar*** *data type is selected.*
C. ***Cutoff Date*** — *Data older than the date you set is discarded or thinned.*

> ***Note***
> *Data thinning is only available for* ***Scalar Data****.*

2. Choose which type of data to use a retention limit on:
   - **Scalar**
   - **Block**
   - **Both**
3. (Optional) (Only for **Scalar** data.) Choose which resolution of **Scalar** data to retain.
   - **2880** — Delete all **Scalar** data.
   - **240** — Keep up to 4 **Scalar** data points per 2880 minutes / 28 hours.
   - **60** — Keep up to 4 **Scalar** data points per 240 minutes / 4 hours
   - **5** — Keep up to 4 **Scalar** data points per 60 minutes.
   - **0** — Keep up to 4 **Scalar** data points per 5 minutes.
4. Set the cutoff date for data retention.
   - **Days** — Select **Days** and enter an integer value from 1 to 1000.
   - **Months** — Select **Months** and enter an integer value from 1 to 100.
   - **Years** — (Default: 5) Enter an integer value from 1 to 100.
   - **Exact Date** — Select **Exact Date** and select a date from the calendar.
5. Click **Remove Data** choose:
   - **Yes** — Data older than the date you set is removed.

- **Cancel** — Return to the **Ad hoc data retention** screen.

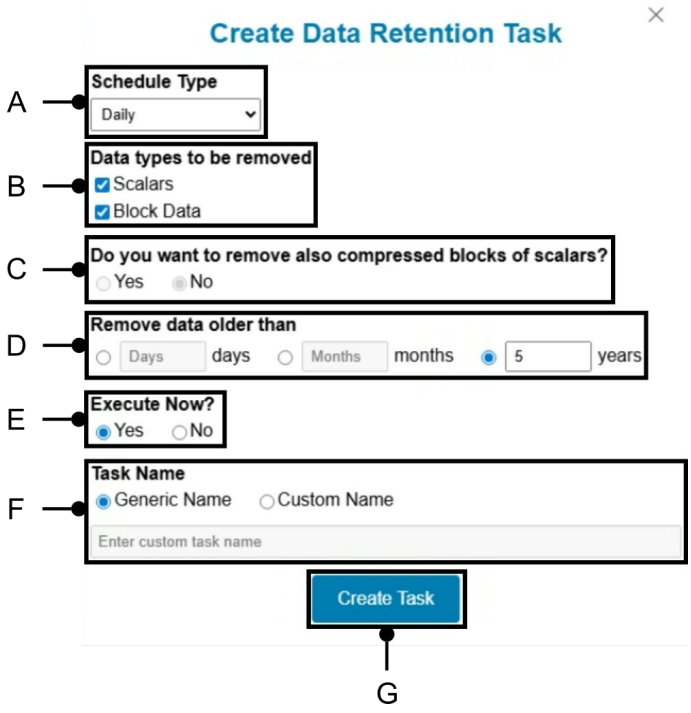
6. (Optional) Click the **Home** button to return to the **Data Retention Home Screen**.

Create a Data Retention Task

Regularly scheduled data retention tasks can be created by a user which has login access to the server which AMS Machine Works is installed on.

7. (Optional) On the **Data Retention Home Screen**, click **New Retention Task** to create a regularly scheduled data retention task:

Figure 3-78: Create Data Retention Task



A. ***Schedule Type*** — *Select how often to run the **Data Retention Task**. (**Monthly** / **Weekly** / (Default) **Daily** / **Specific Day**)*
B. ***Data Type Selection*** — *Select at least one type of data to use a retention limit on.*
C. ***Remove Compressed Scalar Blocks*** — *(Unconfigurable) (Default: No) Only visible when the **Scalar** data type is selected.*
D. ***Cutoff Date*** — *Data older than the date you set is discarded or thinned.*

> ***Note***
> *Data thinning is only available for **Scalar Data**.*

E. ***Execute Now?*** — *(Default: **Yes**) By default a new schedule is immediately executed.*
F. ***Task Name*** — *(Default: **Generic Name**) You can set a **Custom Name** for the task.*

8. Choose the **Schedule Type**:
   - **Monthly**

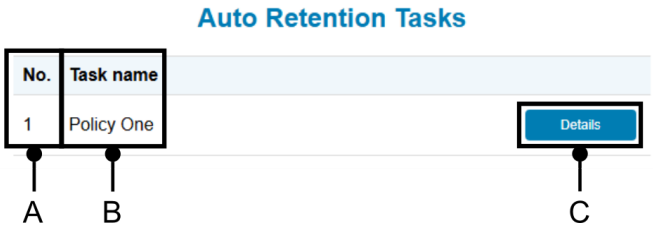
- **Weekly**
- (Default) **Daily**
- **Specific Day** — (Default: Monday) Choose which day of the week to run this **Data Retention Task**.

9. Choose which type of data to use a retention limit on:
   - **Scalar**
   - **Block**
   - **Both**
10. (Optional) (Only for **Scalar** data.) Choose which resolution of **Scalar** data to retain.
    - **2880** — Delete all **Scalar** data.
    - **240** — Keep up to 4 **Scalar** data points per 2880 minutes / 28 hours.
    - **60** — Keep up to 4 **Scalar** data points per 240 minutes / 4 hours
    - **5** — Keep up to 4 **Scalar** data points per 60 minutes.
    - **0** — Keep up to 4 **Scalar** data points per 5 minutes.
11. Set the cutoff date for data retention.
    - **Days** — Select **Days** and enter an integer value from 1 to 1000.
    - **Months** — Select **Months** and enter an integer value from 1 to 100.
    - **Years** — (Default: 5) Enter an integer value from 1 to 100.
    - **Exact Date** — Select **Exact Date** and select a date from the calendar.
12. Click **Remove Data** choose:
    - **Yes** — Data older than the date you set is removed.
    - **Cancel** — Return to the **Ad hoc data retention** screen.

View Retention Task List and Details

A user which has login access to the server which AMS Machine Works is installed on can review the list of data retention tasks, and the details about each task.

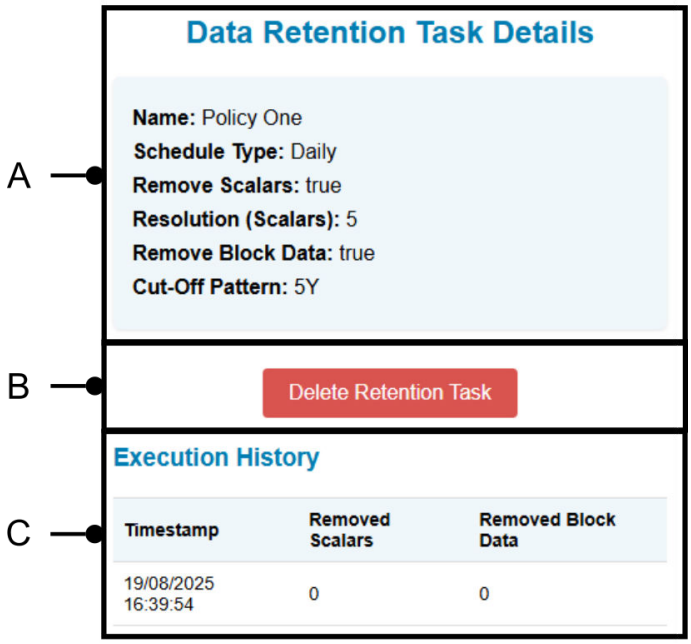
Figure 3-79: Data Retention Task List



A. ***Number*** *— The number of the* ***Data Retention Task****.*
B. ***Task Name*** *— This is either a generically created descriptive* ***Task Name****, or a* ***Custom Name*** *that you create.* ***Data Retention Tasks*** *are sorted by the* ***Task Name****.*
C. ***Details*** *button — Click on* ***Details*** *to open the* ***Data Retention Task Details*** *screen.*

13. (Optional) On the **Data Retention Home Screen**, click the **Details** button next to a task you need more information about:

Figure 3-80: Data Retention Task Details



A. ***Task Configuration Details***
B. ***Delete Retention Task*** *button — Click the* ***Delete Retention Task*** *button to remove a task.*
C. ***Execution History*** *— A list of every time that the* ***Data Retention Task*** *was executed.*

14. (Optional) To remove an unnecessary **Retention Task**, click the **Delete Retention Task** button:

- Click **Yes** to delete the task.
- Click **Cancel** to reject the action.

3.5.12 Monitor DSS Processing Capacity

The **DSS** / **Data Shovel Service** can become a bottleneck to overall system performance.

DSS is the **Emerson MW Core Data Shovel Service** in the **Services** app.

AMS Machine Works has a group of KPIs for monitoring this service. Normally, these KPIs should have values near to 100% remaining capacity.

⚠ CAUTION

When any one of these KPIs has less than 10% of capacity remaining:

- The system is in **critical overload**.
- There is a risk of **data loss**.

Prerequisites

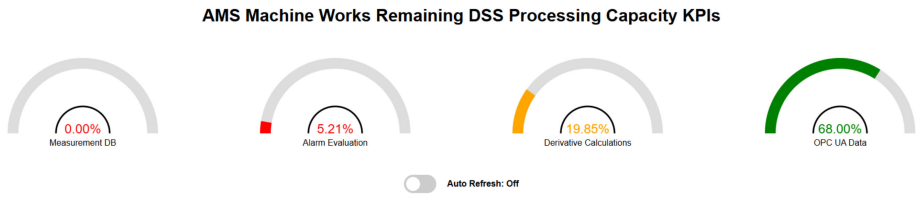
1. AMS Machine Works must be installed and running.
2. You must be logged into the machine where AMS Machine Works is installed.
3. The browser you are using to access AMS Machine Works must be running on the AMS Machine Works server.

Procedure

1. Open the **DSS Processing Capacity KPIs** page in your browser:
   - Double-click the **AMS DSS Processing Capacity KPI** icon on the desktop.
   - Enter the URL in your browser: `http://localhost:5006/status/dashboard.html`

     Note
     The URL must begin with **http**, **https** is not supported.

Figure 3-81: DSS Processing Capacity KPIs



- **Measurement DB** — Displays the amount of capacity remaining in the DSS queue for writing to the measurement database.
- **Alarm Evaluation** — Displays the amount of capacity remaining in the DSS queue for evaluating alarms.
- **Derivative Calculations** — Displays the amount of capacity remaining in the DSS queue for calculating derivatives.
- **OPC UA Data** — Displays the amount of capacity remaining in the DSS queue for publishing data to OPC UA.
- **Auto Refresh** toggle — (Default: **Off**)

2. (Optional) Click the **Auto Refresh** toggle to switch between **On** / (default)**Off**. When **Auto Refresh** is **On** it will update every 5 seconds.
3. Periodically monitor the DSS Processing Capacity.
    a) If any value trends towards or below 10% of remaining capacity, contact Emerson Support. See: Sending Log Files to Emerson Product Support

3.5.13 Create Backups

Your AMS Machine Works system should be regularly backed up according to your organization's schedule and methods.

The simplest method is to perform a **Full Machine Backup**.

Procedure

Perform regular backups of your system.

3.5.14 Install the Vibration Analyzer - VibApp

The AMS Machine Works Vibration Analyzer lets you analyze vibration data collected in AMS Machine Works from connected devices. This is a Windows application that can be installed on client computers and also on the AMS Machine Works server.

Note
If you install AMS Machine Works Vibration Analyzer on the server, an extra step is required to authenticate and launch. You must add the server name to the browser's list of trusted sites. Refer to your browser's documentation to add a trusted site.

Prerequisites

- Turn off automatic Windows updates during installation or upgrade. Pausing updates will reduce the number of restarts during the installation process. In **Windows Settings**, select **Advanced**, and choose to pause updates and select a date to resume updates.

Procedure

1. Open a browser, type **https://[server]:[port number]/VibApp**.

   Where `[server]` is the computer name of the server where AMS Machine Works is installed and `[port number]`, if required, is the port number assigned.

   Note
   Enter the server name set during installation of AMS Machine Works.

   Note
   The Vibration Analyzer installer is also available as a .exe file at: `(Installer Folder)/Products/AMS Machine Works Vibration Analysis Service`

2. Click **Install** on the Vibration Analyzer installation page.
3. Run the application.
4. **Note**
   If you are prompted to upgrade the installation, this indicates that you have already installed the application.

   When prompted, enter the name of the AMS Machine Works server, and then click **Next**.

   Note
   Use the same server name as the AMS Machine Works configuration, and when installing or upgrading components. For example, when you choose the **Use Server Name** option in the Server and Port Binding Configuration screen during the installation, you must enter the name of the AMS Machine Works server.

   Failure to use the same configuration as the AMS Machine Works server when installing or upgrading components may cause the installation to fail and you will need to uninstall and reinstall the software to configure the same server setting.

5. Click **Next**.
6. Click **Install**.
7. Click **Finish** when done.

3.5.15 Install CSI USB Drivers

You can install the USB drivers on any computer where you need to connect an AMS 2140 Machinery Health Analyzer unit.

Note
The USB drivers for the AMS 2140 Machinery Health Analyzer are installed automatically with AMS Machinery Manager or AMS Standalone Data Transfer.

Prerequisites

Locate the AMS Machine Works installation package.

Procedure

1. In the installer package, browse to the folder: `C:\..\Installer_2.3.0.XXX\dep\_Support\CSIUSBDriver\`

   Note

   a. `C:\..\` — The drive letter and the folder path are where you decompressed the installer package.

   b. `2.3.0.XXX` — XXX is the specific build number of your version of AMS Machine Works v2.3.

2. Right click on the `setup.exe` application and select **Run as administrator**.
3. Read and accept the license agreement.
4. Follow the instructions presented by the installation program.
5. When **Windows Security** prompts for permission, click **Install**.
6. Click **Finish** to complete your installation.

4 Updates and Migrations

Updates

Versions of AMS Machine Works which have update paths to AMS Machine Works v2.3 are updated in sequential steps.

See:

1. For updates from the prior version of AMS Machine Works, see: Update from v2.2 to v2.3
2. For updates from previous versions of AMS Machine Works see: Update from versions before AMS Machine Works v2.2

Migrations

There are two migration paths AMS Machine Works v2.3:

1. From AMS Machine Works v1.7.2
2. From AMS Machine Works v1.7.5

See: Migrations from AMS Machine Works v1.7.2 / v1.7.5

4.1 Update from v2.2 to v2.3

The installer package supports an update path from AMS Machine Works v2.2 to v2.3.

