



ULTRATREND DMS 6

Database Management System

User Manual



Version 6.7
April 2020



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Version 6.7

Version 6.7: Summary of Changes

- 3rd-Party software updates:
 - LabVIEW Runtime updated to 2019
 - NI-VISA drivers updated to 18.5
 - SQL Server Express updated to 2017
 - ODBC and SQL Cmd Line Utils updated to latest
- Database Schema updated to version 5
 - Flags field added to notification table for tracking global registration
- Database API
 - Updated to better support potentially malformed database backups
 - New (faster) API methods for retrieving dashboard data
 - Address lockup in notification handler that prevented UEServerDaemon from stopping properly
 - More caching for faster data retrieval
- DMS Dashboard
 - Updates execute in the background, so the UI only needs to lock for ~.25s instead of the entire update period
 - Supports a simple export to an excel file
- DMS Tree
 - Updates to better defer redrawing the tree
 - Added parameter that cuts database roundtrips ~in half, for up to 50% better load times on the tree
- DMS
 - Image Viewer filters out duplicate images
 - Image retrieval handles malformed image paths
 - Version check updated in the Help menu and removed from the tab list
 - Added data fields for other DMS hierarchy levels in the Record Information Tab
 - Miscellaneous bug fixes per UE-supplied issue list:
 - Bearing Lube Fields Reports ordering
 - Module type reverting to SCM
 - Historical record in empty group
 - Points Currently In -> Probe
 - New default options in Lists if user resets to default
- 4Cast Controller Service
 - Renamed
 - Now periodically updates the database when connected so another instance can launch if the previous one dies
- Installer
 - Removed dependency on a separate DMS installer; we now uninstall the existing DMS instance and replace with the new one
 - Remove support for 32-bit Windows in all Database actions
 - Remove requirement to enable .NET 3.5 as it was only needed for SQL Server 2014
 - 4Cast Controller Service now opens associated TCP port

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I. Software Overview

1. Introduction

Ultratrend DMS is a data organizing software for creating and maintaining databases that apply to all the basic applications performed by the Ultraprobe models 401, 3000, 9000, 10,000 and 15,000, as well as, the 4Cast monitoring system. Users can select Generic, Bearings, Leaks, Valves, Steam and Electrical applications for inspection. It will store and organize records, provide reports, alarms and charts.

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Users will be able to transmit data from the Ultraprobe to a computer or from a computer to the Ultraprobe via a USB connection (Ultraprobe 3000 or 9000) or by an SD card (Ultraprobe 401, 10,000 or 15,000).

The Ultratrend DMS software package supports internet communication with the 4Cast monitoring system. 4Cast is a unique system that continuously logs bearing data and bearing sounds. At pre-set intervals, all stored data and sound samples are sent to a computer for reporting and analysis.

2. Program Overview

To allow for customization and ease of use, the DMS 6 software is divided into three modules that can be installed separately or together based upon the end user's configuration needs. These modules are the DMS Interface, DMS Database, and the UE 4Cast Controller.

2.1 DMS Interface

The DMS Interface is similar in appearance and operation to Windows Explorer providing users with a "Record Hierarchy" view of the data and the ability to sort, organize and archive records. The record hierarchy is: **Plant, Application, Group, Location/Machine and Point**. Each Record will maintain fields, which contain basic inspection data as well as a subsection for historical information. The hierarchy design of the program provides users with the capability of ever-expanding data management.

The DMS Interface includes the **4Cast Manager**, which is the configuration tool for interacting with 4Cast devices.

2.2 DMS Database

The DMS Database is the storage location for all data that the system stores. A single database installation can have multiple interfaces and can support data acquisition from the 4Cast system even when the interface is not open.

2.3 UE 4Cast Controller

The UE 4Cast Controller is a module that allows for communication with the 4Cast.

3. System Requirements

- Windows Based PC
- Windows 10
- Windows Server 2016 or greater
- Microsoft SQL Server 2017 or greater
- 100 GB of Hard Drive space (Minimum)
- 4 GB of RAM required, 8 GB of RAM recommended
- Microsoft Excel 2010 or greater

4. Installing the Software

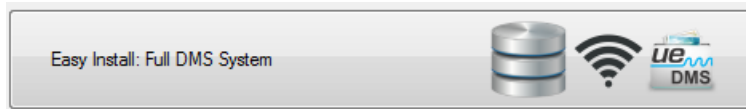
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Before starting the installation process, it is recommended that the user verify port 38801 is open through the systems firewall to ensure no errors occur during the installation of the DMS 6 database; if the 4Cast system is to be used then port 7001 will need to be open as well. The DMS 6 software can be downloaded from the UE Systems website: <https://www.uesystems.com/learning-center/software-download/>

To begin the installation, run the DMS Installer application from the unzipped DMS 6 Installation folder and then select one of the following installation options.

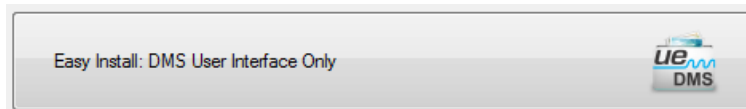
4.1 Easy Install: Full DMS System



Full Install Button

The Full DMS System option is intended for a simple installation of the entire Ultratrend DMS software package on one computer. Please reference the "I. Software Overview: 5.1. During Installation" section of this manual for more information on configuring the install.

4.2 Easy Install: DMS User Interface Only



Interface Install Button

The DMS User Interface Only option is intended for a simple installation of the DMS Interface on a client computer that will be accessing a previously installed database on another computer or server in their network. Please reference the "I. Software Overview: 5.1. During Installation" section of this manual for more information on configuring the install.

4.3 Custom Installation



Custom Install Button

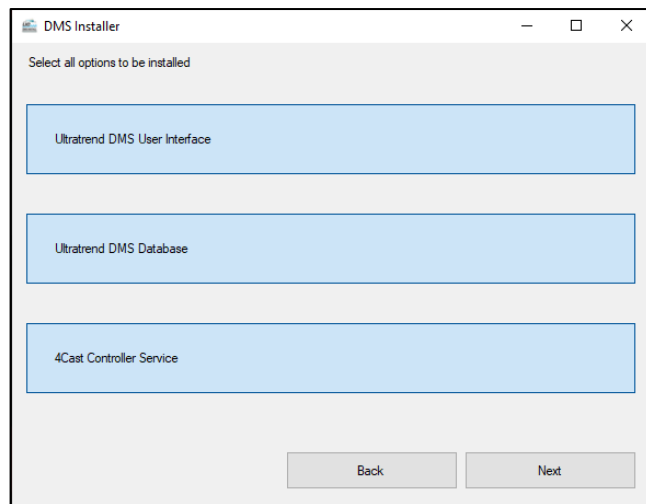
The Custom Installation option allows the user to choose what portions of the DMS software to install. It also provides the option to install the DMS 6 database with a backup file, giving the new database access to previous data. Some users may choose an advanced configuration for the DMS installation using the existing SQL database instead of the SQL 2017 Express version included in the DMS software. If that is the case, the Custom Installation process can be used for those configurations.

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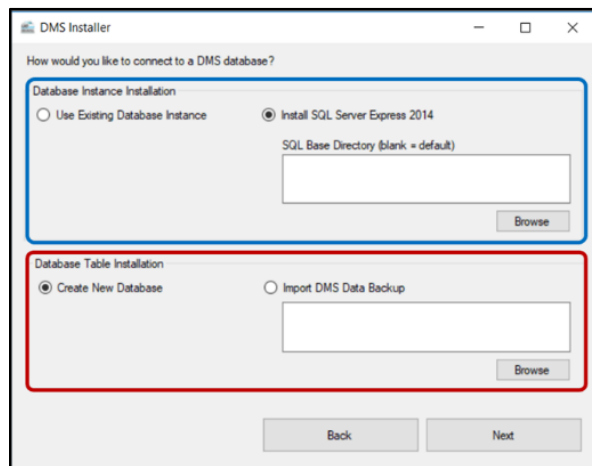
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When the Custom Installation option is chosen, the user will then be given the option to select which DMS modules (Interface, Database, or UE 4Cast Controller) they would like to install. The user can choose to select multiple modules to be installed at one time.

Each module that is selected will be highlighted “blue” and pressing the Next button will advance the installation process to the Database Installation screen if the “Ultratrend DMS Database” module was selected.



DMS Custom Installer: Modules Screen



DMS Custom Installer: Database Screen

From the Database Installation screen of the DMS Custom Installer, the user can choose how the database table and instance will be installed.

Database Instance Installation – The user can choose one of the following two options: “Use Existing Database Instance” or “Install SQL Server Express 2017”. If “Use Existing Database Instance” is chosen, they will need to use the Browse button to enter the location information for the database into the SQL Base Directory field provided. If “Install SQL Server Express 2017” is selected, the SQL Base Directory field should be left blank.

Database Table Installation – The user can choose one of the following two options: “Create New Database” or “Import DMS Data Backup”. If “Create New Database” is selected, the user has chosen to create a blank database. If “Import DMS Data Backup” is chosen, they will need to use the Browse button to enter the location of the backup file in the field provided.

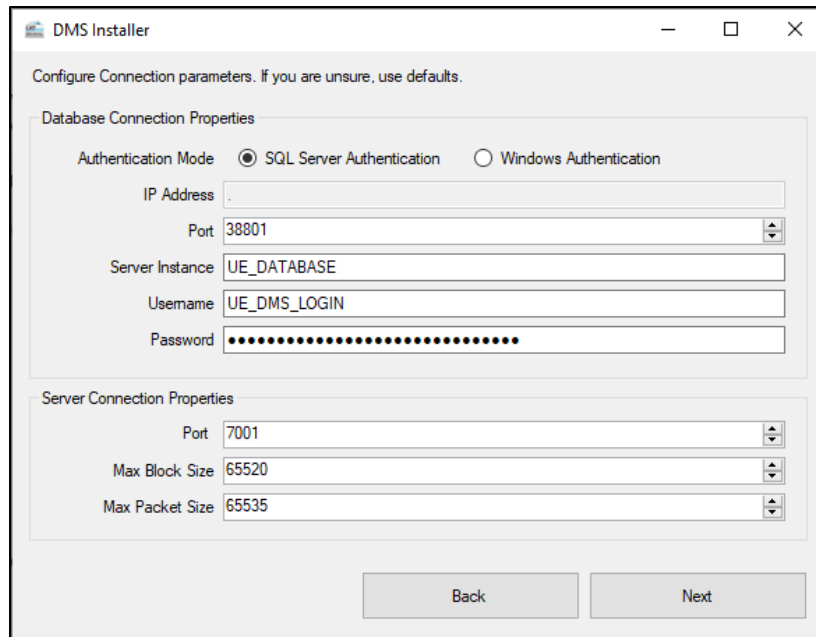
After the user has made their selections, they can continue with the installation process by pressing Next at the bottom of the DMS Installer screen. Please reference the “I. Software Overview: 5.1. During Installation” section of this manual for more information on configuring the install.

5. Configuring the System

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5.1 During Installation

The screenshot shows a window titled "DMS Installer" with a close button. Below the title bar is a subtitle: "Configure Connection parameters. If you are unsure, use defaults." The window is divided into two main sections. The first section, "Database Connection Properties", contains an "Authentication Mode" section with two radio buttons: "SQL Server Authentication" (which is selected) and "Windows Authentication". Below this are five text input fields: "IP Address" (empty), "Port" (containing "38801"), "Server Instance" (containing "UE_DATABASE"), "Username" (containing "UE_DMS_LOGIN"), and "Password" (filled with dots). The second section, "Server Connection Properties", contains three spinners: "Port" (set to "7001"), "Max Block Size" (set to "65520"), and "Max Packet Size" (set to "65535"). At the bottom of the window are two buttons: "Back" and "Next".

DMS Custom Installer: Database Connection Parameters

When setting up the database during software installation, the user will be prompted with the screen seen above.

The Database Connection Properties are as follows:

Authentication Mode – This refers to the way the server/DMS Interface will connect to the database.

SQL Server Authentication – The account resides in the SQL server master database but nowhere on the Domain.

Windows Authentication – The account resides in the Active Directory for the Domain.

IP Address – The IP address of the computer that is running the database or Host Computer. If the database is on the same network as the server/DMS Interface being installed, the database computer's local IP address would be used. If it is not on the same network, the external static IP would be used.

To determine the IP Address of the Host Computer that is running the database, perform the following steps on that computer:

- a) Enter CMD in the search bar and select Command Prompt
- b) In the Command Prompt, type IPCONFIG and press enter
- c) Under IPCONFIG, look for the IPv4 address, this is the Host Computer IP Address that will be entered into the Remote Computer connecting to it

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Port – The port that SQL Server is configured to connect through on the database computer.