The update process affects:

1. AMS Machine Works v2.2 — Updates to version 2.3.
2. Asset Monitor Agent (AMA) v2.2 — Updates to version 2.3.
3. AMS 6500 ATG Agent v2.2 (ATGA) — Updates to version 2.3.
4. Emerson Wireless Gateway Agent v2.2 (EWA) — Updates to version 2.3.
5. Portables Edge Agent v2.2 (PEA) — Updates to version 2.3.
6. RabbitMQ 4.1.1 — Updates to version 4.2.5
7. Erlang OTP 27.1.4 — Updates to version OTP 27.3.4.11
8. PostgreSQL 17.7 — Updates to version 17.9
9. .NET 8.0.18 — Updates to version 10.0.7
10. .NET 8.18 Desktop Runtime — Updates to version 10.0.7
11. VC Redist 2015-2022 14.42.34438.0 — Updates to version 14.42.35211.0
12. Some third party utilities provided in the installer package:
    a. MongoDB Compass 1.45.2 — Updates to version 1.49.5
    b. mongoimport 100.11.0 — Updates to 100.16.1
    c. mongosh 2.3.8 — Updates to 2.8.3

d. pgadmin 9.11 — Updates to 9.14

Note
Analysis Parameter Sets configured in versions of AMS Machine Works before v2.3 are duplicated for every **Site** that they were used in when updating to AMS Machine Works v2.3.

Unused **Analysis Parameter Sets** from versions of AMS Machine Works before v2.3 are deleted when updating to AMS Machine Works v2.3.

To update an AMS Machine Works v2.2 installation to v2.3, follow the instructions found here: Update AMS Machine Works from v2.2 to v2.3

4.1.1 Update AMS Machine Works from v2.2 to v2.3

Follow these steps to update an existing AMS Machine Works v2.2 installation to AMS Machine Works v2.3.

Prerequisites

1. AMS Machine Works v2.2 must be installed.
2. The computer must be running one of the following operating systems:
   - Windows Server 2025 Standard or Datacenter
   - Windows Server 2022 Standard or Datacenter
   - Windows Server 2019 Standard or Datacenter

   Note
   If you have an older operating system, you must update the operating system before proceeding.

3. Get the installer package. See: Locate the Installer

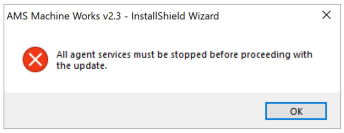
   ⚠ CAUTION

   It is strongly recommended that you pause Windows Automatic Updates during the installation process. Failure to do so may lead to inconsistent results. See: Stop Automatic Updates

Procedure

1. If your AMS Machine Works system includes any **External Agent Servers**, you must stop every **External Agent Server** now. Open the **Services** app, and stop the following services:
   a. **Emerson MW Asset Monitor Agent**
   b. **Emerson MW ATG Agent**
   c. **Emerson MW Portables Edge Agent**
   d. **Emerson MW Wireless Agent**

Figure 4-1: Agents running error.



Note
If a service is not present then that **Agent** was not installed, and no action needs to be taken.

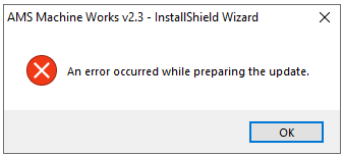
2. In the installer folder, run `setup.exe` as an **Administrator**.

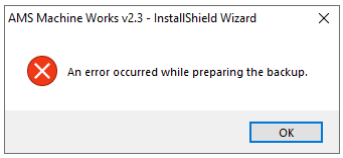
⚠ CAUTION

Run `setup.exe` from a folder close to the root of your file system. Long path names can result in the installer failing.

3. If one of the following error screens is shown, contact Emerson Product Support. See: Sending Log Files to Emerson Product Support

Figure 4-2: Updater Error Messages

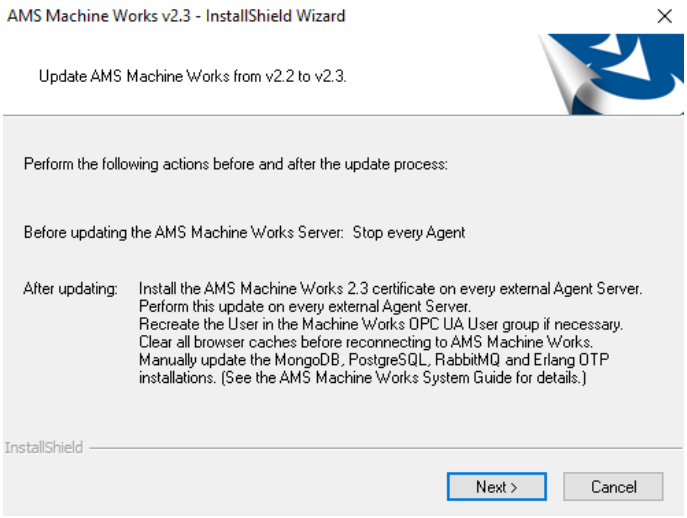




- Error Preparing Update
- Error Preparing Backup

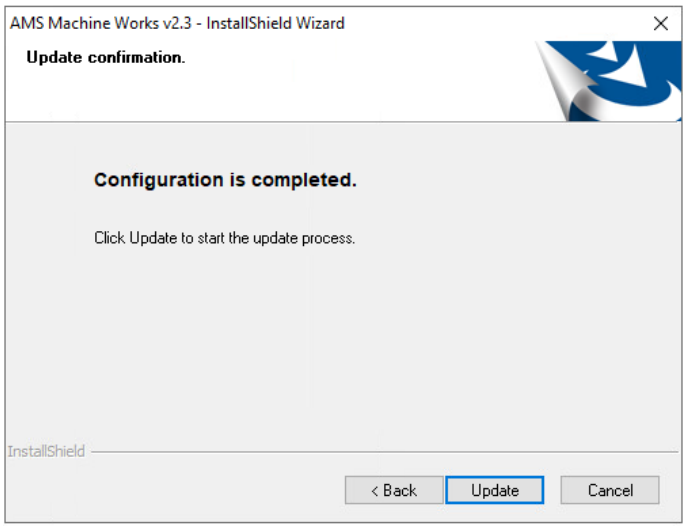
4. Read the update instructions, then click **Next** to continue.

Figure 4-3: Update Information



5. The update is ready to begin, click **Update** to continue.

Figure 4-4: Update Confirmation



6. Complete the reboot cycle.
7. Update every **External Agent Server** which is part of your AMS Machine Works installation.
    a) Copy the installer package to every external system which has one or more of the following agents installed:
        1. Asset Monitor Agent v2.2 (AMA)
        2. AMS 6500 ATG Agent v2.2 (ATGA)
        3. Emerson Wireless Gateway Agent v2.2 (EWA)

4. Portable Edge Agent v2.2 (PEA)

Note
The version number of the each agent will be updated to the current version after the update.

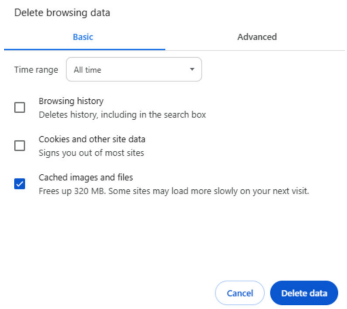
b) Run the `Setup.exe` installer program as an **Administrator** on every system with an **External Agent Server**.

c) Export the new security certificates to every **External Agent Server**. See: Add AMS Machine Works Certificates

d) Restart each **External Agent Server**.

8. Recreate a **User** in the **Machine Works OPC UA User** group if one was configured before the update. See: Manage Certificates in OPC UA Clients and Servers
9. Clear the cache of every browser used with AMS Machine Works before connecting to the updated version of AMS Machine Works.

Figure 4-5: Delete Browsing Data



- Set **Time range** to: **All time**
- Select **Cached images and files**

⚠ CAUTION

Not clearing the browser caches can lead to incorrect system performance and the loss of data.

10. Every **AMS Machine Works Vibration Analyzer** installation on your network must be updated. See: Install the Vibration Analyzer - VibApp

Update 3rd Party Components

The `setup.exe` program used to update AMS Machine Works from v2.2 to v2.3 does not update the **MongoDB** installation or the **PostgreSQL** installation.

The system administrator must manually update the **MongoDB 8.0.17** installation to **MongoDB 8.0.21**.

The system administrator must manually update the **PostgreSQL 17.7** installation to **PostgreSQL 17.9**.

Prerequisites

1. The computer must be running either:
   - Windows Server 2025 Standard or Datacenter
   - Windows Server 2022 Standard or Datacenter
   - Windows Server 2019 Standard or Datacenter

   Note
   If you have an older operating system, you must update the operating system before proceeding.

2. A version of MongoDB 8.x.x must be installed and configured to work with AMS Machine Works.

   Note
   If the version of MongoDB 8.x.x is higher than 8.0.21, you do not need to downgrade to MongoDB 8.0.21.

3. A version of PostgreSQL 17.x must be installed and configured to work with AMS Machine Works.

   Note
   If the version of PostgreSQL 17.x is higher than 17.9, you do not need to downgrade to PostgreSQL 17.9.

4. Get the minimum version of the MongoDB installer, (MongoDB 8.0.21), from one of the following locations:
   a. AMS Machine Works v2.3 installer package — `..\dep\_Support\MongoDB\mongodb-windows-x86_64-8.0.21-signed.msi`
   b. Online — Download the installation file for MongoDB 8.0.21 to the machine. https://fastdl.mongodb.org/windows/mongodb-windows-x86_64-8.0.21-signed.msi

5. Get the minimum version of the PostgreSQL installer, (PostgreSQL 17.9) from one of the following locations:
   a. AMS Machine Works v2.3 installer package — `..\dep\_Support\PostgreSQL\postgresql-17.9-1-windows-x64.exe`
   b. Online — Download the installation file for PostgreSQL 17.9 to the machine. https://sbp.enterprisedb.com/getfile.jsp?fileid=1260116

6. Find the paths that your MongoDB installation uses installation uses for `\Data` and `\Logs`.

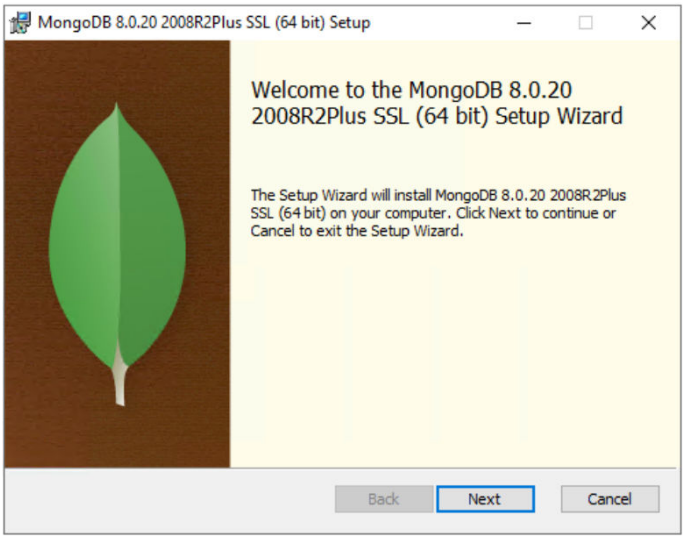
Procedure

1. On the AMS Machine Works Server, stop every **Windows Service** with a name beginning with **Emerson MW**
   - Manually: Click **Services** → **Emerson MW <service name>** → **Stop** for every **Service** beginning with **EmersonMW**.
   - Automatically: In **PowerShell** enter the command:
     ```
     Get-Service | Where-Object { $_.DisplayName -like "Emerson MW *" } | ForEach-Object { Stop-Service -Name $_.Name -Force}
     ```
2. On the AMS Machine Works Server, stop the **EmersonCSI Site**. Select: **IIS** → **Connections** → **Sites** → **EmersonCSI** → **Actions** → **Manage Website** → **Stop**
3. Backup the MongoDB configuration file named to a safe location.
   a) Go to `C:\Program Files\MongoDB\Server\8.0\bin`
   b) Backup the MongoDB configuration file named `mongod.cfg`.

   ⚠ CAUTION

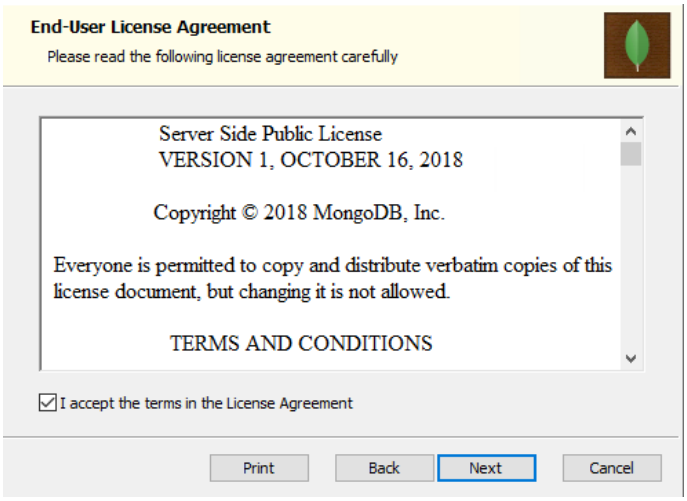
   The `mongod.cfg` file must be restored in a later step to prevent data loss.
4. Uninstall the old version of MongoDB.
   a) On the computer where MongoDB is installed: Select **Add & Remove Programs** → **MongoDB** → **Uninstall**
   b) Wait for the uninstallation process to complete.
5. Run the MongoDB installer, and then click **Next**.

Figure 4-6: Welcome Screen



6. Accept the terms in the License Agreement, and then click **Next**.

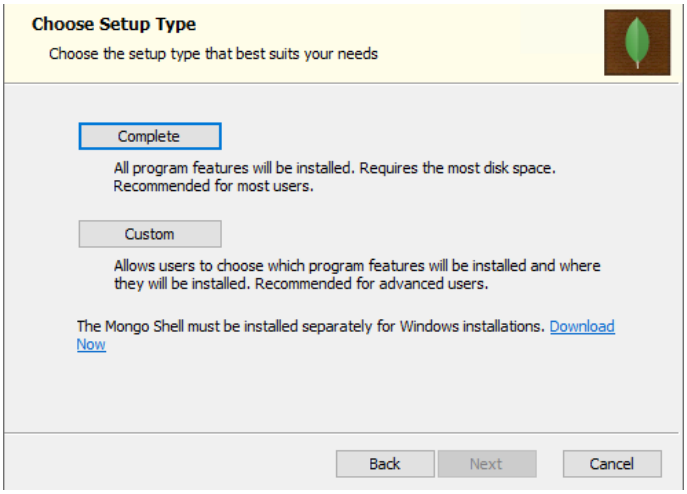
Figure 4-7: License Agreement



7. Choose the Setup Type for your MongoDB, and then click **Next**.

Note
The **Complete** option is recommended. For **Custom** options contact your System Administrator.

Figure 4-8: Choose Setup Type



8. Configure the **MongoDB Server**, and then click **Next**.

Note
Recommendation:

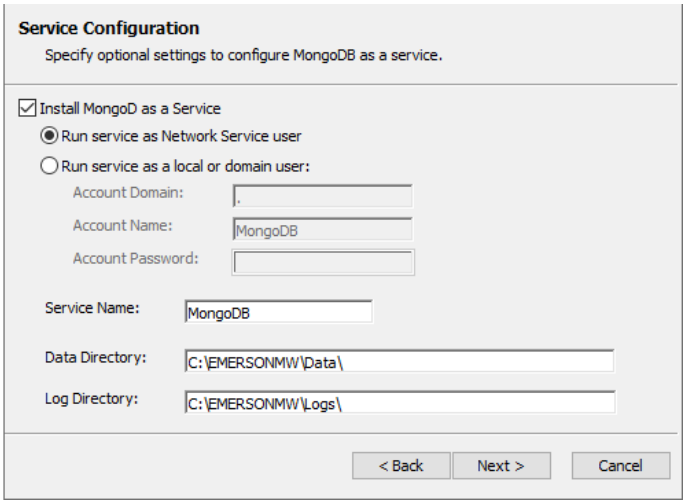
a. Accept the default options to install MongoD as a service named MongoDB.

b. Run the MongoDB service as a Network Service user.

c. Configure the Data Directory and the Log Directory paths to match the previous installation, and establish a backup schedule for this drive.

For other configuration options contact your System Administrator.

Figure 4-9: Service Configuration



Note

The **Data Director** and **Log Directory** paths can be different for every system:

a. **Internal MongoDB Installation** —

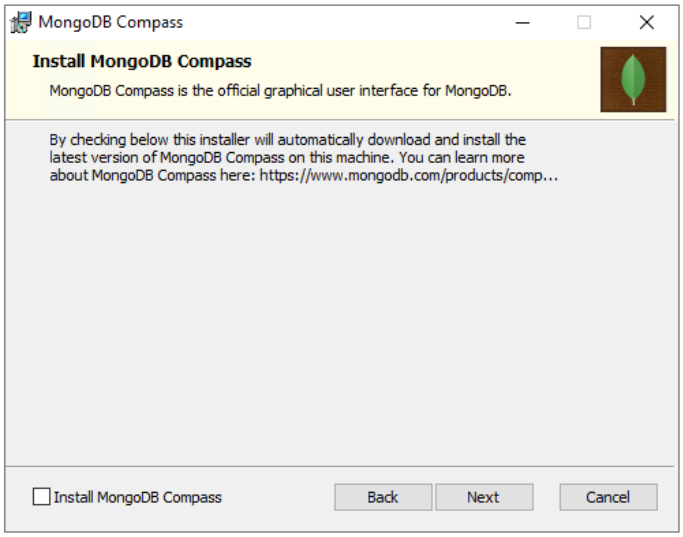
- `<Installation_Drive_Name>:\EMERSONMW\Data`
- `<Installation_Drive_Name>:\EMERSONMW\Logs`

b. **External MongoDB Installation** —

- `<Installation_Drive_Name>:\<Custom_1>\<Custom_2>\..\<Custom_N>\Data`
- `<Installation_Drive_Name>:\<Custom_1>\<Custom_2>\..\<Custom_N>\Logs`

9. (Optional) Select **Install MongoDB Compass**
10. Click **Next**.

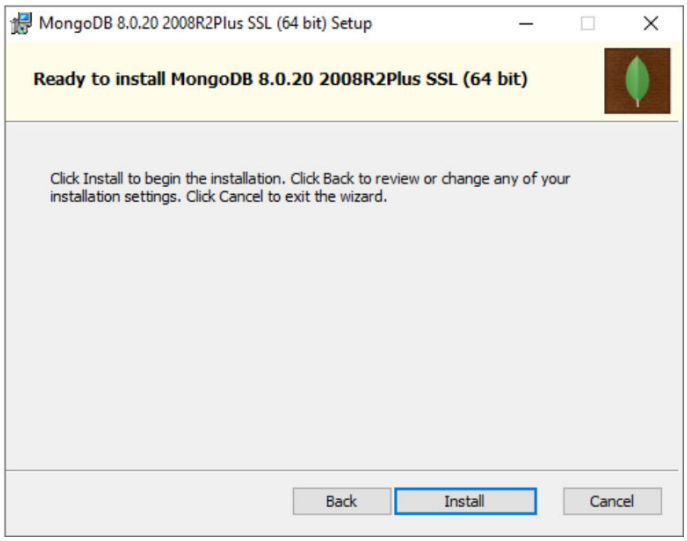
Figure 4-10: Install MongoDB Compass



11. Confirm your installation choices, and then click **Install**.

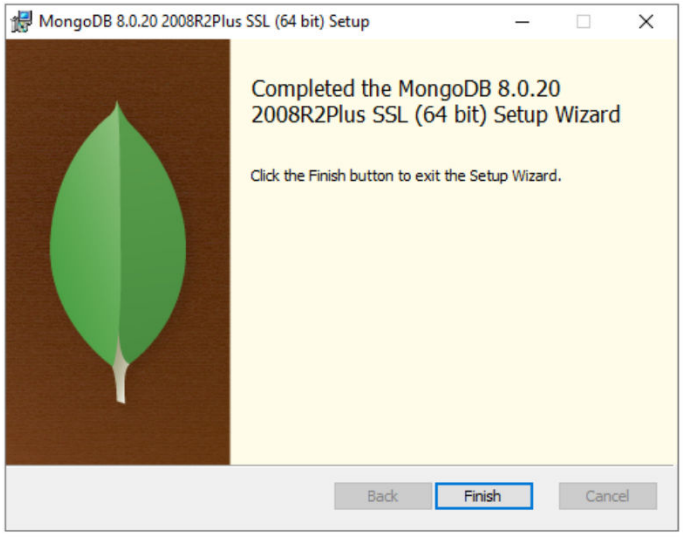
Note
You can use the **Back** and **Next** keys to review your choices and then return to this screen.

Figure 4-11: Install this Configuration



12. When the installation is complete click **Finish**.

Figure 4-12: Finish Installation



13. Use the `mongod.cfg` that you backed up to replace the file with the same name in the directory: `C:\Program Files\MongoDB\Server\8.0\bin`

⚠ CAUTION

Data loss can occur when the wrong `mongod.cfg` is in use.

14. Launch the PostgreSQL 17.9 installer.
15. When the **Setup** screen is shown, click **Next**.

Figure 4-13: Welcome Screen



16. When the **Select Components** screen is shown, deselect any unnecessary components.

Figure 4-14: Select Components Screen



a) (Required) PostgreSQL Server

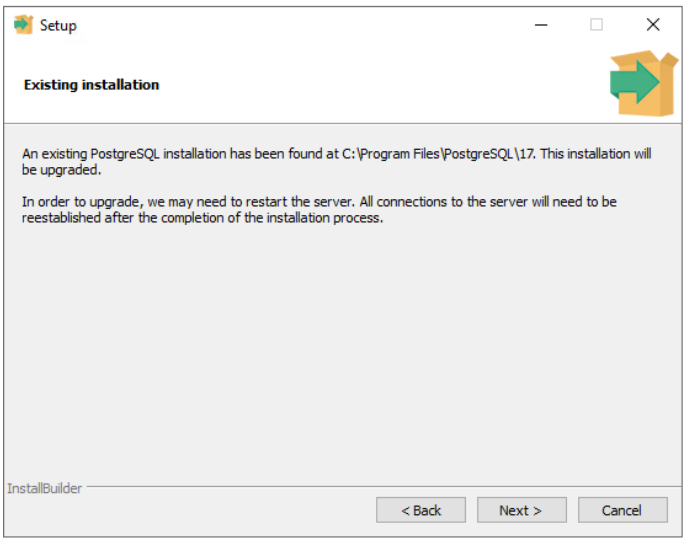
b) (Optional) pgAdmin 4

c) (Optional) Stack Builder

d) (Required) Command Line Tools

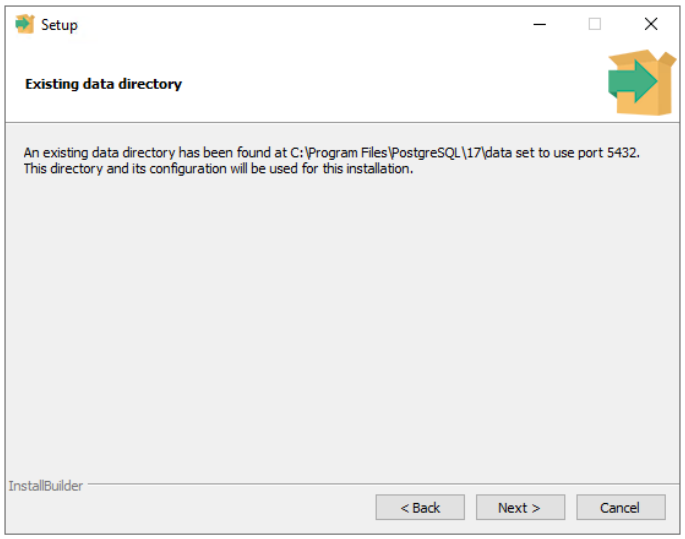
17. The installer should detect the previous installation and display the following screen. When the **Existing Installation** screen is shown, click **Next**.

Figure 4-15: Existing Installation Screen



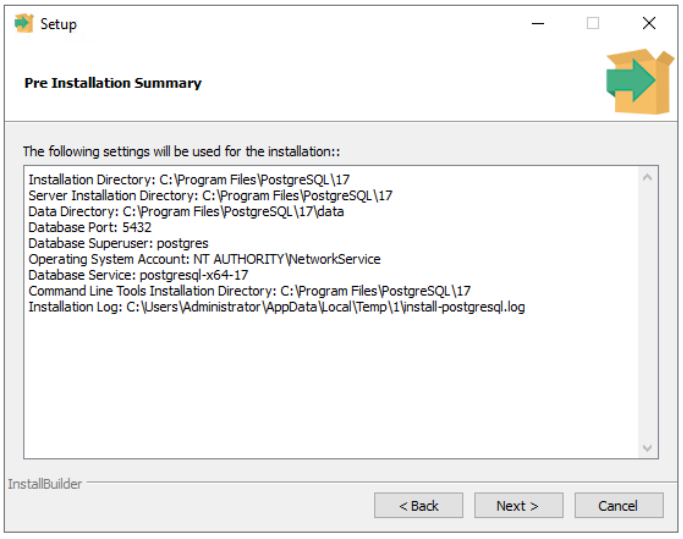
18. The installer should detect the previous data directory and display the following screen. When the **Existing Data Directory** screen is shown, click **Next**.

Figure 4-16: Existing Data Directory Screen



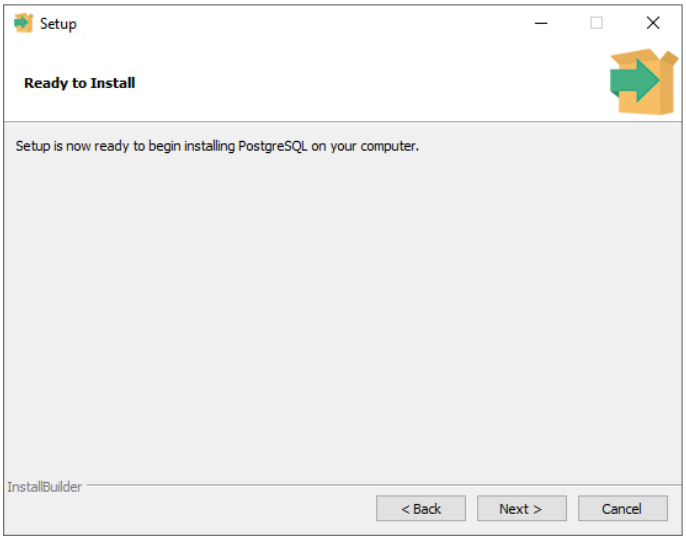
19. When the **Pre-Installation Summary** screen is shown, click **Next**.

Figure 4-17: Pre-Installation Summary Screen



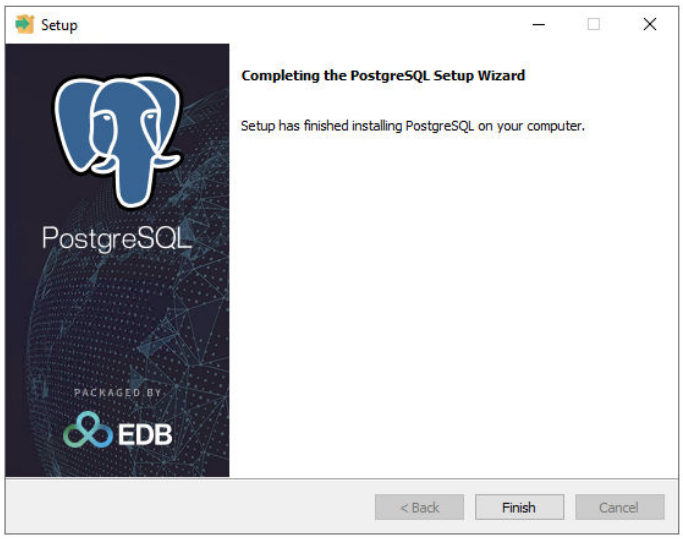
20. When the **Ready to Install** screen is shown, click **Next** to begin the installation.

Figure 4-18: Ready to Install Screen



21. When the **Installation Complete** screen is shown, click **Finish** to exit the installer.

Figure 4-19: Installation Complete Screen



22. On the AMS Machine Works Server, start the **EmersonCSI Site**.
    a) Select: **IIS** → **Connections** → **Sites** → **EmersonCSI** → **Actions** → **Manage Website** → **Start**
    b) When the **Stop** control becomes available, the **EmersonCSI** site is running, and you may proceed.
23. Restart the every computer which was involved in the update process:
    - **Internal MongoDB** —

a. Restart the AMS Machine Works server.

b. Check that all the services are running. See: Check Windows Services

- **External MongoDB** —
  a. Restart the **External MongoDB** server before restarting the AMS Machine Works server..

  b. Verify that the service named

  ```
  MongoDB Server (MongoDB)
  ```

  is running on the **External MongoDB** server.

  c. Restart the AMS Machine Works server.

  d. Verify that all the services are running. See: Check Windows Services

24. Return to the task: Update AMS Machine Works from v2.2 to v2.3

4.2 Update from versions before AMS Machine Works v2.2

The AMS Machine Works v2.3 installer package does not support a direct update path from versions before AMS Machine Works v2.2.

You will need to start your update process at different points depending on the version you are currently using:

1. For v1.8 begin here: Use the AMS Machine Works v2.0 installer package and the update instructions found in the AMS Machine Works v2.0 System Guide. ("Update from v1.8 to v2.0")
2. For v2.0 begin here: Use the AMS Machine Works v2.1 installer package and the update instructions found in this AMS Machine Works v2.1 System Guide. ("Update from v2.0 to v2.1")
3. For v2.1 begin here: Use the AMS Machine Works v2.2 installer package and the update instructions found in this AMS Machine Works v2.2 System Guide. ("Update from v2.1 to v2.2")
4. Finally, use the update instructions in this document: Update from v2.2 to v2.3

4.3 Migrations from AMS Machine Works v1.7.2 / v1.7.5

The paths from some versions of AMS Machine Works to AMS Machine Works v2.3 are considered migrations because they involve:

- Significant user interaction with the migration software
- Significant transformation of data structures.

There are two migration paths to AMS Machine Works v2.3:

1. From AMS Machine Works v1.7.2
2. From AMS Machine Works v1.7.5

These migrations require special instructions and the use of a specialized migration software tool. These instructions are in a separate document. See: AMS Machine Works Migration Guide v1.7.2 / v1.7.5 Migration Tool v2

5 Maintenance

The AMS Machine Works v2.3 installer supports modification options for v2.3.