Username – The username configured on the database computer for accessing the database. The default username is UE_DMS_LOGIN

Password – The username configured on the database computer for accessing the database. The default password is Srr3Av5#a4ZTx7#s&eNU2L7kMTMnff

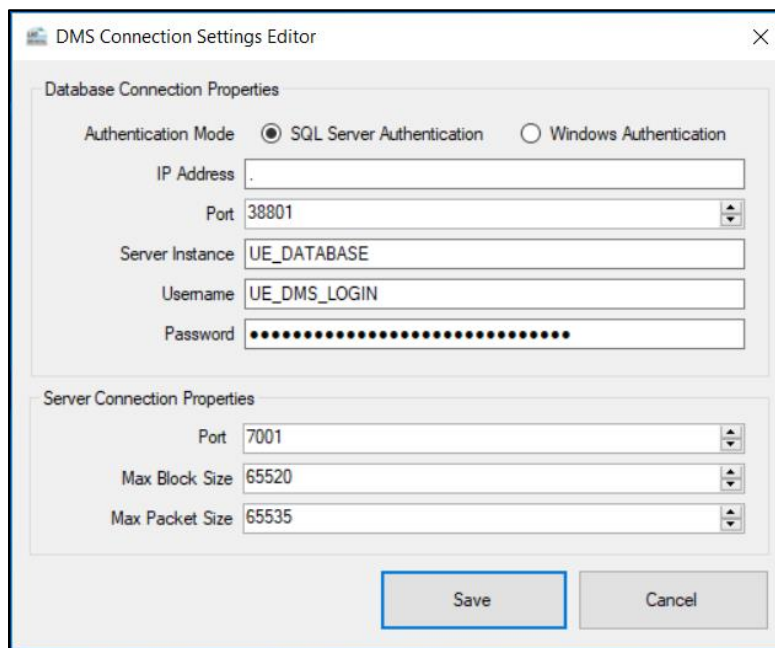
The Server Connection Properties are as follows:

Port – The port that the 4Cast server is listening for connection on. To properly connect, make sure this matches what is configured on the 4Cast boxes as well.

Max Packet Size – The maximum size of a data packet for the messaging protocol.

Max Block Size – The maximum size of a data packet used in a file transfer.

5.2 Using the Connection Editor



Ultratrend DMS Connection Editor

After installing the software, future database and server connection configuration changes can be made with the Ultratrend DMS Connection Editor seen in Figure 5. The Ultratrend DMS Connection Editor can be found in the computer's start menu programs, UE System's folder.

6. Basic Installation Configurations

These are just the basic setup installations. For other setup configurations, please reference the "I. Software Overview: 7.0. Advanced Installation Configurations" section of this manual.

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Note: Before starting the installation process it is recommended that port 38801 is open through the systems firewall to ensure no errors occur during the installation of the DMS 6 database; if the 4Cast system is to be used, then port 7001 will need to be open as well.

6.1 Local Computer – Single Point Access

To install the DMS 6 software for use as a single point access on a local computer, please perform the following steps:

- 1) Extract the DMS 6 Installation Folder to the local drive of the designated computer/server.
- 2) Right-click the DMS Installer Application and select "Run as Administrator".
- 3) Select the Easy Install: Full DMS System option from the installation screen; when prompted select Next.
- 4) For the Connection Parameters page, select SQL Authentication. All other options should be left at their default settings; when prompted select Next.
- 5) Once installation is complete, restart the computer.

6.2 Multiple Local Computers – On Same Network

Local Server/Host Computer

- 1) Determine IP Address of Host Computer:
 - a) Enter CMD in the search bar and select Command Prompt.
 - b) In the Command Prompt, type IPCONFIG and press enter.
 - c) Under IPCONFIG, look for the IPv4 address; this is the Host Computer IP Address that will be entered into the Remote Computer connecting to it.
- 2) Extract the DMS 6 Installation Folder to the local drive of the designated computer/server.
- 3) Right-click the DMS Installer Application and select "Run as Administrator".
- 4) Select the Easy Install: Full DMS System option from the installation screen, when prompted select Next.
- 5) For the Connection Parameters page, select SQL Authentication all other options should be left at their default settings; when prompted select Next.
- 6) Once installation is complete, restart the computer.

Local Client Computer

- 1) Extract the DMS 6 Installation Folder to the local drive of the designated computer/server.
- 2) Right-click the DMS Installer Application and select "Run as Administrator".
- 3) Select the Easy Install: DMS User Interface Only option from the installation screen; when prompted select Next.
- 4) For the Connection Parameters page, select SQL Authentication and enter the IP Address of the Server/Host Computer, all other options should be left at their default settings; when prompted select Next.
- 5) Once installation is complete, restart the computer.

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Note: If DMS is being installed for a different user, it is recommended any additional users be given Full Control permissions for the following folders:

- C:\Program Files\UE Systems
- C:\Program Files (x86)\UE Systems
- C:\ProgramData\UE Systems
- C:\ProgramData\UE Systems Backups

7. Advanced Installation Configurations

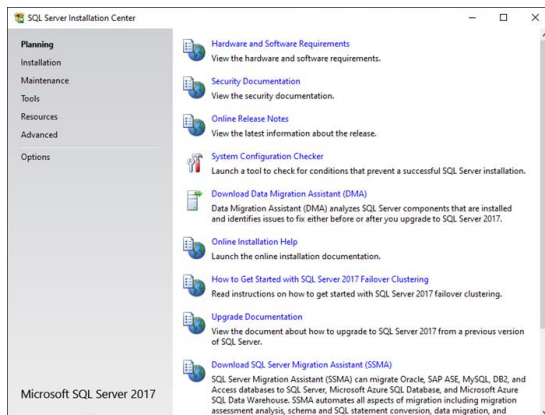
Use Cases

- To use a different version of SQL Server than the default SQL Server 2017 Express.
- The user is not concerned with where the database files live in the file system.

7.1 Additional Requirements

- 1) SQL Server 2017 or greater
- 2) Windows Server 2016 or greater
- 3) A database instance with FILESTREAM enabled

7.2 Manual SQL Server Installation



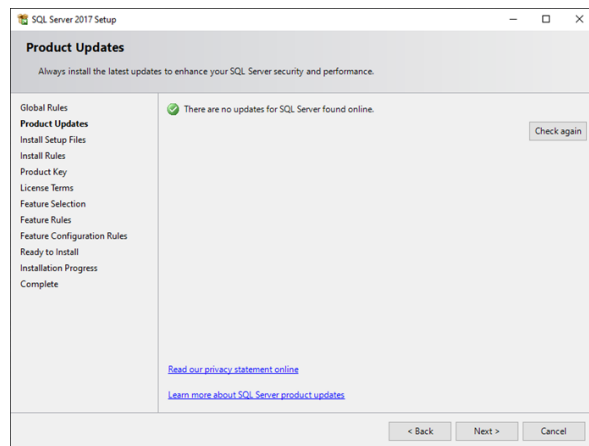
Install SQL Server
Run setup.exe

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- Go to the Installation section.

- Click first option “New SQL Server stand-alone installation or add features to an existing installation”.



- After a few moments, a new window will popup:

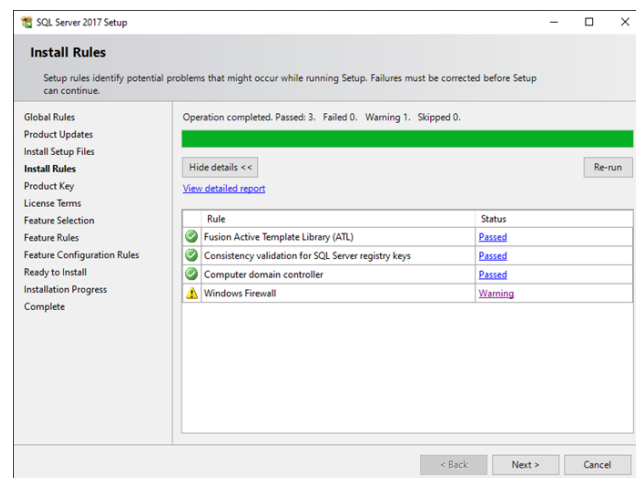
- Click Next

The installer will automatically progress through Install Setup Files and into Install Rules.

- Click Next.

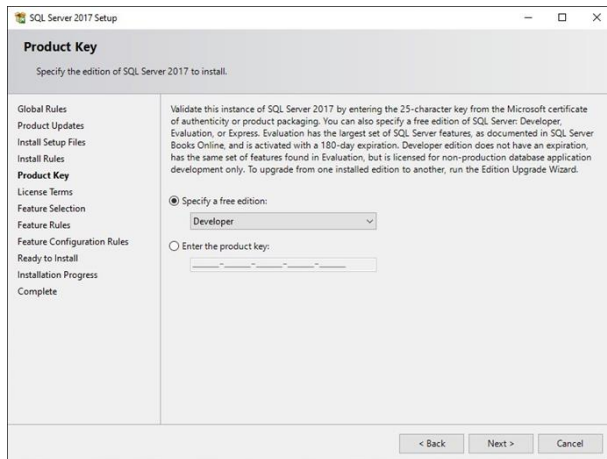
Note:

You will likely have one warning for the Windows Firewall. This is a warning to make sure that you open firewall ports as necessary. This can be done later.



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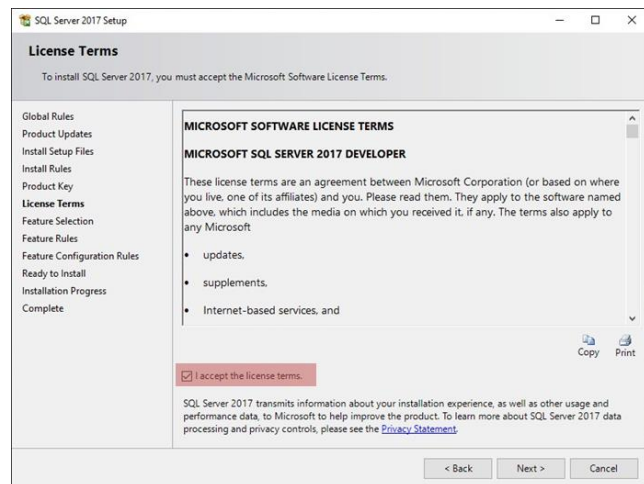


- Free customers can use the Express option, while paid customers should enter their product key.

- Click Next.

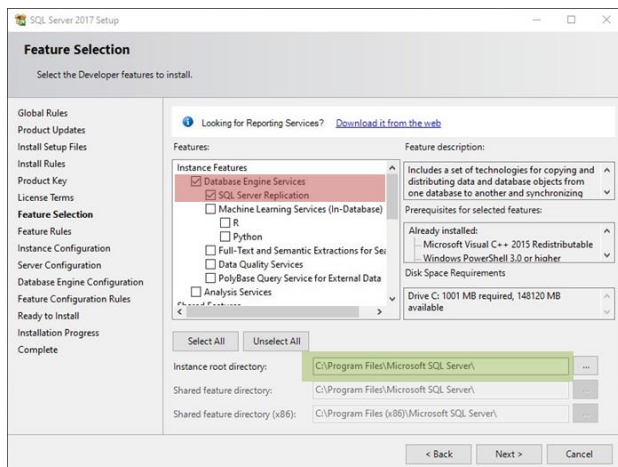
- Check the box to accept the license agreement

- Click Next



- Select Database Engine Services and SQL Server Replication (red). All other items can remain unchecked, but you may install them if you choose. For the Instance Root Directory (green), we set this value to "C:\Program Files\UE Systems\UE Database\SQL Server\" in our installer, but any directory is valid.

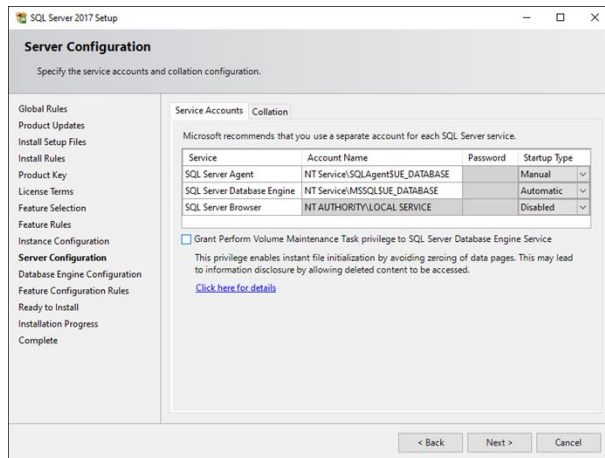
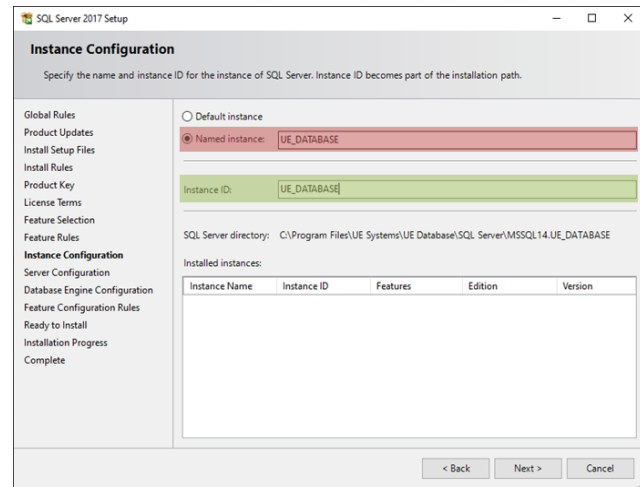
- Press Next to continue. If only the above options were selected, then the installer will skip through Feature Rules into Instance Configuration.