Maintenance Tasks:

1. Modification Options — You can add an **Agent** to a server if that type of **Agent** is absent on that server. See: Modification Options
2. Backup and Restore — See: Backup and Restore Procedures

Note
You should follow your organization's policies for performing backups. A **Full Machine Backup** is recommended.

5.1 Modification Options

When you run an AMS Machine Works installer on a system which has the same version of AMS Machine Works installed on it, you have the option to modify your installation by adding any absent types of **Agents** to the computer. See: Modify an AMS Machine Works v2.3 Installation

5.1.1 Modify an AMS Machine Works v2.3 Installation

You can add **Agents** to an AMS Machine Works installation or to an Agent Server installation.

Only one copy of an **Agent** can be on a server at a time.

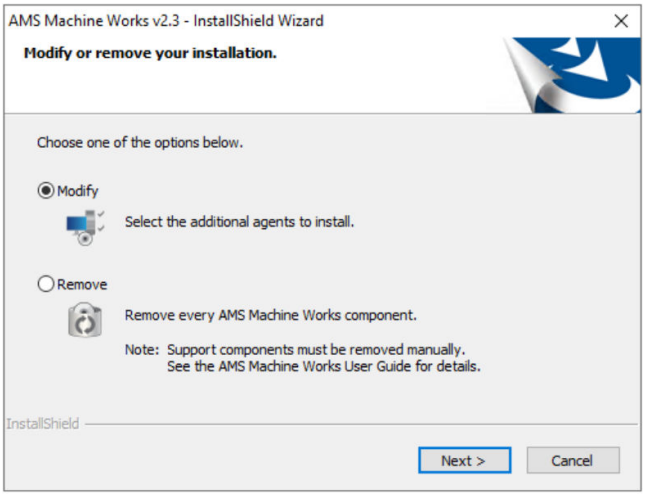
Prerequisites

1. You can modify:
   a. An **AMS Machine Works** server installation. See: AMS Machine Works Server Installation
   b. An **Agent** server installation. See: Agent Server Installation
2. You must use the same version of the installer to modify AMS Machine Works as you used for installation.

Procedure

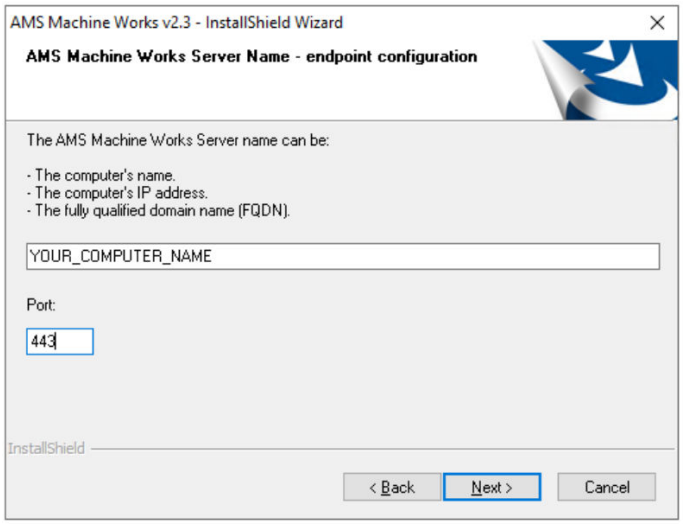
1. Run `setup.exe` as an **Administrator**.
2. Choose **Modify** → **Next** to settings to modify or agents to add to your AMS Machine Works installation.

Figure 5-1: Modify Installation



3. Set the **Computer Name** and **Port** for the AMS Machine Works server.

Figure 5-2: Set Computer Name and Port



a) The computer name can be specified as:

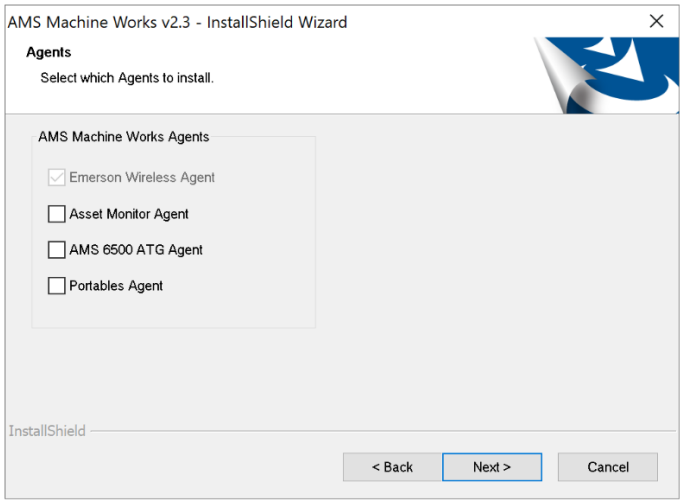
- **Computer Name** — (Default) The **device name** of the server computer. (Available in **Windows** → **Settings**.)
- **IP Address** — The **IP Address** of the server computer. (Available in **Windows** → **Settings**.)
- **FQDN** — The **Fully Qualified Domain Name** or **Full device name** of the server computer. (Available in **Windows** → **Settings**.)

b) The computer port number can be from 1 to 65535. (Default port: 443)

4. Choose which types of **Agent** to install.

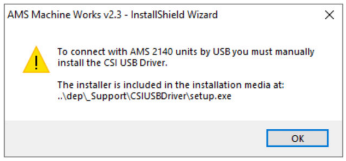
Note
Agents listed with a filled in **checkbox** and gray text are already present on this server.

Figure 5-3: Install Additional Agents



a) (Optional) To connect to an AMS 2140 unit via USB, you will need to install the CSI USB driver manually. See: Install CSI USB Drivers

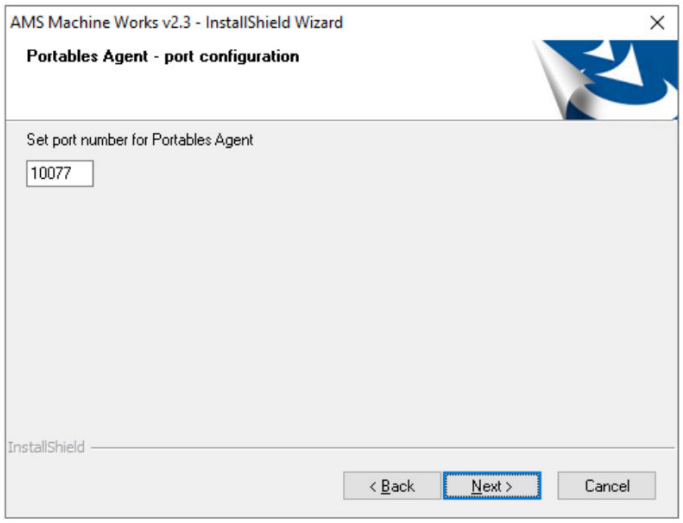
Figure 5-4: Install CSI USB Driver Reminder



a) (Optional) If you require USB to connect to your AMS 2140 Machinery Health Analyzer to AMS Machine Works, you must have the `CSI USB Driver` installed. You must perform the following post-installation step: Install CSI USB Drivers

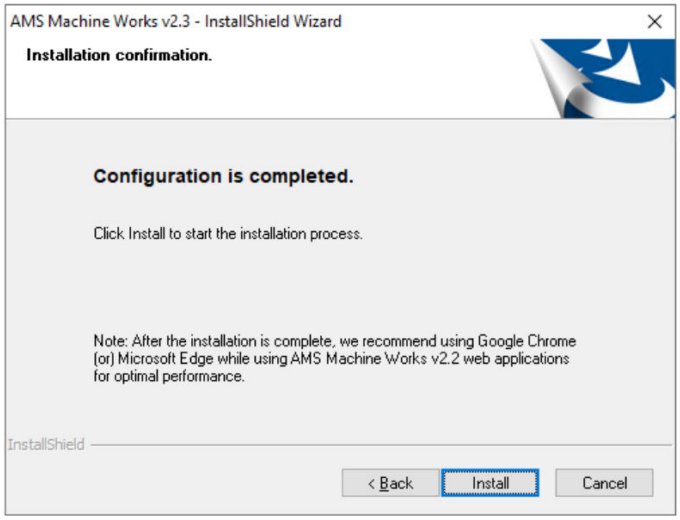
5. (Optional) When you are installing a **Portables Edge Agent** you must specify which port to communicate on. (Default port: 10077)

Figure 5-5: Portables Edge Agent Port Configuration



6. Click **Install** to begin the installation process.

Figure 5-6: Confirm Installation



7. Click **Reboot** when you are prompted.

Note
The number of reboots that are required depends on your Windows configuration.

Reboot as many times as you are prompted.

Need help?
Error occurred: Uninstallation failed. Exit code: 1638.

Reboot and retry

This error can be caused by using a different installer to run the uninstallation process.

Check that you are using the same installer program that you installed AMS Machine Works with.

5.2 Reinstall AMS Machine Works v2.3

If necessary, your AMS Machine Works can be reinstalled.

There are two main reasons to reinstall AMS Machine Works, either:

- Your AMS Machine Works installation has become corrupted.
- The server where your AMS Machine Works installation is located must be renamed.

5.2.1 Re-installation Procedures

To properly reinstall AMS Machine Works, it must be uninstalled without deleting the configuration or data folders.

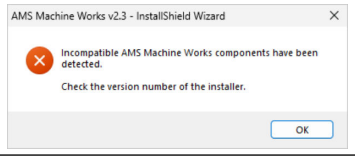
Prerequisites

1. Locate and use the same installer package that you used to install this installation of AMS Machine Works.
2. Follow the procedures to Uninstall AMS Machine Works, but **do not remove** any folders or perform any other cleanup steps. The following items must remain:
    a. PostgreSQL
    b. RabbitMQ
    c. Erlang OTP
    d. Sentinel RMS License Manager
    e. MongoDB (Internal / External)
    f. External Agents

Procedure

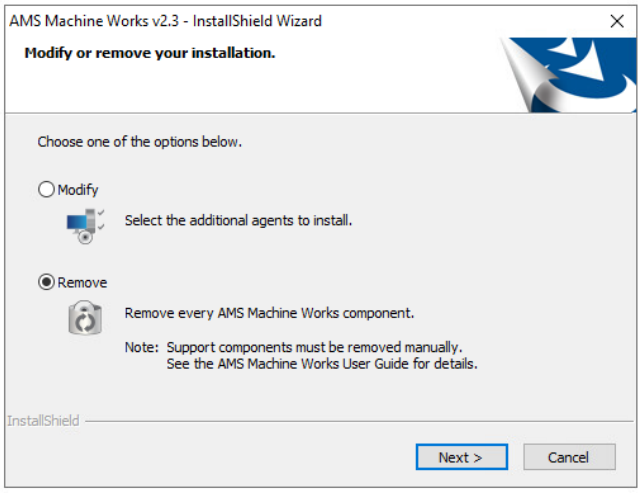
1. Run `setup.exe` as an **Administrator**.
2. If the following error message is displayed, you must locate the installer package used to install the version of AMS Machine Works that you are trying to reinstall.

Figure 5-7: Installer Version Mismatch



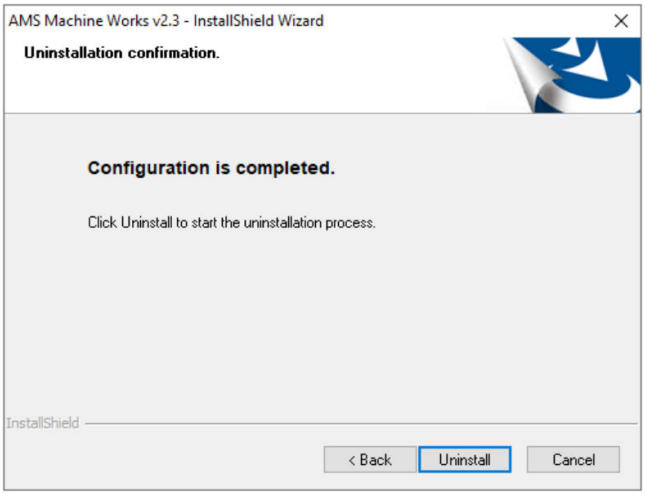
3. Choose **Remove** → **Next** to remove every AMS Machine Works component.

Figure 5-8: Remove Installation



4. Click **Uninstall** to begin the uninstallation process.

Figure 5-9: Confirm Uninstallation



5. Click **Reboot** when you are prompted.

Note
The number of reboot cycles varies depending on the elements that you have installed.

Reboot as many times as you are prompted.

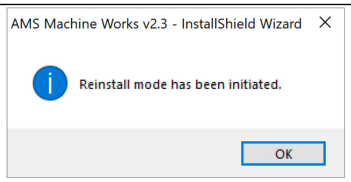
Need help?
Error occurred: Uninstallation failed. Exit code: 1638.

Reboot and retry

This error can be caused by using a different installer to run the uninstallation process.

Check that you are using the same installer program that you installed AMS Machine Works with.

6. (Optional) To change the hostname of your AMS Machine Works installation perform the following substeps.
   a) Change the computer name, and then reboot.
   b) Navigate to `C:\Program Files\RabbitMQ Server \rabbitmq_server-4.2.5\sbin`, and open the command line.
   c) To remove RabbitMQ, enter the command: `rabbitmq-service.bat remove`, and leave this command open and wait for it to complete.
   d) In the **File Explorer**, navigate to `C:\ProgramData\RabbitMQ\db`, and remove everything in the folder.
   e) In the folder, `C:\Program Files\RabbitMQ Server \rabbitmq_server-4.2.5\sbin`, execute the following command: `rabbitmq-service.bat install`
   f) When the installation completes, execute the following command: `rabbitmq-service.bat start`
   g) In the **File Explorer**, navigate to `C:\ProgramData\RabbitMQ\db`, and verify that the following items exist for the new computer name that you set: <computer_name>
      1. `rabbit@<computer_name>-mnesia`
      2. `rabbit@<computer_name>-plugins-expand`
      3. `rabbit@<computer_name>-pid`
      4. `rabbit@<computer_name>-feature_flags`
   h) Stop RabbitMQ by executing the following command: `rabbitmq-service.bat stop`
   i) Start RabbitMQ by executing the following command: `rabbitmq-service.bat start`
   j) Verify that no errors occurred on restart.
7. Stop every **External Agent**.
8. From the same installation package that was used to uninstall AMS Machine Works, run `setup.exe` as an **Administrator**.

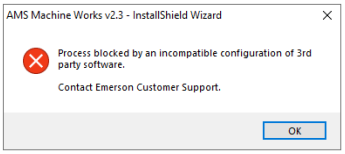


If the following message is shown the `setup.exe` application has properly entered **Reinstall mode**.

⚠ CAUTION

If the following message is shown, essential 3rd party software is missing from your system.

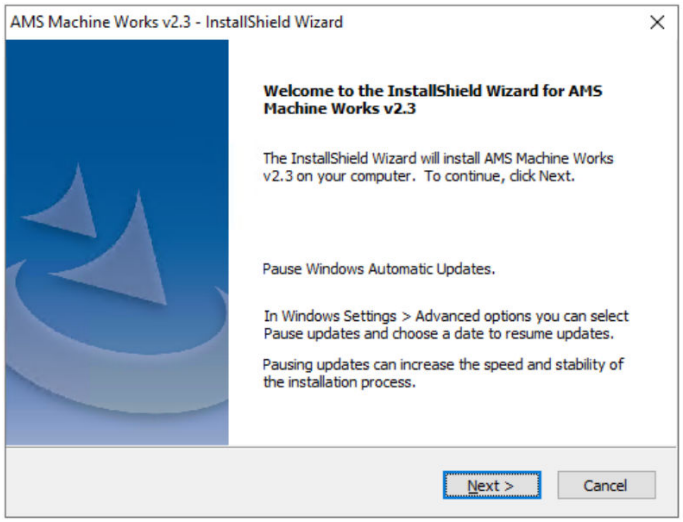
Figure 5-10: 3rd Party Software Missing



The normal reinstallation method will not be able to proceed, contact Emerson Customer Support for assistance.

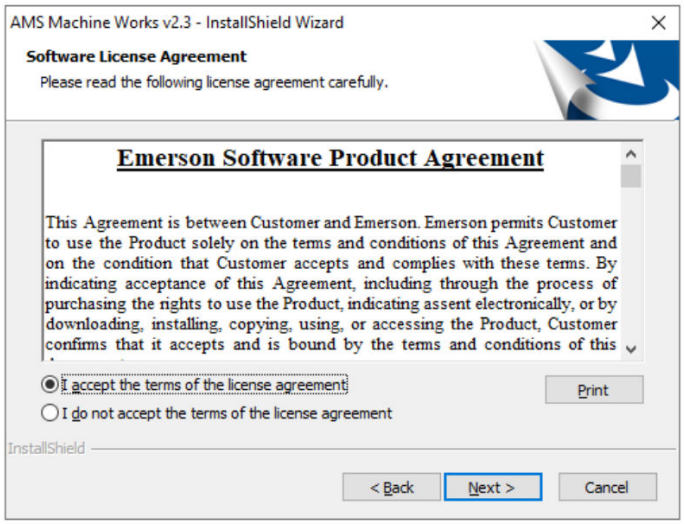
9. Click **Next** to continue.

Figure 5-11: AMS Machine Works v2.3 – InstallShield Wizard



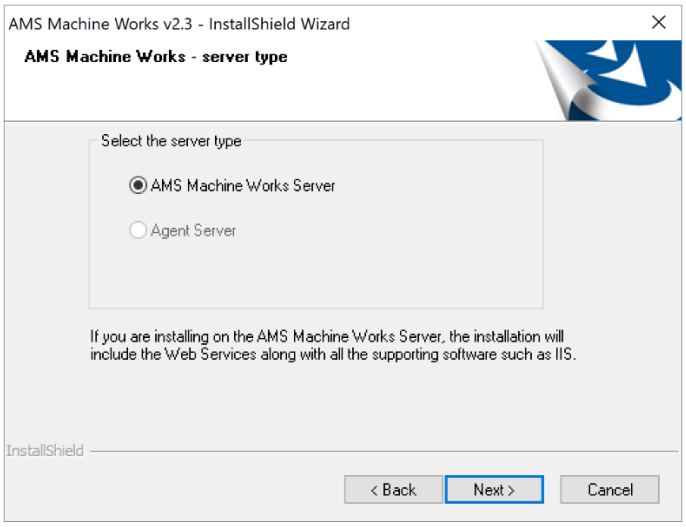
10. Click the checkbox next to **I accept the terms of the license agreement**.

Figure 5-12: InstallShield Wizard - License Agreement



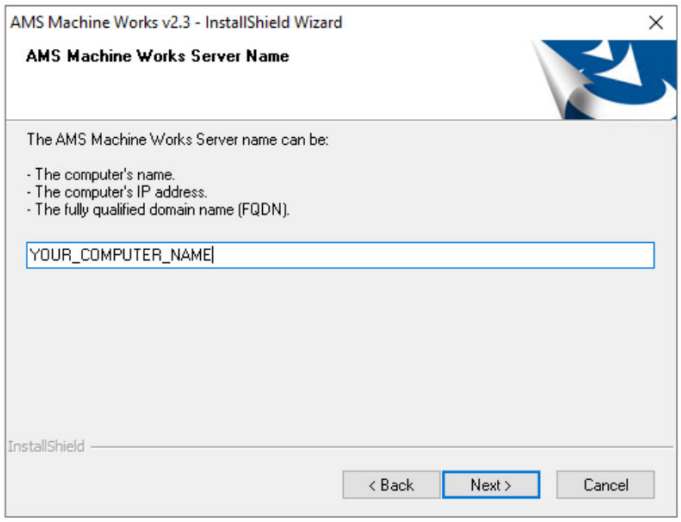
11. By default, AMS Machine Works Server is selected, and Agent Server is unavailable. Click **Next** to continue.

Figure 5-13: InstallShield Wizard - Select which type of server to install.



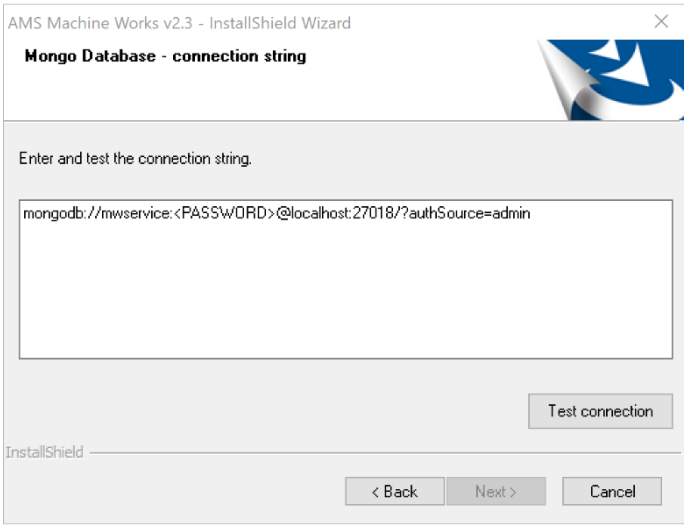
12. (Default: Automatically filled with your computer's current name.) Enter a name for your AMS Machine Works Server.

Figure 5-14: InstallShield Wizard - Name the Server



13. Enter the **MongoDB** connection string.

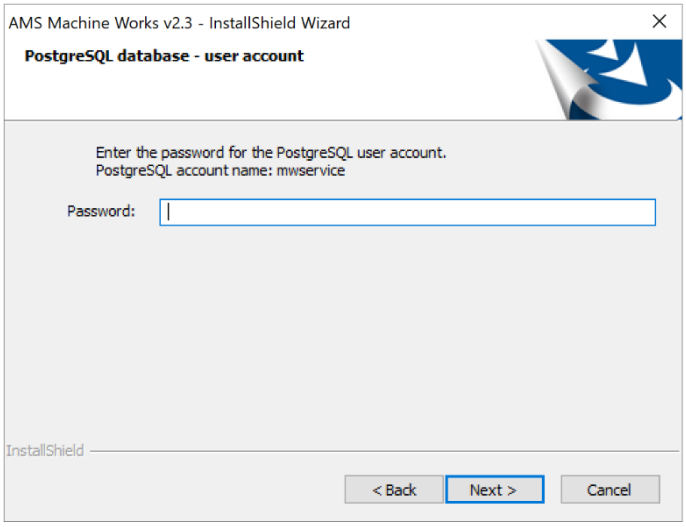
Figure 5-15: InstallShield Wizard - Enter the MongoDB connection string.



- For **Internal MongoDB** installations the connection string is: `mongodb://mwservice:<password>@localhost:27018/?authSource=admin` where the `<password>` is the `mwservice` password entered for your **Internal MongoDB** installation
- For **External MongoDB** installations, enter the connection string that you used in your External MongoDB Server Installation. This will probably follow the form: `mongodb://mwservice:<password>@<servername>:27018/?authSource=admin&tls=true`, but other options are possible depending on your specific configuration of your **External MongoDB** installation.

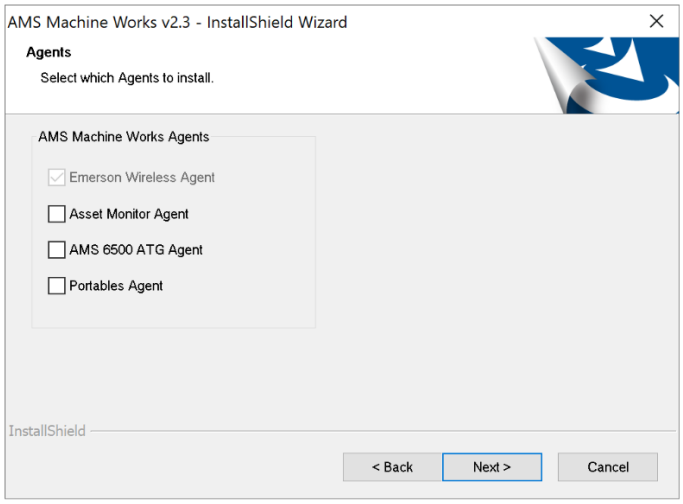
14. For the user account, **mwservice**, enter the PostgreSQL password, and then click **Next** to continue.

Figure 5-16: InstallShield Wizard - Enter PostgreSQL mwservice password.



15. Select every type of **Internal Agent** which you will need to access the devices on your network.

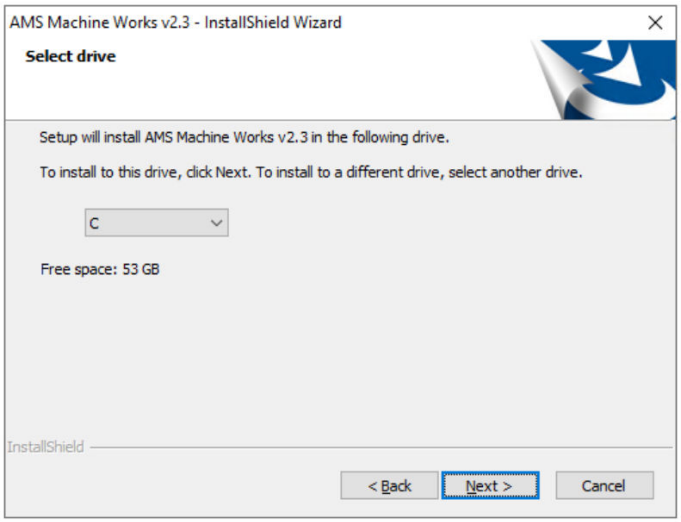
Figure 5-17: InstallShield Wizard - Agent Selection



Note
You must install each specific type of **Agent** to be able to access those device types.

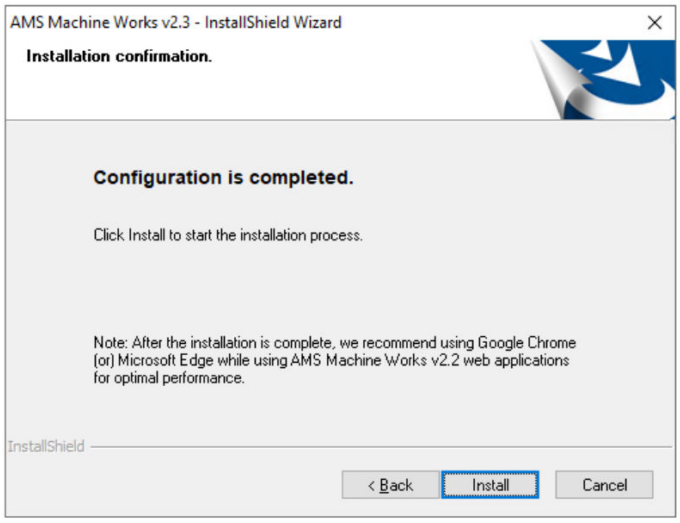
16. Select which drive to install on.

Figure 5-18: InstallShield Wizard - Select which drive to install on.



17. The configuration is complete, click **Install** to start the installation process.

Figure 5-19: InstallShield Wizard - Configuration is complete, begin the installation process.



18. Complete the reboot cycle.
19. (Optional) If the server name was changed, every **External Agent** must have their `appsettings.json` file edited.
    a) On every **Agent Server**:
    - For **Asset Monitor Agents**: Go to `C:\Program Files\Emerson\AMS Machine Works\AMA\appsettings.json`

- For **AMS 6500 ATG Agents**: `C:\Program Files\Emerson\AMS Machine Works\ATGA\appsettings.json`
- For **Emerson Wireless Gateway Agents**: `C:\Program Files\Emerson\AMS Machine Works\EWA\appsettings.json`
- For **Portable Edge Agents**:
  1. Uninstall every **Portable Edge Agent** on your network.
  2. Reinstall every **Portable Edge Agent** on your network using the new AMS Machine Works server name.

b) In the `appsettings.json` file replace the <OLD_SERVER_NAME> with the <NEW_SERVER_NAME>.

c) Save the `appsettings.json` file.

⚠ CAUTION

Portable Edge Agents must be added and registered in your AMS Machine Works installation again.

20. Restart every **Agent Server**.

5.3 Backup and Restore Procedures

A full system backup and restore procedure is the simplest and most effective method for backing up your AMS Machine Works system. You should follow your organization's policies for performing backups. A **Full Machine Backup** is recommended.

The PostgreSQL database does not have any specific instructions for backup, restore, or maintenance procedures. Expert users can use the administration tool `pgadmin4-9.11-x64.exe` provided in the installer at: `../<Installer>/dep/_Support/PostgreSQL/pgadmin4-9.11-x64.exe`

Backups

To perform backups of an **Internal MongoDB** database, see: Manual Backup of the MongoDB Database

An **External MongoDB** installation requires maintenance by a database administrator. Backups are expected to be performed by the database administrator. Please contact your database administrator or IT department for proper backup procedures as they relate to your overall backup strategy. See: Manual Backup of the MongoDB Database

Restore

If you need to restore any of the databases, contact your IT department to guide you on the proper restore procedure.

5.3.1 Manual Backup of the MongoDB Database

To backup an **Internal MongoDB** or **External MongoDB** installation you need to use your password and connection string with the `mongodump.exe` tool.

Prerequisites

Download and extract the `mongodump.exe` tool from the MongoDB website:

1. https://www.mongodb.com/docs/database-tools/mongodump/
2. https://www.mongodb.com
3. Or search for 'mongodump' in the search engine of your choice.

Procedure

1. Open the terminal application.
2. Change the directory to the location where the `mongodump.exe` was extracted.

   Note
   For more information about the `mongodump.exe` tool, refer to the MongoDB documentation website.