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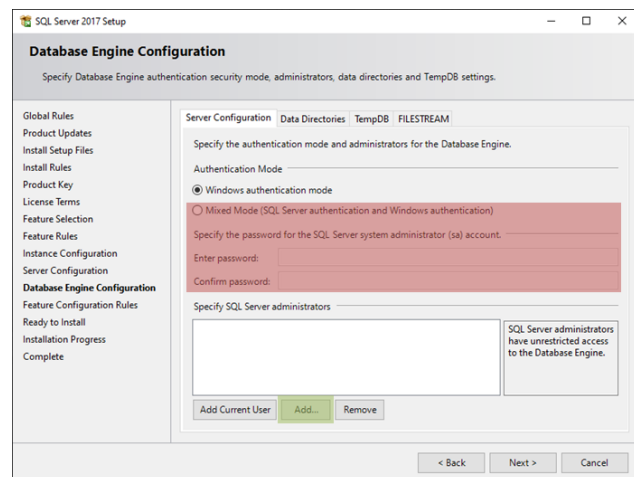
- The installer sets the instance name/id to "UE_DATABASE" but, may use any instance name that is not already listed under Installed Instances.
- Setting the Name will, by default, set the Instance ID to the same value.
- Press Next



- The installer will prefill the account names with default values. These can be left untouched.

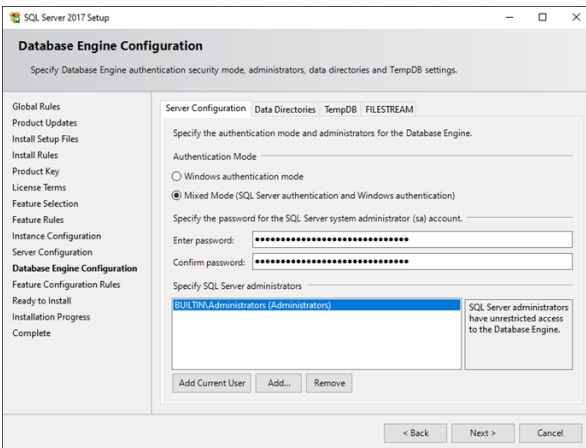
- Click Next

- Select the type of authentication mode (Windows or Mixed). Most users will typically use the latter option.



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- If Mixed is selected, a default password should be set for the “sa” account (**red**). This is the super-administrator account that is given unlimited permissions to the database, so this password should be secure.

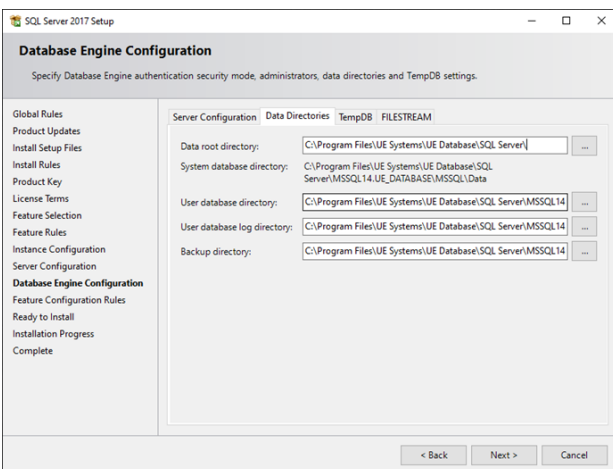
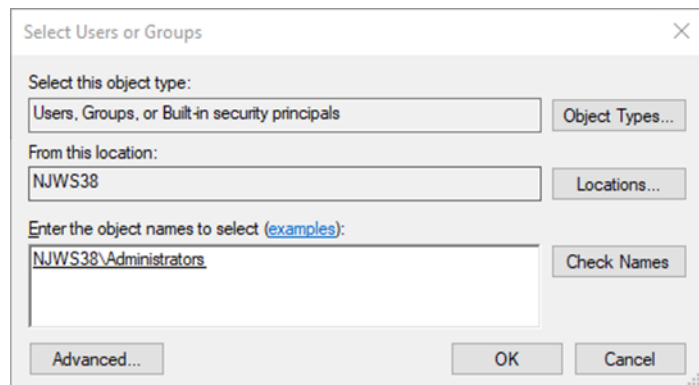
- We also typically add the BUILTIN\Administrators group to the list of administrators.

- To add additional admins, select the Add... button (**green**) and enter the user/group name. For example, to add all admins, enter “Administrators” in the “Enter the object names to select” box

- Press Check Names.

The text will be replaced with “ComputerName\Administrators.

- Press OK to add the user to the list. If you don’t want all admins to have access, then selectively choose users to add. Non-Windows users can be added later.



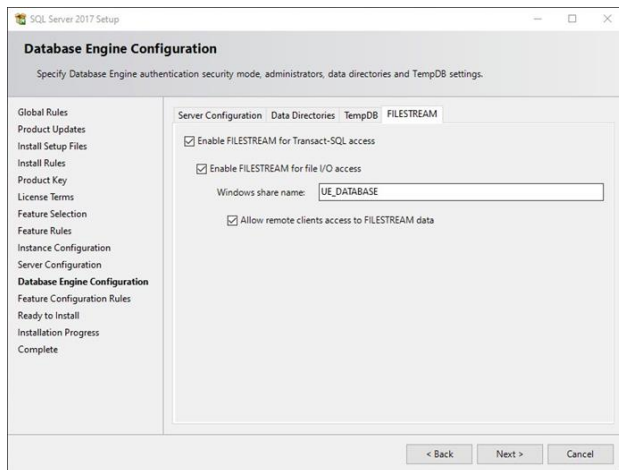
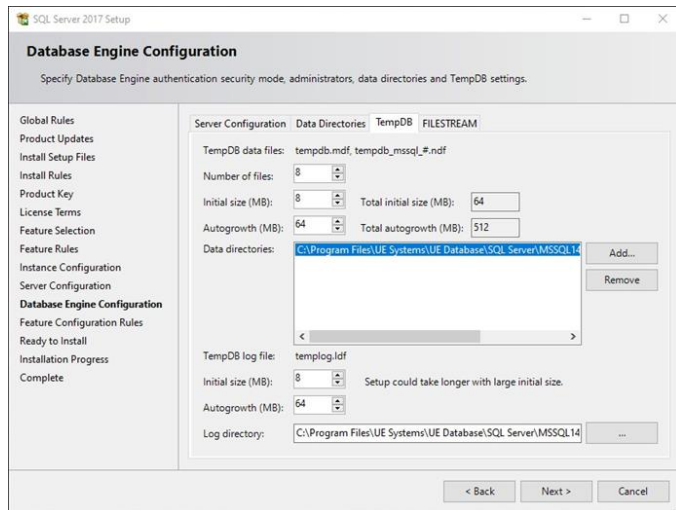
- In Data Directories tab, leave everything automatically filled.

- Click Next

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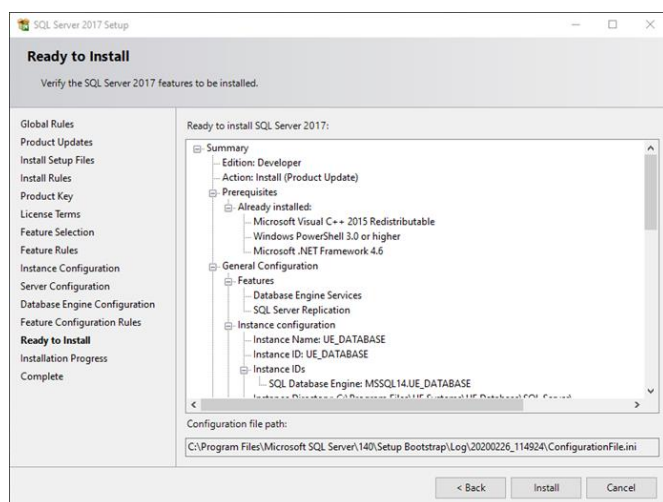
- In TempDB tab, leave things as default as well.



- Within the FILESTREAM tab, check all the boxes to enable FILESTREAM access and keep the share name the same as the instance name (which will be defaulted).
- Press Next

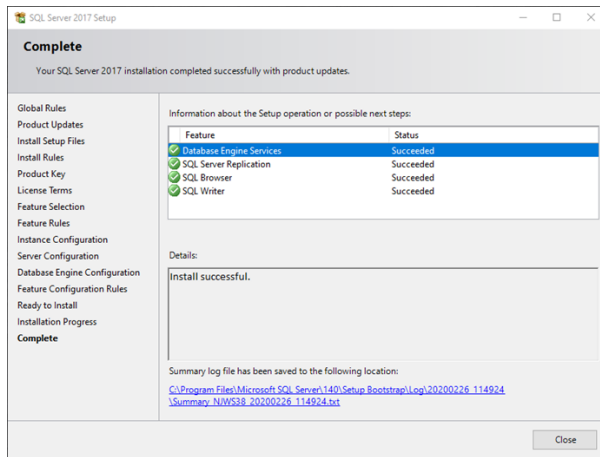
- This page will summarize all items you are about to install and show you the path to a configuration file that includes all the configuration the installer will use.

- Press Install to start the installation. It may take a few minutes to complete. At the end, the user should get the following success screen:



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- SQL Server is installed, but it doesn't know what the database is.

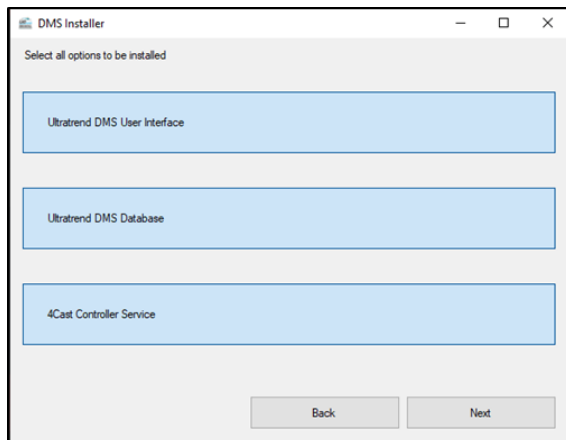
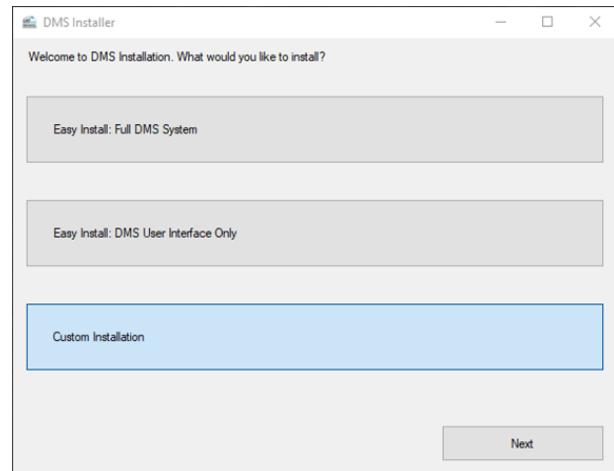
- Click Close

- Run the DMS installer with a custom configuration to finish installation.

DMS Custom Install

- Open the DMS Installer, select Custom Installation.

- Press Next



- Select what features to install, but at a minimum, select "Ultratrend DMS Database"

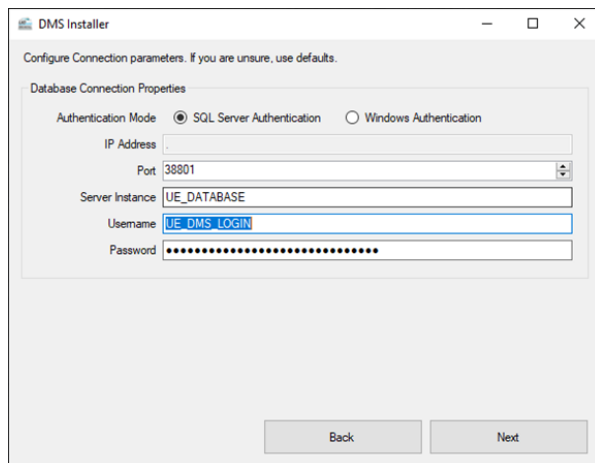
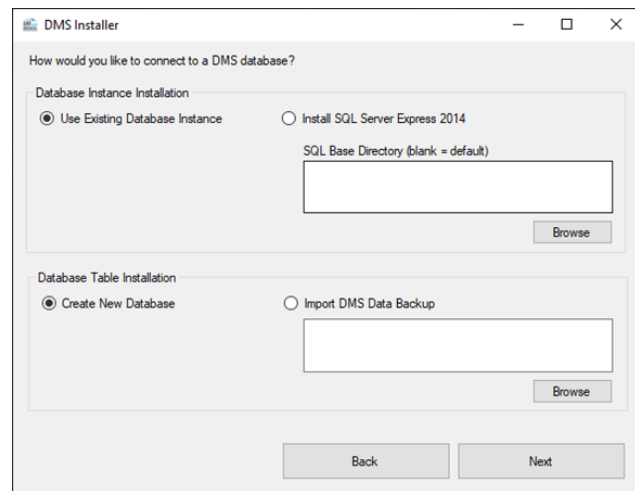
- Press Next

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- Select “Use Existing Database Instance” for Database Instance Installation and leave Database Table Installation set to “Create New Database”.

- Click Next

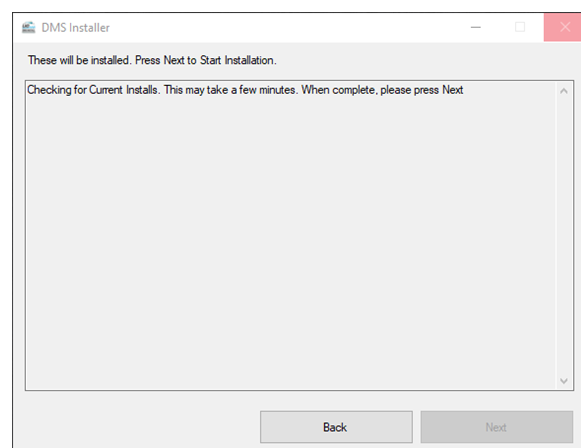


- Set the Server Instance to the same value used when installing SQL Server. Then configure the username and password of the UE_DMS_LOGIN user. Default values are used here, but you can change them. However, if you do change them, make sure the same credentials are used on other installations.

- Alternatively, if you would like to use Windows Authentication, switch to that authentication mode and ignore the username and password fields.

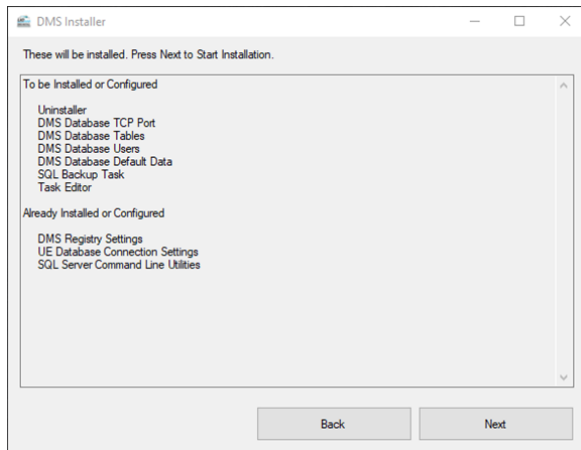
- Press Next

- The installer will check for existing installations of the DMS software. This may take a few minutes.



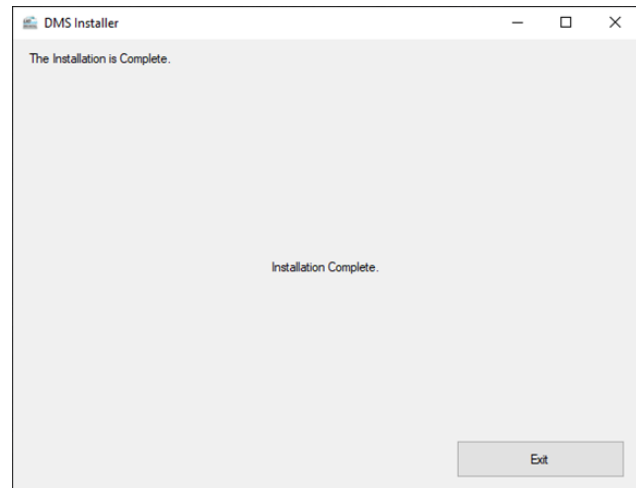
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- The installer will display the items to be installed and those that are already installed.
- Press Next to proceed with installation.
- This will take several minutes and proceed to the Installation is Complete screen:

- Press Exit to complete setup.



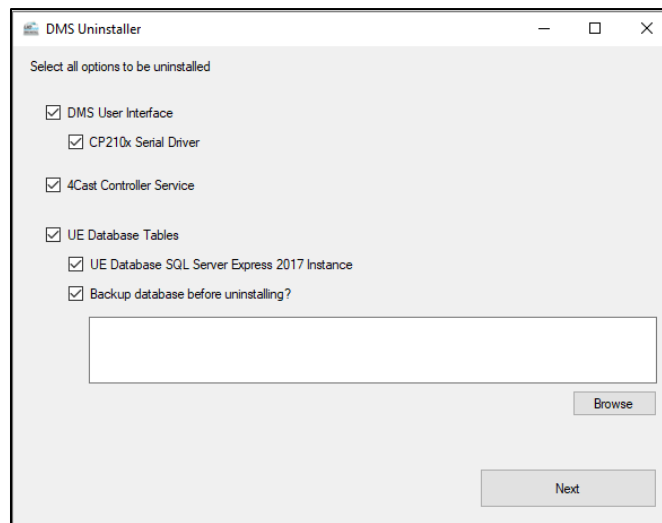
8. Uninstalling the Software

The DMS Uninstaller can assist with the removal of the different modules and components of the DMS 6 software by selecting Ultratrend DMS 6 (Full) from the computer's Add and Remove Programs list.

8.1 Using the DMS Uninstaller

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DMS Uninstaller Screen

When Ultratrend DMS 6 (Full) is selected to be uninstalled from the computer's Add and Remove Programs list, the DMS Uninstaller application will open. From here, select which portions of the DMS 6 software to uninstall. The option to save a backup file can also be selected from the DMS Uninstaller screen. The backup file can be used during a new install to provide access to the old data.

The uninstall process will begin when the user presses the button labeled Next. If the checkbox for "Backup database before uninstalling?" is left blank, then the user will receive two warnings confirming they understand that their database will be deleted if they continue. After all portions of the DMS 6 software have been uninstalled, the user will need to restart their computer to complete the process.

8.2 Creating a Backup File

If the user needs to uninstall the DMS 6 software completely from their computer and wants to keep all the data in their current database so it can be used with a new install of the software; they will need to create a backup file from the DMS Uninstaller. To create a backup file during the uninstallation process, the user will need to enter a check in the box next to "Backup database before uninstalling?" of the DMS Uninstaller screen. They will also need to use the "Browse" button to determine the location of where the backup file will be saved.

The backup file saved will be a .bak only file that can only be used when the user is performing a new install of the DMS 6 database. The .bak file is a single file that includes all the information for every Plant that was in the DMS database at the time of the uninstall. It is NOT the same as the "Save a Copy of Plant" or "Export Database" functions in DMS; it can only be used when installing the DMS database.

9. Updating the Software

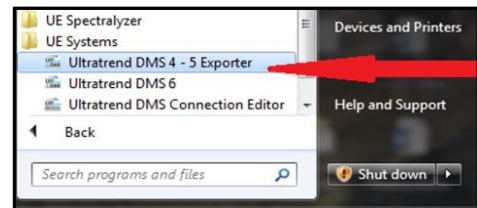
When a new version of Ultratrend DMS 6 is available it can be installed as normal to update an older version. Please reference the "I. Software Overview: 4.0. Installing the Software" section of this manual for assistance with the installation process.

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10. Ultratrend DMS 4 – 5 Exporter

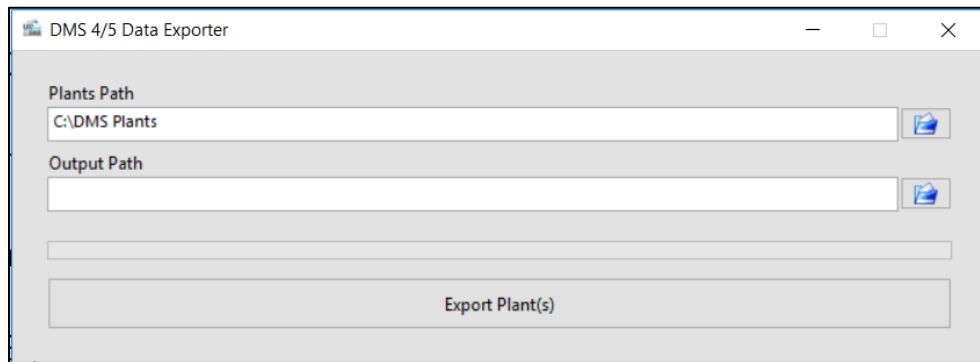
The DMS 4 - 5 Exporter is a separate application included with the installation of the DMS 6 software. It can be accessed from the UE Systems folder of the computer's Apps or Programs list in the Windows Start menu. This application can be used to export data from a DMS 5 database and converted, so it can be imported into a DMS 6 database.



Start Menu: DMS 4-5 Exporter

Note: DMS 5 is in a Microsoft Access database format and DMS 6 is in a Microsoft SQL database format.

10.1 Using the Exporter



Ultratrend DMS 4-5 Exporter Screen

Once the DMS 4 -5 Exporter has been opened, perform the following steps to convert and export DMS 5 Plant folders that can be imported into a DMS 6 database:

- 1) Create a new folder on the computer where the converted Plant folder from DMS 5 will be saved. It's advised that the folder name be the same as the original plant from DMS 5 to mitigate any confusion that could occur during the DMS 6 importing process.
- 2) **Plants Path** – This field is used to identify the DMS 5 Plant folder that needs to be exported. It defaults to the “DMS Plants” folder location but can be changed by selecting the browse folder on the right. If the “DMS Plants” folder is left selected it will export all the Plant folders located within it together. If the user has a significantly large database, it is recommended they select one Plant at a time to avoid a potentially lengthy conversion process.
- 3) **Output Path** – This field is used to identify the folder where the converted DMS 5 data will be saved. Use the bottom browse folder to the right of the Output Path field to locate the folder created in the first step. Once selected, the file path should be displayed in this field.
- 4) **Export Plant(s)** – When the user has chosen both paths, they can press the “Export Plant(s)” button to begin the exporting and converting process. There will be a progress bar showing how far the conversion process is from completion. Once completed the DMS 4 - 5 Data Exporter will disappear.
- 5) To import the converted Plant folders from DMS 5 into the DMS 6 database; please reference the “II. Basic Operation: 11.4. Import / Export Database” section of this manual for more information on importing and exporting databases.

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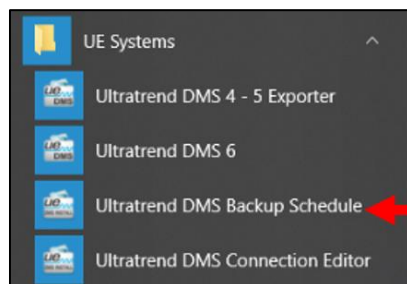
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11. Ultratrend DMS Backup Schedule

The DMS Backup Schedule provides the user with the ability to create database backups based upon a set schedule defined by that user. The user will be able create a one-time backup or set a schedule for that backup based upon days, weeks, or months.

Once configured, the backups will continue to be created without user notification based upon the previously defined schedule until that user selects a new schedule or generates a one-time backup. The backups will be stored in a default folder created by DMS 6 unless the user selects a new folder path when creating the backup. **The Backup Schedule is only located on the computer that has the Database.**

11.1 Scheduling the Backup



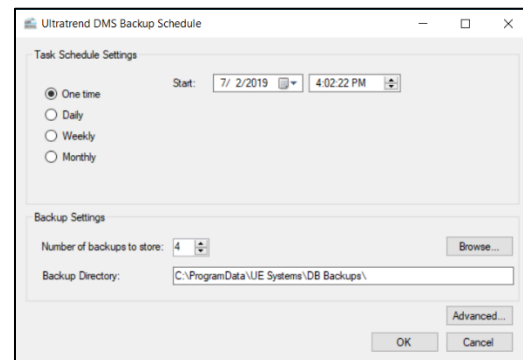
Start Menu: DMS Backup Schedule

Open the start menu and select the UE Systems folder. The “Ultratrend DMS Backup Schedule” can be selected and opened from within this folder. The DMS Backup Schedule Screen will allow the user to schedule and create backup files of their DMS 6 database.

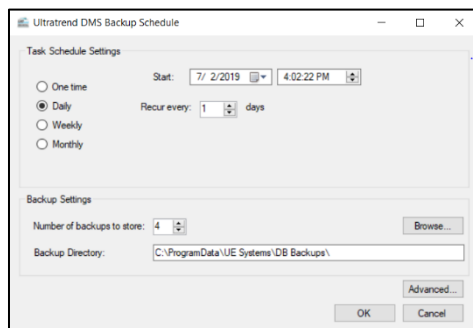
Creating a One-Time Backup

- 1) Select “One Time”.
- 2) Select where the backup file will be saved.
- 3) Click OK when finished. Backup will be created after 1 minute after selecting OK.

This option will only create one backup file.



DMS Backup Schedule: One-Time Backup



DMS Backup Schedule: Daily Backups

Creating Daily Backups

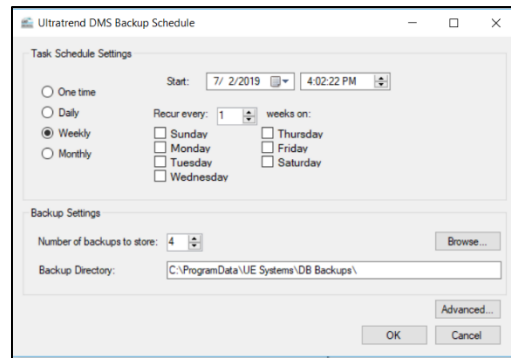
- 1) Select Daily, choose the start date and time of when the backups will occur.
- 2) Choose how often the backups will be created for “Recur every __ days”.
- 3) Select the number of backups to store and where the backup file will be saved.
- 4) Click OK when finished.

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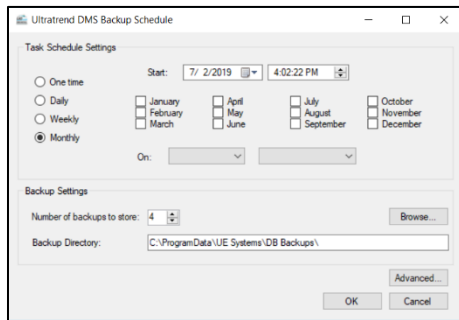
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Creating Weekly Backups

- 1) Select Weekly, choose the start date and time of when the backups will occur.
- 2) Choose how often the backups will be created for "Recur every ___ days".
- 3) Select the days for the backups to occur.
- 4) Select the number of backups to store and where the backup file will be saved.
- 5) Click OK when finished.