3. As an administrator user for the MongoDB database, run the `mongodump.exe` tool with the following command:

   ```
   mongodump.exe "mongodb://
   <ADMIN_ACCOUNT_NAME>:<ADMIN_ACCOUT_PASSWORD>@localhost:27018/?
   authSource=admin"
   ```

Postrequisites

To perform a restore operation please contact your system administrator and search the MongoDB documentation website for `mongorestore`.

6 Uninstallation

Each version of AMS Machine Works has its own uninstallation procedure. For this version see:

- Uninstall AMS Machine Works v2.3.

6.1 Uninstall AMS Machine Works v2.3

AMS Machine Works v2.3 can be uninstalled by running the installation application, `setup.exe`.

The installer application is located where you decompressed it:

`C:\..\MachineWorksInstaller\setup.exe`

Note
You must use the same version of the installer to uninstall AMS Machine Works as you used for installation. Uninstallation by the Windows **Add or remove programs** control panel will work if the proper version of the installer is unavailable.

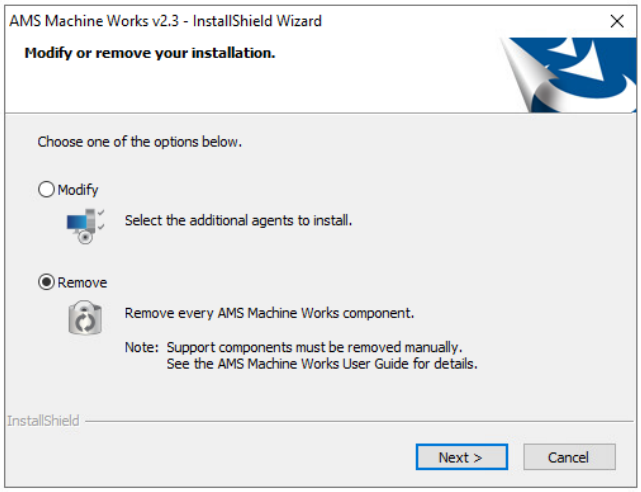
Prerequisites

1. AMS Machine Works v2.3 must be installed on your computer system.
2. You must use the same version of the installer to uninstall AMS Machine Works as you used for installation.

Procedure

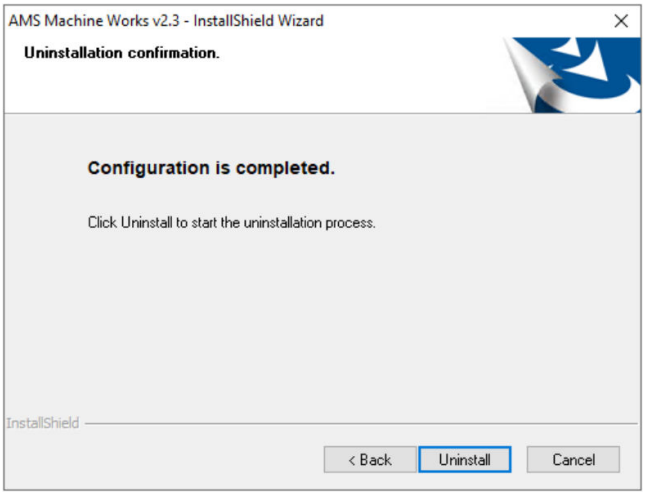
1. Run `setup.exe` as an **Administrator**.
2. Choose **Remove** → **Next** to remove every AMS Machine Works component.

Figure 6-1: Remove Installation



3. Click **Uninstall** to begin the uninstallation process.

Figure 6-2: Confirm Uninstallation



4. Click **Reboot** when you are prompted.

Note
The number of reboot cycles varies depending on the elements that you have installed.

Reboot as many times as you are prompted.

Need help?
Error occurred: Uninstallation failed. Exit code: 1638.

Reboot and retry

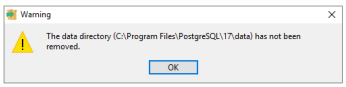
This error can be caused by using a different installer to run the uninstallation process.

Check that you are using the same installer program that you installed AMS Machine Works with.

5. Delete the AMS Machine Works configuration files manually.
   a) Delete the folder containing the configuration data located at:
   `C:\ProgramData\Emerson`
6. Uninstall **Sentinel RMS License Manager 10.2.0**:
   a) Open **Apps & features**.
   b) Select **Sentinel RMS License Manager 10.2.0** → **Uninstall**.
   c) Click **Uninstall** in the popup window to confirm.
7. Uninstall **PostgreSQL 17**:
   a) Open **Apps & features**.
   b) Select **PostgreSQL 17** → **Uninstall**.
   c) Click **Uninstall** in the popup window to confirm.

d) Select **Entire application** → **Next**.

Figure 6-3: Data Directory - Not Removed Warning



The data directory **has not been removed**. A popup is shown giving the location of the data directory.

e) Click **OK** to proceed, and click **OK** in the next window to complete the uninstallation.
PostgreSQL 17 is uninstalled, and your AMS Machine Works configuration data is located at: `C:\Program Files\PostgreSQL\17\data`

f) Either delete or backup the data at: `C:\Program Files\PostgreSQL\17\data`

g) Either delete or backup the data at: `C:\Program Files\PostgreSQL`

8. Uninstall **MongoDB**:

Note
The version of MongoDB that is installed depends on your operating system. See: Database Components

a) Open **Apps & features**.

b) Select **MongoDB** → **Uninstall**.

c) Click **Uninstall** in the popup window to confirm.
MongoDB is uninstalled and your AMS Machine Works measurement data and logs are located at: `C:\EMERSONMW\`

d) Either delete or backup the data at: `C:\EMERSONMW\`

9. Uninstall **RabbitMQ Server 4.2.5**:

a) Open **Apps & features**.

b) Select **RabbitMQ Server 4.2.5** → **Uninstall**.

c) Click **Uninstall** in the popup window to confirm.

d) Click **Uninstall** in the second popup window to confirm.
The uninstallation process begins.

e) (Optional) Click **Show details** to see what the uninstallation process is doing.

f) Click **Next** in the next window.

Rabbit MQ files still remain on your system at:

`C:\Users\Administrator\AppData\Roaming\RabbitMQ`

g) Click **Finish** to finish the uninstallation process.

10. Uninstall **Erlang OTP 27.3.4.11 (15.2.7.8)**:
    a) Open **Apps & features**.
    b) Select **Erlang OTP 27.3.4.11 (15.2.7.8)** → **Uninstall**.
    c) Click **Uninstall** in the popup window to confirm.
    d) Click **Uninstall** in the second popup window to confirm.
    The uninstallation process begins.
    e) (Optional) Click **Show details** to see what the uninstallation process is doing.
    f) Click **Close** to finish the uninstallation process.
11. Check the Task Manager for the following processes, **erlsrv** and **erl**.
    a) If they are running, stop **erlsrv** and **erl**.
12. (Optional) Any files that were not removed by the uninstall functions in **Apps & Features** control panel should be removed.
    - (Automatic Option) Use the Uninstall Cleaner Utility. See: Uninstall Cleaner Utility
    - (Manual Option) Continue the instructions below, and delete these files manually.
13. Open the **Command Prompt** for your computer.
    a) Type the command: `tasklist |findstr "epmd"`
    b) Make note of the PID for "epmd.exe": **Your_PID**
    The second column contains the PID:
    ```
    epmd.exe 5744 Services 0 3,088 K
    ```
    In this example: `Your_PID = 5744`, but it is different on every computer.
    c) Type the command: `taskkill /f /pid` **Your_PID**
    `SUCCESS: The process with PID` **Your_PID** `has been terminated.`
14. Delete the following folders:
    a) Delete: `C:\Program Files\RabbitMQ Server`
    b) Delete: `C:\Program Files\Erlang OTP`
15. Delete the data at:
    a) Delete: `C:Users\Administrator\AppData\Roaming\RabbitMQ`
    b) Delete: `C:Users\Administrator\.erlang.cookie`
    c) Delete: `C:Windows\System32\config\systemprofile\.erlang.cookie`

Note

`Administrator` is the name of the default administrator, if you used another administrator account to perform the installation, then the filepath will use that name.

For example: `C:\Users\Other_Administrator\AppData\Roaming\RabbitMQ`

16. Run the Windows Registry Editor, and delete the following registry entries.
    a) Use the Registry Editor to delete the first Ericsson folder:
    `HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Ericsson`
    b) Use the Registry Editor to delete the second Ericsson folder:
    `HKEY_LOCAL_MACHINE\SOFTWARE\Ericsson`
    c) (Optional) Use the Registry Editor to delete the RabbitMQ folder if it exists:
    `Computer\HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Services\RabbitMQ`
17. (Optional) Remove the AMS Machine Works Root CA certificate from External Agent Servers.
18. (Optional) Remove the External MongoDB certificate if you had an External MongoDB.
19. Restart your computer.

7 Support Tools

A group of support tools and utilities is included with the installation package in the `SupportTools` folder.

Note
The `..Installer_2.1.0.XXX\SupportTools` folder is in the hierarchy created when you unzipped the `Installer_2.1.0.XXX.zip` file. See: Installation Procedures

Each of these applications is dedicated to a specific purpose:

- The Pre-Installation Checklist tool checks for common problems which can disrupt or halt the installation process. See: Pre-Installation Checklist Tool
- Contacting Emerson Product Support See: Sending Log Files to Emerson Product Support
  - The Installation Logs Compressor creates a compressed `.zip` file of the installation logs which you can send to Emerson Product Support. See: Installation Logs Compressor
  - The Service Logs Compressor creates a compressed `.zip` file of the service logs which you can send to Emerson Product Support. See: Service Logs Compressor
- The Data Retention Policy page enables you to manage how long your MongoDB database retains measurement data. See: Set the Data Retention Policy
- The Uninstall Cleaner Utility aids you in ensuring that your system is free of any components or files which may affect your system, or that could create errors when upgrading or reinstalling AMS Machine Works. See: Uninstall Cleaner Utility

Note
For additional information on some common problems, read the Troubleshooting section.

7.1 Pre-Installation Checklist Tool

The Pre-Installation Checklist tool checks for common problems which can disrupt or halt the installation process. It is located in the decompressed installer package at:

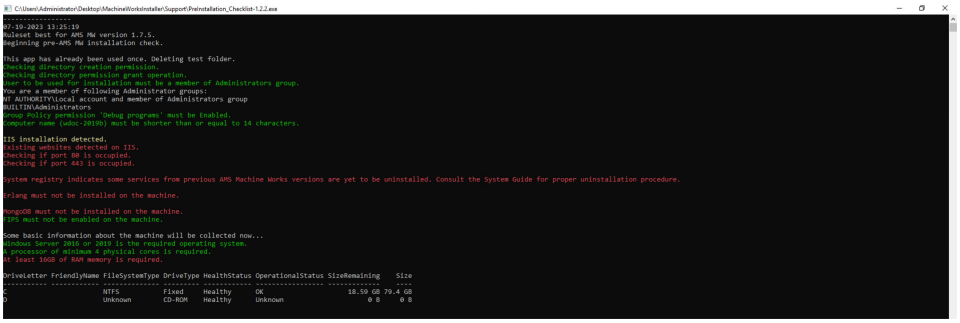
```
C:\\..\SupportTools\PreInstallationChecklist.exe
```

Note
The Pre-Installation Checklist tool should be run prior to using the AMS Machine Works installer. The tool should be used on every machine where you plan to use the AMS Machine Works installer.

Procedure

1. Launch the `PreInstallationChecklist.exe` application from the `SupportTools` folder to begin the analysis.

Figure 7-1: Initial Analysis

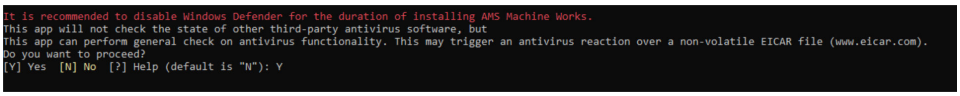


2. (Optional) Press the 'Y' key to perform an antivirus test, or press the 'N' key to skip this test.

Note
Pressing the '?' key displays a short help text.

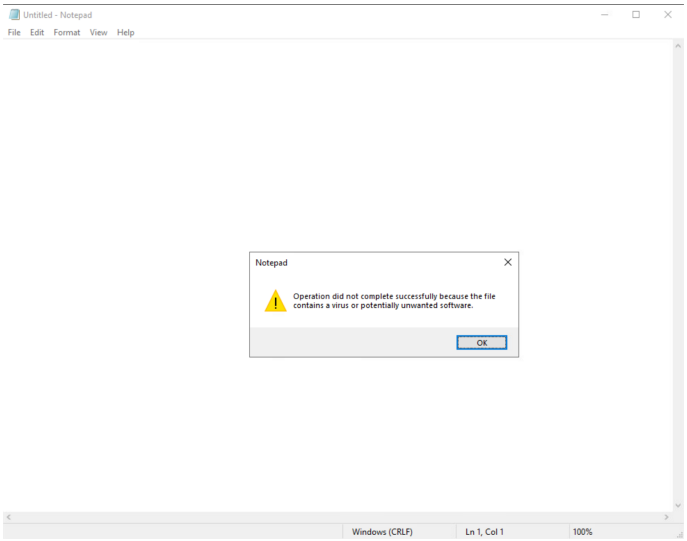
Attention
Antivirus software should be disabled while running the AMS Machine Works Installer.

Figure 7-2: Perform Antivirus Test



a) Every antivirus system reacts differently. The example below shows the response of Windows Defender.

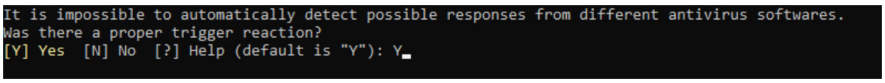
Figure 7-3: Evaluation of Antivirus Test Results: One



Note
The test involves creating a non-volatile file in your default application for `.txt` files, which may trigger an antivirus reaction. (See: www.eicar.com) Antivirus reactions are different for each antivirus software, the response pictured is for Notepad and Windows Defender.

b) If the test did not trigger an antivirus reaction, click **N** to proceed. Click **Y** to indicate that an antivirus response occurred, and you will proceed and also receive a warning to turn off your antivirus software during the installation process.

Figure 7-4: Evaluation of Antivirus Test Results: Two

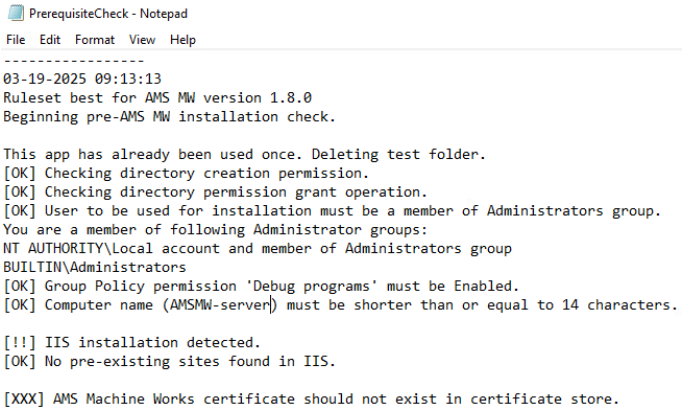


3. Press **Enter** to exit this application.

The application produces an output file: `PreInstallationChecklist.txt`. The outcomes of these checks have lines beginning with **[OK]**, **[!!]**, or **[XXX]**.