DMS Backup Schedule: Weekly Backups



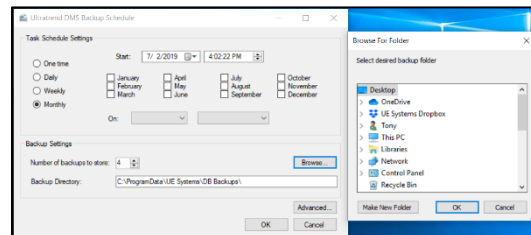
DMS Backup Schedule: Monthly Backups

Creating Monthly Backups

- 1) Select Monthly, choose the start date and time of when the backups will occur.
- 2) Select the months for the backups to occur.
- 3) Choose which day the backup will be created for that month(s).
- 4) Select the number of backups to store and where the backup file will be saved.
- 5) Click OK when finished.

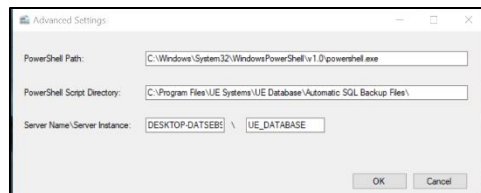
11.2 Changing the Backup Location

- 1) Select the browse folder.
- 2) Choose the new folder location.
- 3) Verify that the new file location selected is displayed in the Backup Directory field.
- 4) Select OK



DMS Backup Schedule: Backup Location

11.3 Advanced Settings



DMS Backup Schedule: Advanced Settings Screen

Press the "Advanced" button in the bottom right corner of the DMS Backup Schedule window to open the Advanced Settings Screen.

This menu displays the path and directory of the PowerShell and script, along with the Server Name and Instance.

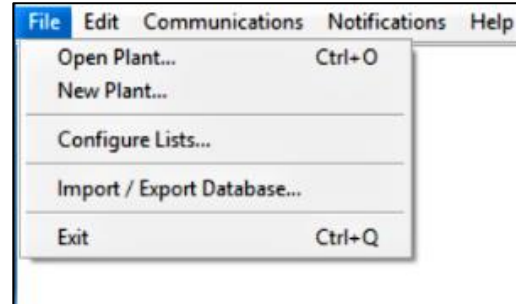
Note: This screen should not be changed unless special setting(s) are required by the current server or computer where the DMS database is installed.

Also Note, the Backup will not be created if the folder is located on a desktop. The Backup folder will need to reside elsewhere.

II. Basic Operations

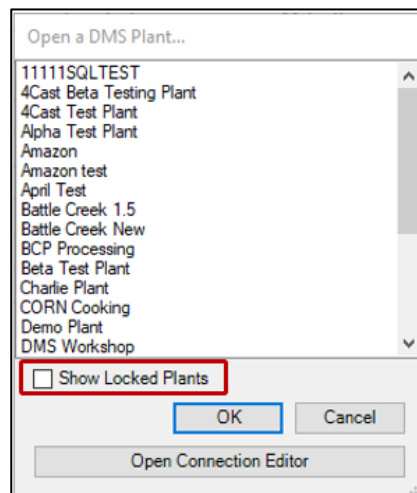
12. File Menu

This menu provides numerous basic functions centered around the management and sharing of Plant folders; the foundation of the DMS database.



File Menu

12.1 Open Plant



Open a DMS Plant Window

When choosing the Open Plant option from the File menu, the user will be provided with a list of previously created Plants. By selecting one of these Plants the DMS program will populate with the hierarchy and information pertaining to that Plant. The user may have multiple Plants open at one time that can be navigated by using the DMS database hierarchy.

Note: Some Plants can become locked either through them being left open by other users or by an unexpected termination of the DMS program. To open a Locked Plant, enter a check in the "Show Locked Plants" box when selecting a Plant to open; the locked Plants will be displayed with an asterisk by them.

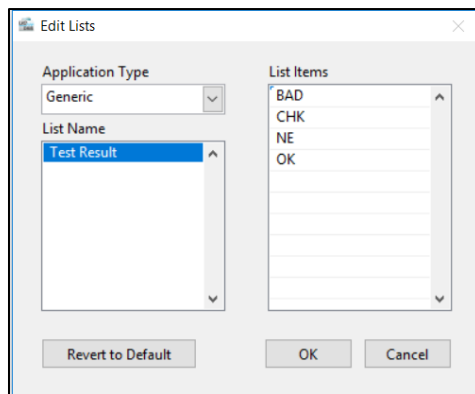
12.2 New Plant

The fundamental starting point for creating a new database in the DMS 6 software is by first creating a New Plant. When the New Plant option from the File menu is selected, the user will be prompted to enter a name for that plant. This will also be the name of the Plant folder that will be created to house all information added to that Plant in the future.

12.3 Configure Lists

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Edit Lists Window

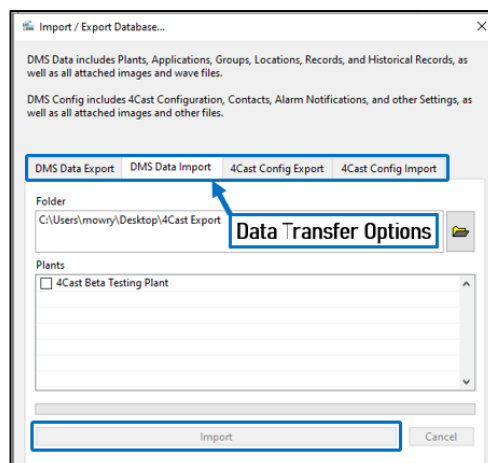
These lists contain information related to describing details of a test for an Application. They can be uploaded to the Ultraprobe 10,000 and 15,000 to be used when entering test data in the field and can also be used as short-hand descriptions when entered into a Historical Record after a route has been downloaded to DMS. The list descriptions are preset in the software but can be changed or “configured”.

These lists contain information related to describing details of a test for an Application. They can be uploaded to the Ultraprobe 10,000 and 15,000 to be used when entering test data in the field and can also be used as short-hand descriptions when entered into a Historical Record after a route has been downloaded to DMS. The list descriptions are preset in the software but can be changed or “configured”.

To configure lists, perform the following steps:

- 1) Highlight either the Group, Location, Point, or Historical Record from the DMS hierarchy.
- 2) From the File menu, select Configure lists to open the “Edit Lists” window.
- 3) Choose an Application Type from the drop-down menu provided.
- 4) Select the appropriate List Name to edit; this directly correlates with specific data fields found on the “Record Information” tab and available based upon the Application chosen.
- 5) The List Items area of the “Edit Lists” window will display items with (3) letters or less such as “NE” for no entry or “LUB” for lubricate.
- 6) Highlight the List Items to edit and make the needed changes by selecting up to 3 letters; add new items by selecting an empty line in the list and doing the same.
- 7) To return to the original list as it came from the factory, press the “Revert to Default”_button.
- 8) Select OK when finished.

12.4 Import / Export Database



Allows the user to import Plants from other locations to be incorporated within their own database and/or be able to export their own Plants to be saved as a backup or be imported somewhere else. Users are also able to export and import their 4Cast configurations.

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Import / Export Database Window

Data Transfer Options

DMS Data Export – This option allows the user to export a Plant folder from their database. The exported copy will be identical to the original Plant and can be used as a backup if needed. All the data, images, and sound files will be included in the export.

DMS Data Import – Users can import Plant folders from other databases to their DMS database by selecting this option. The new Plant will be available in the “Open a DMS Plant” List with the other existing Plants in the database. All the data, images, and sound files will be included in the import.

4Cast Config Export – This option allows the user to export their 4Cast configuration settings found in the 4Cast Manager.

4Cast Config Import - Users will be able to import 4Cast configuration settings into their 4Cast Manager with this option.

To Import / Export Data and Configuration settings; perform the following steps:

- 1) Select the Data Transfer Option.
- 2) In the Folder field, navigate to the folder location where the data will be sent to or received from, based upon the Data Transfer Option selected, and press the “Current Folder” button.
- 3) Enter a check mark in the box next to each Plant listed for the data to be transferred.
- 4) Press the Import / Export button to complete the process.

Note: For larger databases, it is recommended that the user import or export them individually to reduce the amount of time needed for the conversion process and to mitigate the potential for data transfer interruption.

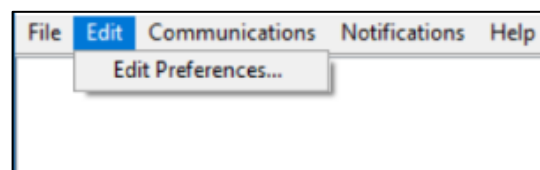
12.5 Exit Program

This will close the DMS program for the end-user.

Note: If Plant folders were left open when a user exits the DMS program they may become Locked Plants for other users.

13. Edit Menu

This is where the general settings are for the user to change languages, units of measure and currency. It also includes a check for updates option and the Spectralyzer file path.

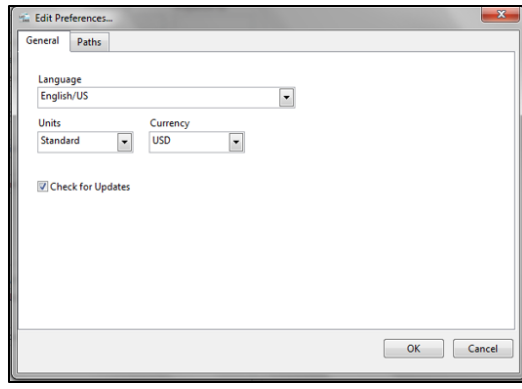


Edit Menu

13.1 Edit Preferences: General Tab

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Edit Preferences: General Tab

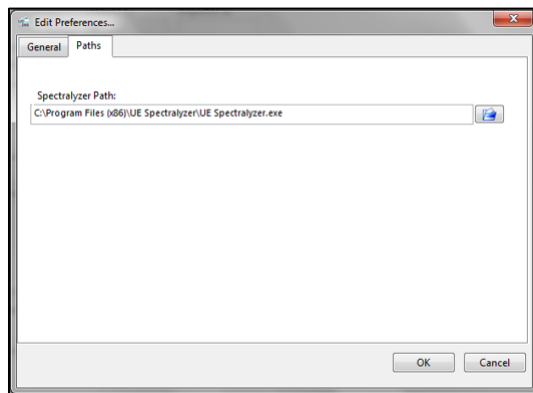
Languages - Select from a list of languages, restart the DMS Program to implement the change.

Units: Standard or Metric measurements

Currency - US dollars, British Pound or Euros

Check for Updates - If the box is checked and the computer has access to the internet, the program will check the UE Systems website for any new updates. If there is a newer version of DMS 6, the user will be notified and will be given an option to download that version.

13.2 Edit Preferences: Path Tab



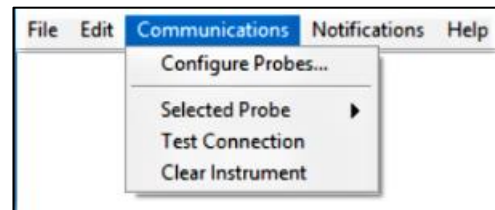
Edit Preferences: Paths Tab

Spectralyzer Path - If the UE Spectralyzer program is installed on the same computer as the DMS 6 program, it will list the path to the Spectralyzer executable file.

Note: The Spectralyzer Path defaults to: (C:\Program Files (x86)\UE Spectralyzer\UE Spectralyzer.exe) and should never be modified or changed.

14. Communications Menu

This menu is used by the DMS database to manage connections with Ultraprobe equipment to allow for the downloading and uploading of data to the DMS database. They will be uploaded from the Group position of the DMS hierarchy to the Ultraprobe 401, 9000, 10,000 and 15,000. The data collected from the Ultraprobe 401, 3000, 9000, 10,000 and 15,000 will then be downloaded back into the selected Group to be stored.

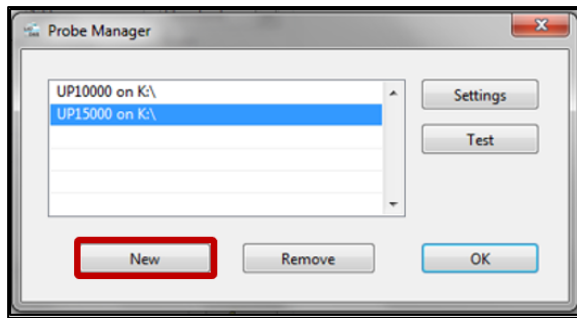


Communications Menu

14.1 Configure Probes

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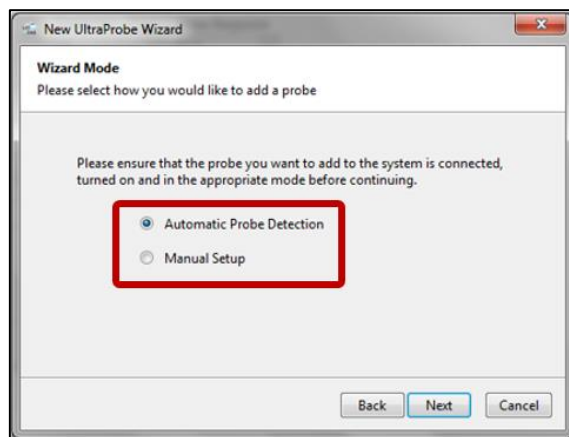


Probe Manager Window

Each Ultraprobe model is different and therefore DMS must be configured to the specific Ultraprobe being used for data transfer. Selecting Configure Probes opens the “Probe Manager” window which will display a list of Ultraprobe instruments that have been previously set up and available. From this window the user can Test, Remove, and change the Settings of an existing probe or choose to create a New one.

To add a new Ultraprobe, click on the New button located at the bottom of the “Probe Manager” window to open the “New Ultraprobe Wizard”.

Note: If the Ultraprobe model normally used is in the list, please ensure the listed drive is also correct before attempting to transfer data. If the listed drive is incorrect it is recommended to remove that Ultraprobe from the list and to recreate the connection by following the new Ultraprobe process.



New Ultraprobe Wizard

There are two methods of establishing a new connection between an Ultraprobe and the DMS 6 database; Automatic Probe Detection and Manual Setup.

Automatic Probe Detection

When selecting this option for probe detection, first ensure that the Ultraprobe is connected to the computer. If using an Ultraprobe 3000 or 9000 model, this will be done by direct connection with the computer. If using an Ultraprobe 401, 10,000, or 15,000; that connection is made by inserting a SD card into the computer. DMS will search for the Ultraprobe and populate a list with available selections that were detected based upon the connection method that was used to identify the Ultraprobe. Select the correct Ultraprobe from the list to register it for future connections with the DMS software.

Note: Always try using Automatic Probe Detection first before attempting a Manual Setup.

Manual Setup

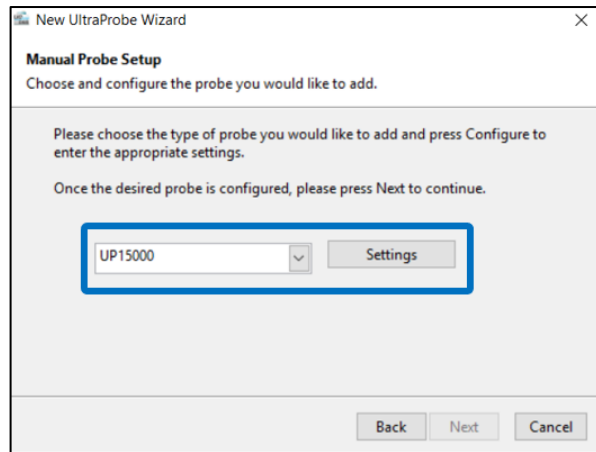
If utilizing this option, all the required information to configure the connection between the Ultraprobe and the DMS 6 database can be manually entered.

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To manually setup the probe, perform the following steps:

- 1) Choose the desired probe from the dropdown list provided in the Wizard.
- 2) Press the Settings button; a new window will appear specific to the selection.
- 3) Enter the requested configuration information needed to make the connection and press OK to return to the Wizard.
- 4) Press Next and then Finish to test and complete the connection.



Manual Probe Setup Wizard

14.2 Selected Probe

This lets the user know which probe has been selected for communication with DMS. If multiple Ultraprobes are being used, it's recommended to routinely check this before uploading and downloading data.

14.3 Test Connection

After an Ultraprobe has been connected to the computer, make sure the data transfer will be successful. Use Test Connection to be sure the SD or USB connection is working.

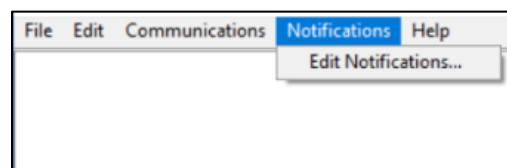
14.4 Clear Instrument

This will delete data only from the Ultraprobe 3000 & 9000 models. The instrument must be connected and in setup mode for the data to be cleared.

Note: To delete the old data from the SD card, the user will need to go into the SD card and manually delete all the files and folders. Another option is to reformat the SD card to ensure all the old data is removed.

15. Notifications Menu

This feature can be used by the user to establish alerts based upon notification criteria to be sent to the user by email, text or webhooks. These alerts can be triggered whenever the data is downloaded to DMS. For the user to receive a notification, a Point in the DMS hierarchy must meet or exceed the notification criteria they have established for a Plant that the user has chosen to monitor.

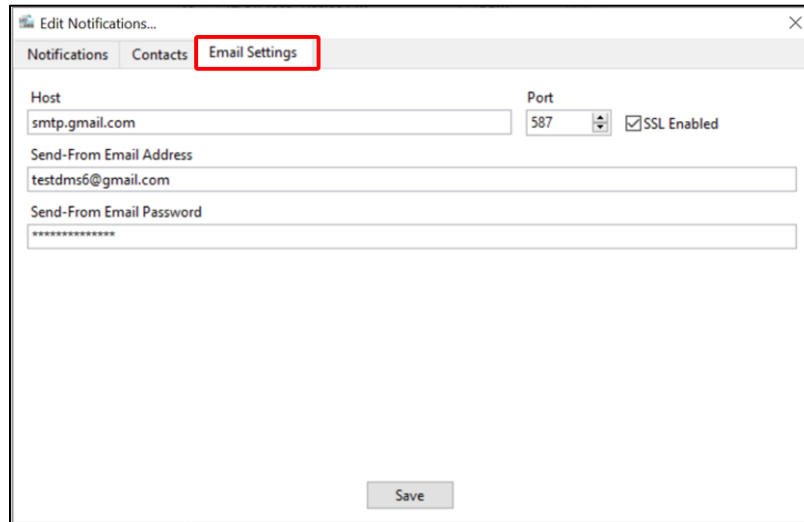


Notifications Menu

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15.1 Edit Notifications: Email Settings Tab



Edit Notifications: Email Settings Tab

From this tab on the Edit Notifications window, the end-user will be able to enter the appropriate access information for the email address that will send the notification from the “host” mail server.

Host – The email server outgoing mail service. (Example: Gmail host outgoing server is smtp.gmail.com).

Port – This is the port number that the outgoing email service uses. This information can often be found for most free email providers through the computer’s web browser. If the user is unable to find this information, they may need to contact their IT department for assistance, (Example: The Gmail outgoing server uses port 465 and/or port 587.)

SSL Enabled – When enabled, it increases the security of the connection by encrypting the email. Most mail servers will flag emails that are not secured and may block the email from reaching its destination.

Email Address - The end-user will need to add an email address that will send the notification from the “host” mail server. (Example: If the user created an email named dms6@gmail.com. The notifications would show dms6@gmail.com as the sender. This can be used as an identifier that the notification(s) are coming from their DMS software.)

Password – Enter the password here for the email address that will be sending the notifications.

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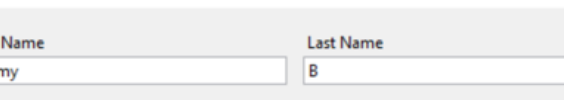
15.2 Edit Notifications: Contacts Tab

[illegible]

Edit Notifications: Contacts Tab

The Contacts tab in the Edit Notifications window is used to manage the contact information needed for notifications to be received by individuals. From here, the user can review the existing list of contacts and edit or remove them as needed. To edit an existing contact double left-click their information in the contact list. Use the Remove option when the contact is selected / highlighted in the list to delete their information.

To create a new contact, press the Add button on the Contacts tab to open the New Contact window and enter the requested information.



New Contact

First Name: Jeremy

Last Name: B

Email Address: JeremyB@uesystems.com

Language: English/US

Cell Phone Carrier: USA::T-Mobile

Cell Phone Number: 914

Buttons: Edit Carriers, OK, Cancel

New Contact Window

Creating a New Contact

First/Last Name - The contact that will be receiving the notifications.

Email - The contact's address the notification will be sent to.

Language - Select the language that will be used for the notifications.

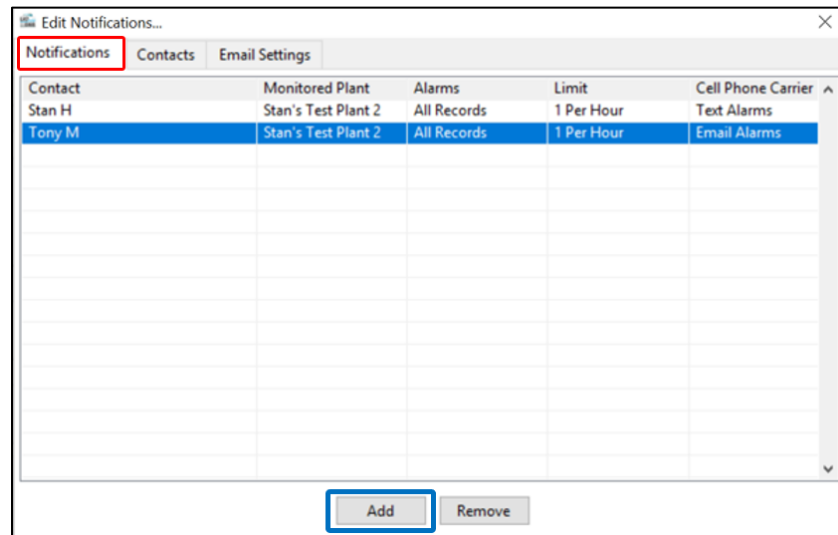
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Cell Phone Carrier - The carrier for the contact's cell phone that will be receiving notifications via text. (This option is primarily for North America)

Cell Phone Number - The contact's cell phone number that they will use to receive the text notifications.

Edit Carriers - If the contact's carrier is not listed as a Cell Phone Carrier selection, they can add their carrier here if they know their MMS (Multimedia Messaging). This information can often be found through the computer's web browser.

15.3 Edit Notifications: Notifications Tab



Edit Notifications: Notifications Tab

The Notifications tab in the Edit Notifications window is used to create and manage the specific parameters that will determine when a notification is sent and the contact they are sent to. From here, the user can also review the existing list of notifications and edit or remove them as needed. To edit an existing notification, double left-click their information in the notification list. Use the Remove option when the notification is selected / highlighted in the list to delete it.

To create a new notification, press the Add button on the Notifications tab to open the New Notification window and enter the requested information.

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New Notification

Monitored Plant: Stan's Test Plant 2

Notification Type: Email

Alarms: None

Limit: 0 Per Hour

Limit Period: Hourly

Contact: Stan H

Notification Data

- ☒ dB
- ☒ Baseline dB
- ☒ Date/Time
- ☒ Alarm Status
- ☒ WAV File
- ☒ Baseline WAV File
- ☒ Chart
- ☒ Plant
- ☒ Application
- ☒ Group
- ☒ Location / Machine
- ☒ Point

OK Cancel

New Notification Window

Creating a New Notification

Monitored Plants – From here, the user can select the DMS Plant that the notification criteria will be applied to.

Alarms – The type of alarm that will be shown in the notification. The user can choose between None, All Alarms, High Alarms, or All Records.

Limit Period - How often the selected contact will receive the notifications by Minutes, Hours, Daily, Weekly, or Monthly.

Limit – The number of times within the Limit Period that the contact will receive notifications.

Notification Type – This determines what method of communication is used to send the notification to the contact from DMS 6. The available options are by Text, Email, or Webhooks. Note: Only the Email Notification Type includes Notification Data options for Wav File, Baseline Wav File, and Chart.

Contact – This is used to assign a contact based upon those listed in the “Contacts” tab, to the notification being created.

Notification Data – This determines the data from the DMS database that will be included in the notification.

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For example, if a contact chose to receive High Alarms by Text with a Limit Period of Hourly and a Limit of 5 Texts per period; the contact would then receive 5 Text messages every hour until that alarm leaves the high alarm state.

15.4 Additional Considerations: Webhooks

When an event occurs, DMS as the server-side application will send a POST request to the URL, or webhook, with the specified content. The content can be generated based on webhook tokens that are available from the Help button of the “Custom Content” tab when creating a new notification. DMS, as the server-side application receiving the webhook from the client-side application, can define the structure and format of the information shared.

Webhooks are used by numerous client-side applications to send notifications. These applications can come in many forms such as websites, programs, and even apps: i.e. Slack. The user will need to create a webhook either on another website or program so that an individual or a team of people would be able to receive the same notification at the same time.

To activate this notification, the user will need to select the Webhook Notification Type.

The screenshot shows the 'New Notification' dialog box. The 'Monitored Plant' is 'Stan's Test Plant 2'. The 'Notification Type' is 'Webhook'. The 'Limit' is '2 Per Hour' and the 'Limit Period' is 'Hourly'. The 'Alarms' dropdown is set to 'All Alarms'. Below these, there are two tabs: 'HTTP Destination' and 'Content'. Both tabs are highlighted with red boxes, and a red arrow points to them with the label 'Webhook Customization Tabs'. The 'Name' field contains '4Cast Alarm!!!'. The 'URI' field contains 'https://hooks.slack.com/services/TFNBRAKU/BGG9SE812/HgUTbJXTzVNCITHaafyake6S'. The 'Content Type' is 'application/json' and the 'Separator' is '\n'. There is a table for 'HTTP Headers' with columns 'Header' and 'Value'. At the bottom are 'OK' and 'Cancel' buttons.

New Notification Window (Webhook)

When the Webhook Notification Type is selected, the New Notification window will change to include two Webhook Customization Tabs: HTTP Destination and Content.

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HTTP Destination Tab

This tab is used to establish communication from the DMS database to external applications and programs. The fields included on this tab can be seen in the previous figure.

URI/URL (Web Address) - Once the webhook has been created on the client-side application by the user, they would then enter the URI/URL into the URI field of the New Notification window for their team to receive the alarms.