- **[OK]** indicates an acceptable outcome.
- **[!!]** indicates a warning about an unusual setting, but installation can proceed.
- **[XXX]** indicates a setting which must be corrected before proceeding with installation.

Figure 7-5: Example Output File



Note
The `PreInstallationChecklist.exe` application is typically located in the `SupportTools` folder, and it will save its output to the same location. If you run the application from another location it will save its output there.

7.2 Sending Log Files to Emerson Product Support

When users provide Emerson Product Support with detailed information, such as screenshots and log files, the speed and effectiveness of Emerson Support's response is greatly increased.

Users should take screenshots of any error messages that occur either during installation or while using AMS Machine Works.

Preparing the Logs

There are two tools that enable you to get more detailed information from your application logs and your service logs.

Follow the instructions found here:

1. Installation Logs Compressor
2. Service Logs Compressor

Sending the Installation Logs, Service Logs, and Screenshots to Emerson Product Support

Gather the screenshots and compressed log files in one directory.

When you contact Emerson Product Support, they will provide a link to a SharePoint location where the log files can be uploaded.

Contact Information

Services are delivered through our global services network.

1. To contact your local Emerson Sales and Service provider, click Contact Us.
2. To contact the Global Service Center, click Technical Support.

7.2.1 Installation Logs Compressor

The Installation Logs Compressor creates a compressed `.zip` file of the installation logs which you can send to Product Support. The application is located at `..\SupportTools\InstallationLogsCompressor.exe`. You can run this application on any machine where the AMS Machine Works Installer was used at least once.

Note
This utility works on both installation types:

1. AMS Machine Works Server
2. Agent Server

This application produces a file, `InstallLogs_*computerName*.zip`, which you can send to Customer Support. The part of the file name, `*computerName*`, is the specified by the computer the utility is run on.

Procedure

1. Run the application located at `..\SupportTools\InstallationLogsCompressor.exe` on the affected machine.

2. The application will run and then exit silently.

A file, named `InstallLogs_*computerName*.zip`, is created.

Note
The `InstallationLogsCompressor.exe` application is typically located in the `SupportTools` folder, but it will save its output to the same location it is run from. For example, if you run the application from the desktop, it will save its output there.

7.2.2 Service Logs Compressor

The Service Logs Compressor creates a compressed `.zip` file of the service logs which you can send to Product Support. The application is located at `..\SupportTools\ServiceLogsCompressor.exe`. You can run this application on any machine where an AMS Machine Works installation exists.

Note
This utility works on both installation types:

1. AMS Machine Works Server
2. Agent Server

This application produces a file, `AMSMWLogs_*computerName*.zip`, which you can send to Product Support. The part of the file name, `*computerName*`, is the specified by the computer the utility is run on.

Procedure

1. Run the application located at `..\SupportTools\ServiceLogsCompressor.exe` on the affected machine.
2. Input the number of days of logs to compress. (Default: 5)

A file, named `AMSMWLogs_*computerName*.zip`, is created.

Note
The `ServiceLogsCompressor.exe` application is typically located in the `SupportTools` folder, but it will save its output to the same location it is run from. For example, if you run the application from the desktop, it will save its output there.

7.3 Uninstall Cleaner Utility

The Uninstall Cleaner automatically detects and removes components left over by the AMS Machine Works uninstallation process. See: Uninstall AMS Machine Works v2.3.

The application is located in the decompressed installer package at:

`..\SupportTools\UninstallCleaner.exe`

You can run this application on any computer or virtual machine where an AMS Machine Works installation exists.

Note
This utility works on both installation types:

1. AMS Machine Works Server
2. Agent Server

The application detects if any AMS Machine Works components or 3rd Party components remain on the system.

Prerequisites

Remove all AMS Machine Works components and 3rd Party components.

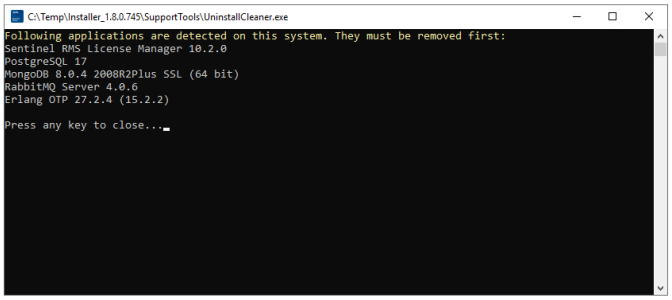
Procedure

1. Run the application located at `..\SupportTools\UninstallCleaner.exe` on the affected machine.

   Need help?

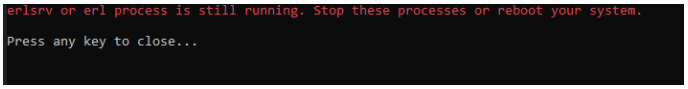
   a. If the `UninstallCleaner.exe` displays a list of program to remove, close the program and refer to the uninstallation steps in this manual. See: Uninstall AMS Machine Works v2.3

   Figure 7-6: Remove Applications

   b. If the `UninstallCleaner.exe` displays a list of processes to stop, close the program and refer to the uninstallation steps in this manual. See: Uninstall AMS Machine Works v2.3

   Figure 7-7: Stop Processes

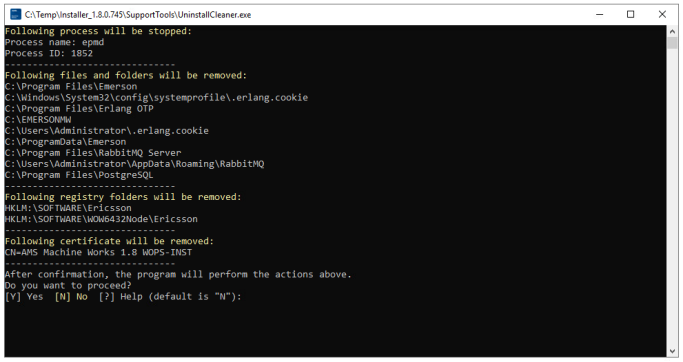
   

2. When the application displays a list of files to delete, and processes to stop, decide if you want to delete the listed files.

   ⚠ CAUTION

   This action will delete all of your data. Back up any databases that you might need.

Figure 7-8: Proceed to Delete Files



- **N** — (Default) By default no action will be taken.
- **Y** — Stop the processes listed and delete the files listed.
- **?** — Display the help information.

When you choose **Y**, the files are deleted, and the processes are stopped.

8 OPC UA Server

AMS Machine Works includes OPC UA Server functionality running as a service to provide secure communication between devices which support the OPC UA standard. The service automatically launched if you have an active license for it.

Figure 8-1: OPC UA Service Name

```
Emerson MW Data Integration Module OPC Server
```

Figure 8-2: OPC UA Service Application

```
C:\Program Files\Emerson\AMS Machine Works\DOPC
\MW.Dim.OpcServer.exe
```

OPC UA Server functionality is not a standard part of every AMS Machine Works license. To check if your installation has this functionality enabled go to the **User Manager** module in AMS Machine Works and click the **LICENSES** tab.

You can upgrade your AMS Machine Works license at any time.

If you upgrade your AMS Machine Works license, you need to **Reboot** your server for the functionality to become available.

8.1 Manage Certificates in OPC UA Clients and Servers

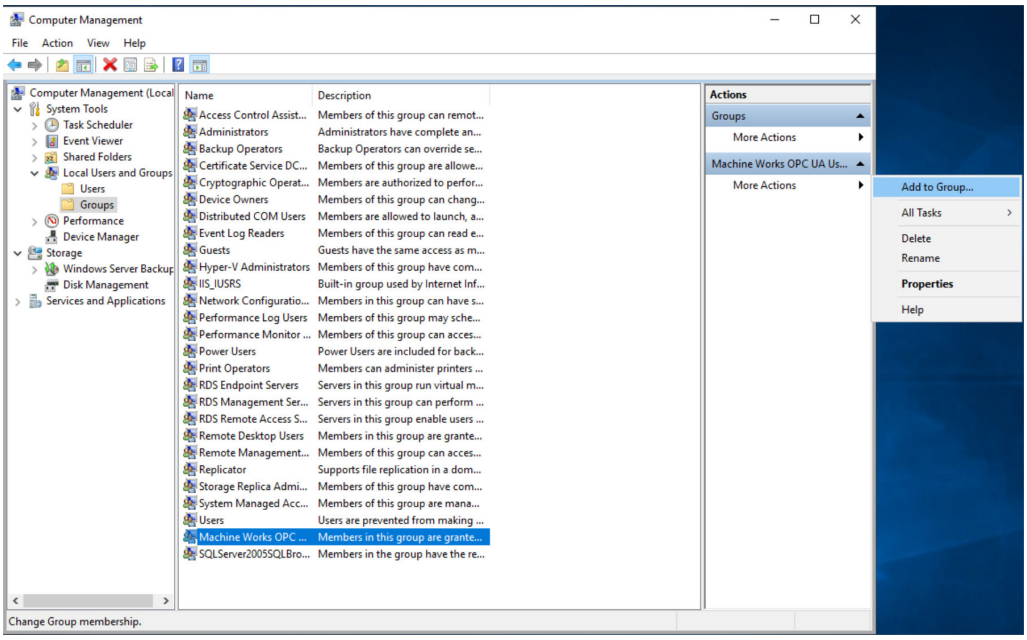
To connect an OPC UA client to the AMS Machine Works OPC UA Server, you need to generate a certificate in your client then add it as a trusted certificate for the server if a user wants to use a certificate for user authentication.

The process has a few general steps:

Procedure

1. Generate a certificate in a compatible OPC UA client. See: OPC UA Software Compatibility
   a) With **UaExpert**, which is used in the Configure an OPC UA Client example below, the file path is: `C:\Users\Administrator\AppData\Roaming\unifiedautomation\uaexpert\PKI\own\certs`
2. (Optional) If you want users to use login and password authentication, then in the operating system's **Computer Management** utility, add a **User** to the **Machine Works OPC UA Users** group.

Figure 8-3: Add a User to the Group



3. Copy the certificate generated in **Step 1** from the folder it was saved to.
    a) Paste the certificate into: `C:\ProgramData\Emerson\AMSMachineWorks\Data\DOPC\pki\server\trusted\certs\`
    b) (Optional) If you want a user to use certificate based authentication, paste the certificate into: `C:\ProgramData\Emerson\AMSMachineWorks\Data\DOPC\pki\user\trusted\certs\`

Postrequisites

For an example installation with details see: Configure an OPC UA Client

8.2 Configure an OPC UA Client

This example shows how to connect a particular OPC UA client, **UaExpert**, to the AMS Machine Works OPC UA Server,

```
Emerson MW Data Integration Module OPC Server
```

Other clients are also compatible. See: OPC UA Software Compatibility

Prerequisites

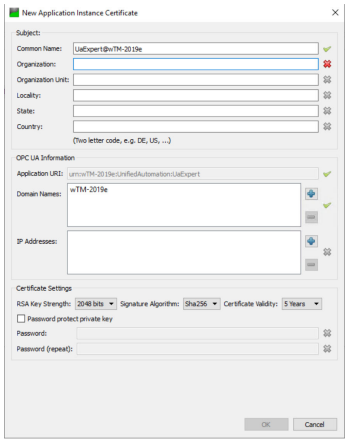
- Click the **LICENSES** tab in the **User Manager** to confirm that the OPC UA Server license is enabled.
- Complete the steps found in: Manage Certificates in OPC UA Clients and Servers

- **Server Information** — From your OPC UA Client, supply the connection information of the OPC UA Server. The URL for the OPC UA Server is **opc.tcp:///[server]:4840**, where [server] is the computer's name, IP address, or localhost of the AMS Machine Works server.
- **Security Settings** — From your OPC UA client, select the security policy and message security mode that applies to your network. The OPC UA Server supports these security settings:
  - **Security Policy**
    - Aes256-Sha256-RsaPss
    - Aes128-Sha256-RsaOaep
    - Basic256Sha256
  - **Message Security Mode**
    - Sign
    - Sign and Encrypt
- **Encrypt Authentication Settings** — An OPC UA client may be able to connect to the OPC UA server via a predetermined username and password, or through certificate validation. To enable an OPC UA client to connect to the server via username and password, an Administrator must add the user to the Machine Works OPC UA Users Windows Group.

Procedure

1. Download, install, and then run **UaExpert** from unified-automation.com. Enter some value into the **Organization** field and then click **OK** to continue.

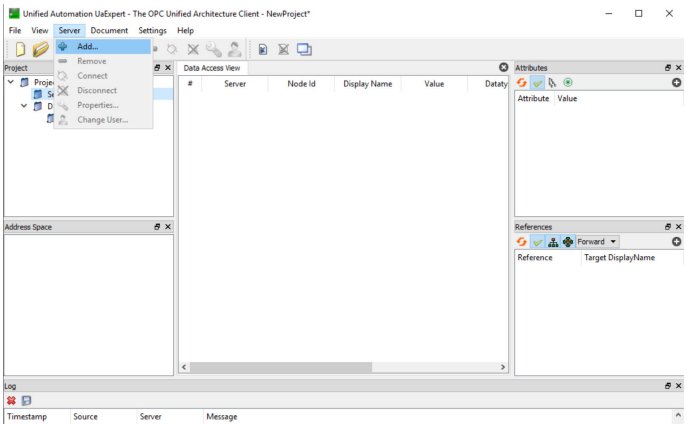
Figure 8-4: Start UaExpert



Note
This is third party software which is shown only for demonstration purposes. Other clients are also compatible. See: OPC UA Software Compatibility

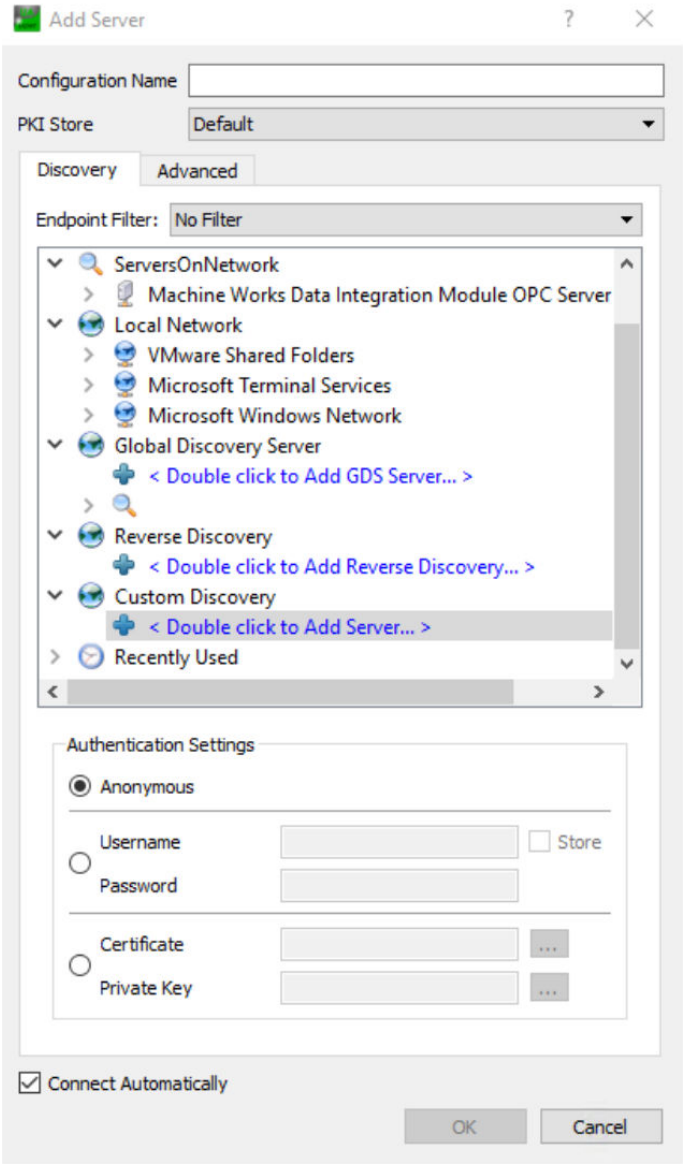
2. Select **Server** → **Add...** to begin configuring the server connection.