Note: The user can put the team name within the DMS notification to allow their client-side application to manage a list of individuals included in that specific team. This will ensure the notifications are distributed only to the individuals as defined by the client-side application. To receive notifications each team member would need access to the client-side application on their phone, tablet, or computer; depending on the form of communication utilized by that application.

Content Type – This is the type of file that it used; the most common used by DMS is the JSON file.

Content Tab

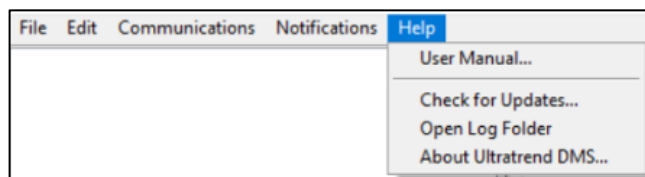
When the Content tab is selected, there will be two additional tabs available to allow the user to configure Custom and Auto Content.

Custom Content – The user can use this option to customize what is shown in the webhook notification.

Auto Content – This option will allow the user to select the Notification Data that will be included in the webhook notification when the notification criteria are met.

16. Help Menu

This menu is where the user can manually check for updates, open log folders, find UE Systems contact info, and review the DMS Software User Manual.



Help Menu

16.1 User Manual

The User's Manual for the installed version of the DMS 6 software can be found by selecting this option from the Help menu.

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16.2 Check for Updates

If the DMS 6 program has access to the internet, the user can prompt the program to check the UE System's website for a newer version. If there is a new version, the user will be given the option if they want to download that version from the website.

16.3 Open Log Folder

When an error code occurs within the DMS 6 program, it will be moved to a log file that can be accessed when selecting this option from the Help menu. These log files can be used by the user's IT department or the UE Systems support team to better understand the error the user has been receiving.

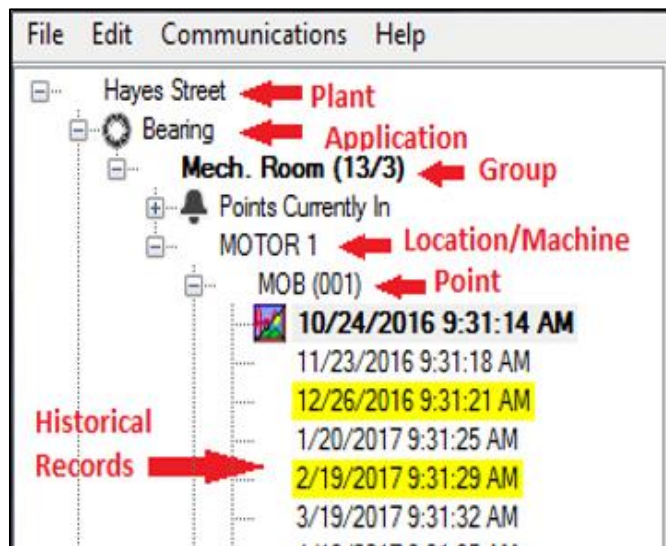
16.4 About Ultratrend DMS

When this option is selected from the Help menu, a window will appear showing information about the current version of the DMS 6 software installed. The contact information for UE Systems Inc. can also be found in this window including a link to the UE Systems website.

III. Database Management

17. Understanding the Database Hierarchy

Most functions for viewing and managing a DMS Database can be found in the hierarchy window on the left side of the DMS program. This is where the database hierarchy will populate when a DMS Plant is created or opened.



Database Hierarchy Window

17.1 Plant

The Plant is the highest level of the DMS hierarchy and the foundation of the database. A user can create and view an unlimited number of Plants. All essential data is contained within the Plant including the: Application, Group, Location/Machine, Test Point (the numbered location), and Historical Records. To view

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any of these components, the Plant must be opened. A Plant can have an unlimited number of Groups included in its hierarchy.

17.2 Application

An Application determines the type of information to be uploaded and downloaded from the Ultraprobe. Each Application has its own unique record structure. A Plant can only contain the following six Applications:

- **Bearings**
- **Electrical**
- **Generic**
- **Leak**
- **Steam**
- **Valves**

An Application can contain an unlimited number of Groups (this is a general area that includes the subject test equipment, it is also known as a "Route"). An Application can be selected when a Plant is opened. When creating a new Plant, all six Applications will also be created in the DMS hierarchy.

17.3 Group

Creating a list of testing locations and organizing them into a route is identified as a Group in the DMS hierarchy. A Group must be assigned to one of the six Applications. The information collected in the Group will be placed in fields that relate solely to that specific Application. An unlimited amount of historical information can be held in a Group.

The Group is also what defines the records that are sent to the Ultraprobe. It can include a sequential set of records ranging from 1 to 400. These records reflect the information found in the 400 memory locations of the Ultraprobe. Only one Group can be sent to an Ultraprobe at a time.

Note: If the work plan requires using more than one Group at a time with an Ultraprobe 401, 10,000, or 15,000; consider using multiple SD cards, one for each Route.

17.4 Location / Machine

Often considered the primary asset or piece of equipment to be tested, the Location / Machine can include one or more specific places identified for testing known as Points. A Location is assigned to a Group, which determines the number of characters it can have in its name when its created: 8 or 13.

17.5 Point / Record

This is the specific Point where the test measurement is taken. It will contain all the Historical Records listed chronologically by date of entry. The Point / Record may be created using 8 or 3 characters depending upon what is selected in the Descriptor Format during Group creation. The Points will be listed sequentially in the Group. Therefore, the first Point will be automatically assigned 001, up to a maximum 400.

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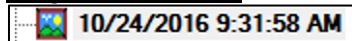
When data is entered into the Point / Record, a Historical Record will be created. After it is created, either by downloading data from the Ultraprobe or from being manually entered, the Historical Record will be listed under each Point as the date and time of when it was collected.

17.6 Historical Record

The Historical Record can be found at the lowest level of the DMS hierarchy. Each time an inspection is performed, a Historical Record is created with the data that was collected based upon the Application. The Historical Record will include the date and time of the inspection and will populate under the specific testing Point from where the data was taken. Multiple Historical Records can accumulate over time and will be seen in chronological order under the Point in the DMS hierarchy it is assigned. The user may have an unlimited number of Historical Records for each Point.

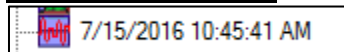
An icon will be displayed next to any Historical Records in the DMS hierarchy that have images or sound files attached to them. Different icons are used based upon what is attached as shown in the examples below:

Image Attached Icon



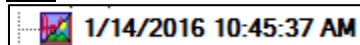
When an image has been attached to a Historical Record, an icon will be displayed to the left of it.

WAV File Attached Icon



When a WAV file has been attached to a Historical Record, an icon will be displayed to the left of it.

Image and WAV File Attached Icon



When an image and WAV file has been attached to a Historical Record, both icons will be displayed to the left of it.

Baseline Record

The first entry of a Historical Record is defaulted by the program as the Baseline Record. A Baseline Record can be identified in the DMS hierarchy by the bold text it is shown in. This may be changed by identifying another Historical Record assigned to the same Point as the Baseline Record. Enter a check in the Baseline checkbox from the "Record Information" tab, and the Baseline Record will change to the one selected. It is the baseline record that is uploaded to an Ultraprobe. The baseline information is used to compare with new test data as it is being collected and to establish alarm levels.

Note: With the Ultraprobe 15,000, if any sound files or images have been attached to the baseline record; all will be uploaded to be reviewed as needed while in the field.

18. Building a Database

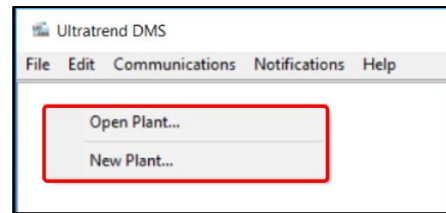
Within DMS 6, there are numerous tools and options for customizing a database hierarchy and most of them can be accessed from the hierarchy window. The ability to create, rename, delete, move, and restore hierarchy items in the DMS database can all be found in this section.

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18.1 Accessing a Plant from the Hierarchy

The first step to creating a database starts at the Plant level. An existing Plant can be opened, and a new Plant can be created not only from the “File Menu”, but also from the hierarchy window itself. Right-clicking an empty area in the hierarchy window will open a menu providing these options.



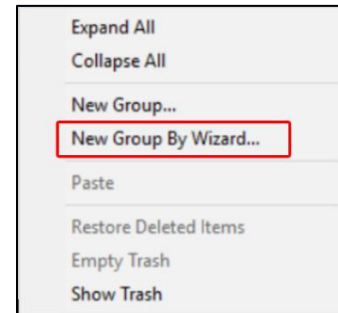
Plant Menu in the Hierarchy Window

For additional information on opening a plant, please reference “II. Basic Operations: 11.1. Open Plant” section of this manual.

18.2 New Group by Wizard

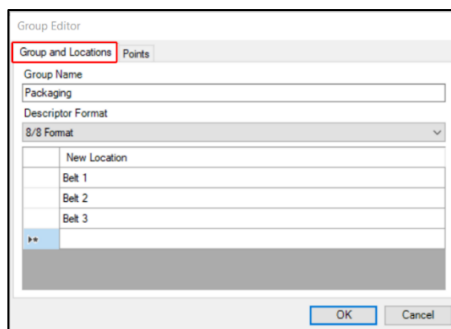
To create a “New Group by Wizard”, perform the following steps:

- 1) Open an existing Plant.
- 2) Right-click the Application to open the hierarchy menu.
- 3) Select “New Group by Wizard” from the menu.
- 4) Enter the Group Name in the “Group Editor”.
- 5) Select the Descriptor Format from the dropdown.
- 6) Enter New Locations.
- 7) Open the “Points” tab; select Locations from the dropdown.
- 8) Enter New Points.
- 9) Press the OK button when finished.



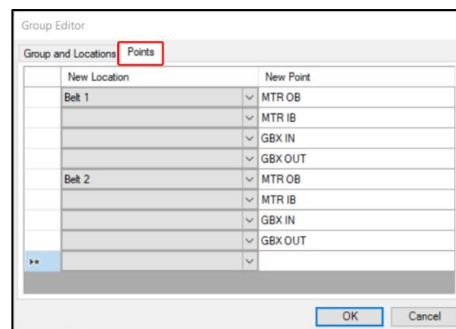
New Group by Wizard

Provided below is additional information and a full description of the data fields found in the Group Editor.



Group Editor: Group and Locations Tab

Group and Locations Tab



Group Editor: Points Tab

Group Name – Enter the name for the Group or route in the data field provided.

Descriptor Format – This is used to determine the maximum number of characters to describe both the Location and Point hierarchy levels in the DMS database. The format options are 8/8 or 13/3; 8 characters for both or 13 for Location and 3 for Point.

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New Location – A list of Locations can be created by entering them in the blank fields located under the New Location column. Each time a Location is entered, a new blank field will populate at the bottom of the “Group Editor” window allowing for additional Locations to be entered.

Note: If there are any duplicate Location names in the Group, the duplicates will be highlighted in “red”. The user will not be able to create the new Group until all duplicates are removed or renamed.

Points Tab

New Location – The dropdown lists provided under the New Location column is based upon the list of Locations created on the previous tab. Select Locations from the dropdown lists that will correlate to each Point created.

Note: The New Location field can be left blank if the Point being created correlates to the last Location selected.

New Point - A list of Points can be created by entering them in the blank fields located under the New Point column. Each time a Location is entered, a new blank field will populate at the bottom of the “Group Editor” window allowing for additional Points to be entered.

Note: If there are any duplicate Point names under one Location, the duplicates will be highlighted in “red”. The user will not be able to create the new Group until all duplicates are removed or renamed.

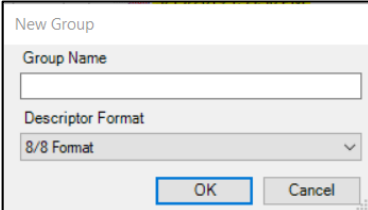
18.3 Adding Hierarchy Items (Manually)

The user can manually add new Groups, Locations, Points, and Historical Records individually to the DMS hierarchy.

New Group

To manually add a new Group, perform the following steps:

- 1) Right-click the Application name where it will reside.
- 2) Select “New Group” from the menu.
- 3) Enter the new Group name in the field provided.
- 4) Choose the Descriptor Format; this determines the number of characters in the Location / Point name.
- 5) Press OK to create the new Group.

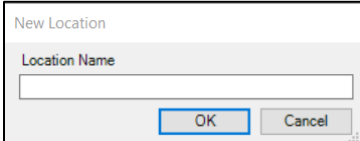


New Group Window

New Location

To manually add a new Location, perform the following steps:

- 6) Right-click the Group name where it will reside.
- 7) Select “New Location” from the menu.
- 8) Enter the new Location name in the field provided.
- 9) Press OK to create the new Location.



New Location Window

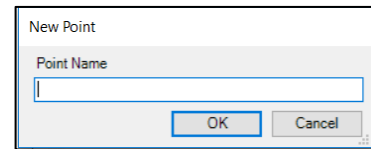
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New Point

To manually add a new Point, perform the following steps:

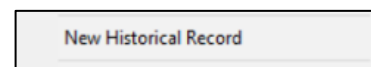
- 1) Right-click the Location name where it will reside.
- 2) Select "New Point" from the menu.
- 3) Enter the new Point name in the field provided.
- 4) Press OK to create the new Point.

A dialog box titled "New Point". It contains a text input field labeled "Point Name". Below the field are two buttons: "OK" and "Cancel".