Figure 8-5: Add a Server



3. In the **Custom Discovery** section, double click the + symbol to add a server.

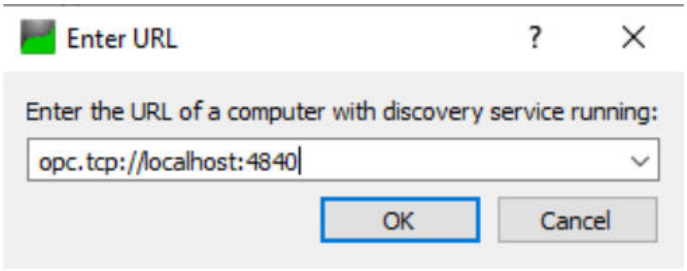
Figure 8-6: Click Custom Discovery



A popup window will open for you to enter the URL for the OPC UA Server.

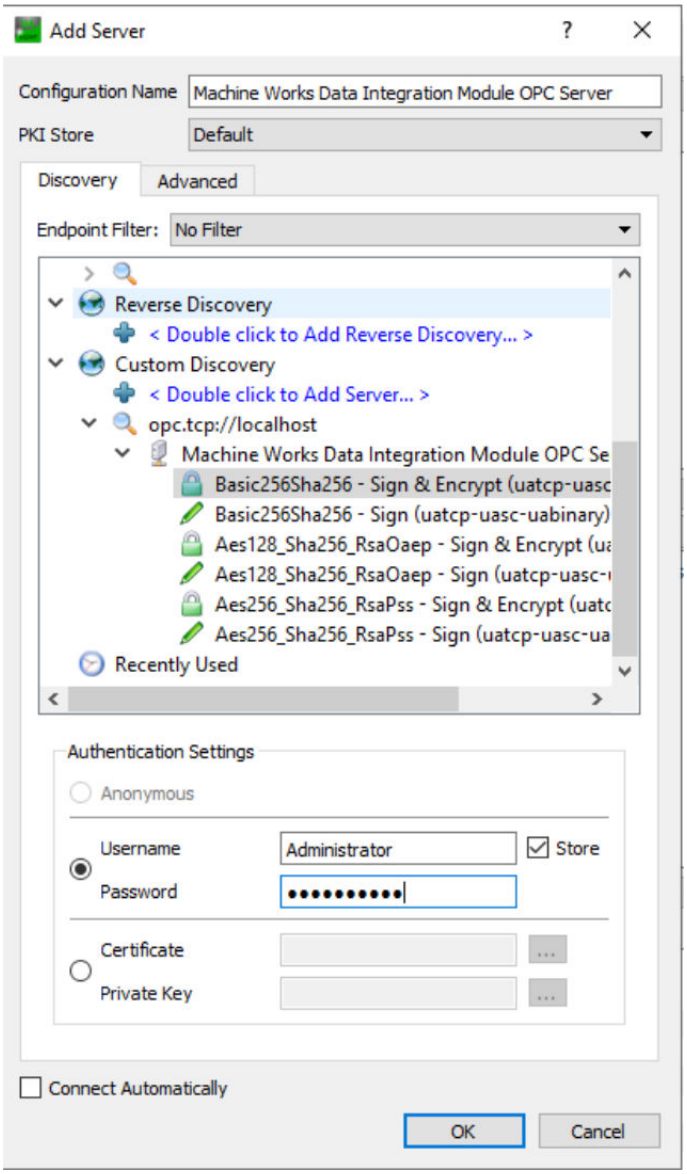
4. Enter the server **name**, **IP**, or **localhost**, followed by **:4840** and then click **OK** to continue.

Figure 8-7: Enter URL



5. Configure the **Security Settings**, **User**, and **Password**.

Figure 8-8: Configure Settings



a) Select your **Security Policy** and **Message Security Mode**.

b) Enter the **User** name, select **Store**, and enter the **Password**.

Note
This is the **User** that you added in the Manage Certificates in OPC UA Clients and Servers steps.

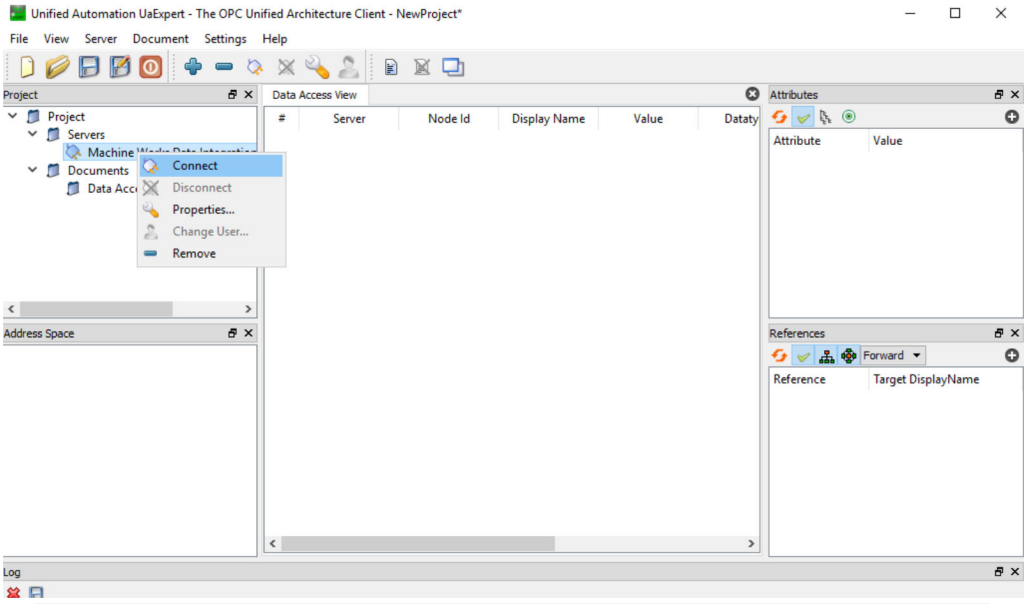
c) (Optional) Click **Connect Automatically** so that this server is always connected.

d) Click **OK** to save your changes and continue.

You are now ready to connect to the server and acquire the hierarchy.

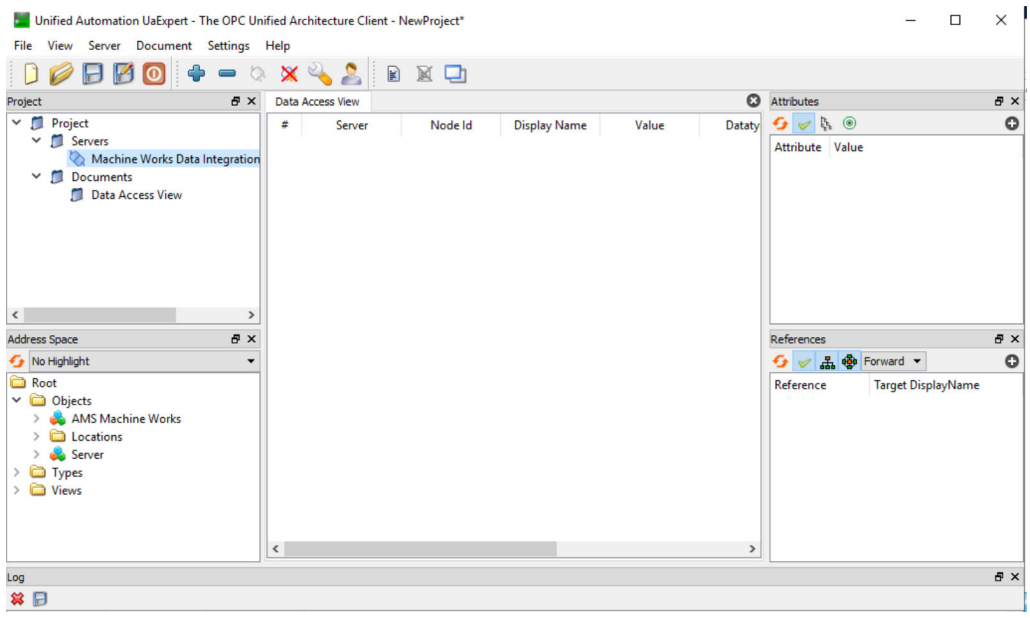
6. Right click on the server you have configured and select **Connect**.

Figure 8-9: Connect to Server



The client is now fully configured, and you can interact with the AMS Machine Works hierarchy as shown in the bottom left of the window.

Figure 8-10: Configured Client with Hierarchy



8.3 OPC UA Tag Information and Tree Structure

The names of the OPC UA tags are usually dependent on the configuration of a system. Virtually all data acquired by AMS Machine Works is available through OPC UA.

Hierarchy and node names, which reflect the hierarchy and structure in other parts of the system, are automatically updated.

All nodes are identified by a UUID, or by an opaque byte string. IDs are unambiguous and immutable, even if a node is renamed or relocated within the hierarchy.

At the top level of the OPC UA hierarchy tree (the server name), these tags are available:

Table 8-1: Example Nodes in the OPC UA Hierarchy

OPC UA Browse Path	Node Description
`AMS Machine Works`	The root node of the AMS Machine Works system.
`AMS Machine Works\Network Devices`	The **Network Devices** node contains sub-nodes for each type of **Device** or **Gateway**.
`AMS Machine Works\Network Devices\Asset Monitors`	The **Asset Monitors** node contains sub-nodes for all the **Asset Monitors** defined in the system.
`AMS Machine Works\Network Devices\Wireless Gateways`	The **Wireless Gateways** node contains sub-nodes for all the **Wireless Gateways** defined in the system..
`AMS Machine Works\Network Devices\Asset Monitors\ [Device]`	The name and device structure of a particular **Asset Monitor**, which was set in the **Network Device Module**.
`AMS Machine Works\Network Devices\Wireless Gateways\ [Gateway]`	The name of a particular **Wireless Gateway**, which was set in the **Network Device Module**.
`AMS Machine Works\Network Devices\Wireless Gateways\ [Gateway]\[Wireless Device]`	The name of a particular **Wireless Device**, which was set in the **Network Device Module**.
`AMS Machine Works\Network Devices\Asset Monitors\ [Device]\Health`	The **Health** information about this **Device**.
`AMS Machine Works\Network Devices\Asset Monitors\ [Device]\[Measurement Source] \Health`	The **Health** information about this **Measurement Source**.

Table 8-1: Example Nodes in the OPC UA Hierarchy *(continued)*

OPC UA Browse Path	Node Description
`AMS Machine Works\Network Devices\Asset Monitors\ [Device]\[Measurement Source]\ [Measurement]`	A **Measurement** value from a specific **Measurement Source** in a specific **Device**.
`AMS Machine Works\Network Devices\Asset Monitors\ [Device]\Temperature`	The internal temperature of a **Device**.
`AMS Machine Works\[Site]`	This node contains the root of your **Location** hierarchy. The **Site** name is set in the **Asset Explorer** module, and has an initial value of, 'Default Site'.
`AMS Machine Works\[Site]\ [Location]`	This node contains the name of a **Location** as defined in the **Asset Explorer**. A **Location** can contain multiple **Location** nodes, as well as multiple **Machine Train** nodes.
`AMS Machine Works\[Site]\ [Location]\[Machine Train]`	This node contains the name and structure of a **Machine Train** as defined in the **Asset Explorer**.
`AMS Machine Works\[Site]\ [Location]\[Machine Train] \Health`	The overall **Health** data for a specific **Machine Train** in a specific **Location**.
`AMS Machine Works\[Site]\ [Location]\[Machine Train]\ [Asset]`	An **Asset** name as defined in the **Machine Configuration Process**, for example the name of a motor, gearbox, or pump.
`AMS Machine Works\[Site]\ [Location]\[Machine Train]\ [Asset]\Health`	The **Health** information of a specific **Asset**.
`AMS Machine Works\[Site]\ [Location]\[Machine Train]\ [Asset]\[Measurement Location]`	A specific **Measurement Location** name such as **Inboard**, **Outboard**, or a **Custom Location**.
`AMS Machine Works\[Site]\ [Location]\[Machine Train]\ [Asset]\[Measurement Location] \[Measurement]`	A **Measurement** from a specific **Measurement Location**.

9 Troubleshooting

This section presents troubleshooting tips. You can also refer to Knowledge Base Articles for additional troubleshooting tips.

9.1 Installation Troubleshooting

Any future issues with the installer that cannot be handled at the time of installation will be added here.

Table 9-1: Installation troubleshooting

Error	Background	Solution
None	No unhandled errors to report.	No issues to solve.

9.2 OPC UA Server Troubleshooting

Table 9-2: OPC UA Server Troubleshooting

Error	Background	Solution
After the server reboots, the hierarchy and associated data are out of sync between the OPC UA client and various AMS Machine Works modules: 1. **Design Studio** 2. **Network Device Module**	After installing or rebooting of the AMS Machine Works server, it can take several minutes to build the plant hierarchy in the OPC UA client.	**First Solution**: Allow several minutes after installing or rebooting the AMS Machine Works server before attempting to connect OPC UA clients.
		Second Solution: If several minutes have passed and the data in the OPC UA client is still not in sync with the data in the software, do the following: 1. In **Services** on the AMS Machine Works server, locate: `Emerson MW Data Integration Module OPC Server` 2. Stop the service. 3. Restart the service. 4. Allow several minutes for the systems to sync.

9.3 Security Troubleshooting

Table 9-3: SSL and Certificates

Error	Background	Solution
Any issues not covered in either: 1. AMS Machine Works Security 2. Add AMS Machine Works Certificates		For further information about any security issues refer to: **AMS Product Security Documentation (AMS-SEC-PSG-001)**

9.4 Vibration Analyzer Troubleshooting

There are no currently known issues.

Table 9-4: Vibration Analyzer Troubleshooting

Error	Background	Solution

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