New Point Window

New Historical Record

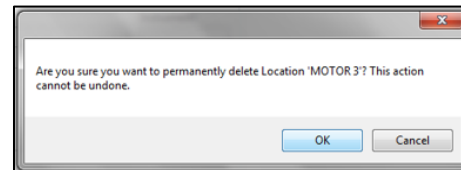
To manually add a new Historical Record, right-click the Point name where it will reside. Select "New Historical Record" from the menu. A new record will be created with the current date & time stamp. The user will need to enter any specific data they want associated with that Historical Record from the "Record Information" tab.



New Historical Record Menu

18.4 Removing Hierarchy Items (Permanently)

The user can permanently remove a hierarchy item from the DMS database by right-clicking the item and selecting "Permanently Delete" from the menu.



Permanently Delete Confirmation

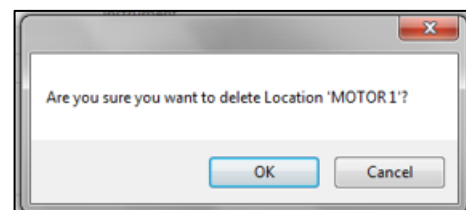
All Historical Records and any other hierarchy levels included under that item will be removed. The user will receive a confirmation to completing the process once accepted.

*Note: Be aware that any hierarchy item permanently deleted will **NOT** be recoverable by the Restore function.*

18.5 Removing Hierarchy Items (Temporarily)

The user can temporarily remove a hierarchy item from the DMS database by right-clicking the item and selecting "Delete" from the menu. All Historical Records and any other hierarchy levels included under that item will be removed. The user will receive a confirmation to completing the process once accepted.

This is also known as a "Soft Delete" and any items removed in this manner can be restored to the active hierarchy from the Trash bin by the user if needed.



Delete Confirmation

18.6 Managing the Database Trash

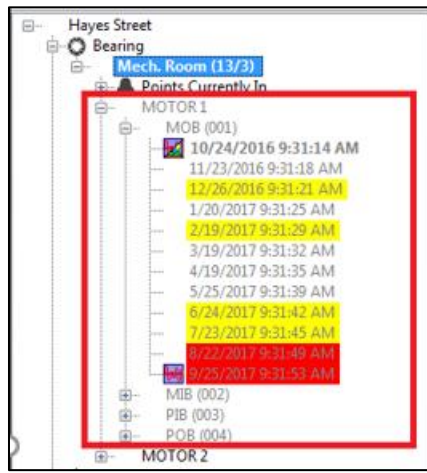
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The DMS 6 database utilizes an inactive area of the database known as “Trash” to allow the user to manage hierarchy items that have been temporarily deleted or “Soft Deleted”. By utilizing the “Trash” area of the database, hierarchy items can be both returned to active database with Restore or permanently deleted with “Empty Trash”.



Trash Menu



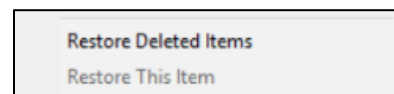
Show Trash Hierarchy

Show Trash - To view temporarily deleted hierarchy items, the user can right-click an area in the DMS hierarchy and then select “Show Trash” from the menu. This will allow all levels under that item that have been deleted to be shown in a grey or subdued text. A check mark next to “Show Trash” in the hierarchy menu will identify it is turned on.

Empty Trash - To permanently delete all hierarchy items in the “Trash”; the user can right-click an area in the DMS hierarchy and then select “Empty Trash”. This will remove all hierarchy items that were previously deleted under the item that was selected.

18.7 Restoring Hierarchy Items

This function can be used to return any hierarchy items that were temporarily removed or “Soft Deleted” to the active database. The user has two options for restoring a hierarchy item, which can be accessed through the hierarchy menu. When the user right-clicks an item in the DMS hierarchy, they can choose one of the below options to perform the restore.



Restore Menu

Restore Deleted Items – This option will restore all hierarchy items located under the item selected.

Restore This Item – This option will restore the specific item selected.

18.8 Renaming Hierarchy Items

The user can rename anything within the DMS hierarchy by right-clicking the hierarchy item and selecting “Rename” from the menu. Once the changes have been made, press “enter” to apply.



Rename Menu

18.9 Copy & Paste Hierarchy Items

This function can be used to copy a hierarchy item and paste it into another hierarchy with the following exceptions:



Copy / Paste Menu

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- Must be pasted into the next highest hierarchy level.
- If hierarchy items are pasted between Groups, the Descriptor Format for the Machine / Point names must match.
- The copied item can only be pasted if it doesn't create a duplicate in the new hierarchy.
- The Applications must match when being pasted.

To use the Copy function, right-click the hierarchy item and select "Copy" from the menu. To use the Paste function, right-click the hierarchy item where it is to go and select "Paste" from the menu.

Note: Be aware that the data that is being copied will copy all data below that entity and be transferred to the new location.

18.10 Moving Hierarchy Items

Users will be able to rearrange their databases by dragging and dropping hierarchy items. They can move their Locations and Points within an existing Group or move them to a different one entirely. They can also move an entire Group from one Plant to another by dropping it onto an Application.

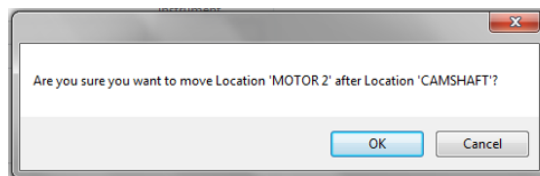
To move an item in the hierarchy, left-click and hold to drag it. Next, drop it to either an area in the current Group or into another one with the following exceptions:



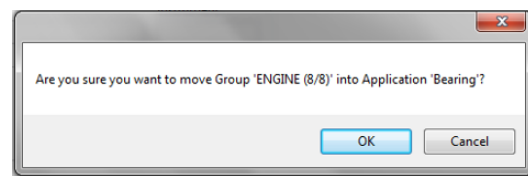
- If hierarchy items are pasted between Groups, the Descriptor Format for the Machine / Point names must match.
- The copied item can only be pasted if it doesn't create a duplicate in the new hierarchy.
- The Applications must match when being pasted.

Note: The symbol to the left will be shown if the attempted drag & drop would be an illegal move; except if it would create a duplicate in which case the move would still not be accepted.

When moving a hierarchy item within the same level of the hierarchy, it will be placed after the hierarchy item it is was dropped on. When moving a hierarchy item to a higher level of the hierarchy, it will be placed within the hierarchy item it was dropped on. In both instances, the user will receive a confirmation to complete the move.



Move Notification (Same Level)



Move Notification (Higher Level)

Note: Any Historical Records attached to the hierarchy item will be moved with it.

19. Navigating the Database

19.1 Closing a Plant

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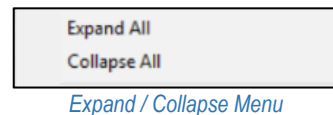
The user can close any Plants they have open in the hierarchy window by right-clicking them individually and selecting “Close Plant” from the menu.



Note: To limit Plants from becoming locked, it is recommended to close all Plants before exiting the DMS 6 program.

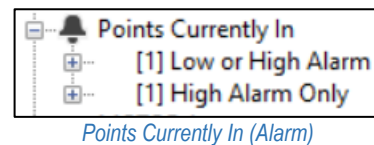
19.2 Expand & Collapse Hierarchy

To make the DMS database more manageable, users can quickly navigate the hierarchy by expanding and collapsing specific areas. This can be done by right-clicking over the hierarchy level to be expanded or collapsed. Select “Expand All” or “Collapse All” from the menu. Everything under the hierarchy level selected will expand or collapse accordingly. This function can be performed at any level of the DMS hierarchy.



19.3 Points Currently In (Alarm)

Test Points within a Group that are in an alarm state will be placed in a separate area of the DMS hierarchy called “Points Currently In” and identified with a bell icon displayed next to it. Click on the (+) to open and view any test Points within the Group that have been identified as either in High or Low alarm status.



The “Points Currently In” area can be moved to the bottom of hierarchy or removed from it entirely. This is performed by right-clicking on the appropriate group and selecting “Display Alarms on Bottom” or “Hide Alarm Locations” from the menu. If the alarm locations are hidden, the Group name in the hierarchy will have an asterisk next to it.

19.4 Display Length Settings

If the user has a large collection of Historical Records for a given test Point, they can use this function to adjust how many records will be displayed. This is done by the user applying a customizable filter based upon the number of months they would like to see data from, starting with the most recent. When the filter is turned on, the database will update the test Point by hiding the older data. The records that are no longer displayed are only “hidden” from the DMS hierarchy, NOT deleted, and can be “unhidden” by turning the filter off.

The Display Length Settings can only be accessed at the test Point level by right-clicking it to open the hierarchy menu. A checkmark next to “Display Only Last # Months” indicates the filter is applied. The Display Length function is separated into two parts:

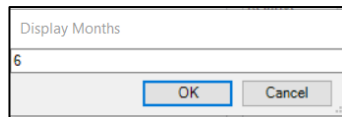


Set Display Length – This is used to set the specific number of months included in the filter.

Display Only Last # Months – This is used to toggle the filter on and off: the default is 6 months.

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Display Months Window

When “Set Display Length” is selected, a new window will open for the user to enter the number of months to be displayed. The “Display Only Last # Months” will be updated with the number that was entered.

Apply the new filter by selecting “Display Only Last # Months” from the hierarchy menu. A checkmark will appear next to it as well as an asterisk next to the Point name to identify that the filter is applied.

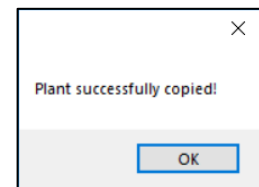
Note: This function is test Point specific. If the user wants to do this as a global Group function, they will need to use the “Group Cleanup” option. For additional information, please reference “III. Database Management: 20.0. Group Cleanup” section of this manual.

19.5 Save a Copy of Plant

This function can be used to save a copy of an individual Plant that is open in the DMS hierarchy. The copy will contain all the data found in the original plant, including the images and sound files.

To save a copy of an open Plant, perform the following steps:

- 1) Right-click the Plant from the hierarchy window.
- 2) Select “Save Copy of Plant” from the menu.
- 3) Choose the location where the copy will be saved and press OK.
- 4) The user will receive a “Plant successfully copied!” prompt when the process is completed.

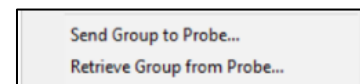


Plant Copied Confirmation

The folder name for the saved copy will include the original Plant name and the date/time stamp of when it was saved. The copy can be imported into another DMS 6 database or kept as a backup for the current one if needed.

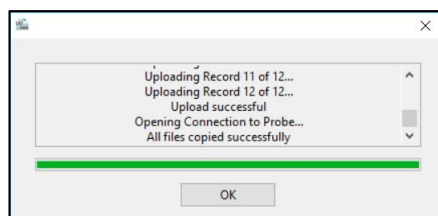
20. Transferring Data

The “Send Group” and “Retrieve Group” functions can be used to transfer data between the DMS database and the Ultraprobe. Before any data can be transferred, the user must have a Group created in the DMS hierarchy. If there are no Locations or Points within the Group when data is downloaded, the DMS software will provide the new Historical Records with default names. Only one Group can be loaded to an Ultraprobe at a time for data collection.



Send / Retrieve Group Menu

20.1 Send Group to Probe



Upload Complete

To upload a Group to an Ultraprobe 401, 9000, 10,000, or 15,000, perform the following steps:

- 1) Ensure the Ultraprobe is connected or the SD card to be used is inserted.
- 2) Right-click the Group from the DMS hierarchy.
- 3) Select “Send Group to Probe” from the menu.

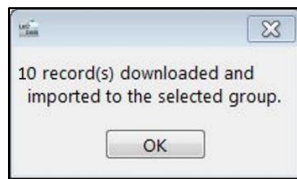
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- 4) The user will receive confirmation when the upload is complete.

Note: It is recommended to delete all files and folders from the SD card before uploading a new Group to the Ultraprobe. Clear Instrument from the “Communications” menu should be performed by the user before collecting any new data with the Ultraprobe 3000 or 9000. For additional information on the Clear Instrument function, please reference the “II. Basic Operation: 13.4. Clear Instrument” section of this manual.

20.2 Retrieve Group from Probe



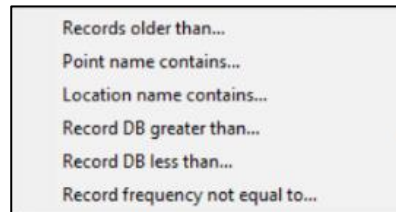
Download Complete

To download a Group from the Ultraprobe 401, 3000, 9000, 10,000, or 15,000, perform the following steps:

- 1) Ensure the Ultraprobe is connected or the SD card to be used is inserted.
- 2) Right-click the Group from the DMS hierarchy.
- 3) Select “Retrieve Group from Probe” from the menu.
- 4) The user will receive confirmation when the download is complete.

21. Group Cleanup

This function allows the user to “Soft Delete” any unwanted Historical Records in the DMS hierarchy based upon the selected filter. There are several filter options to choose from and when selected it will be applied to all test Points under a specific Group. The items that were “Soft Deleted” can still be viewed by choosing Show Trash when right-clicking the Group.



Group Cleanup Menu

To utilize the Group Cleanup function, perform the following steps:

- 1) Right-click on the Group where the cleanup is to be performed.
- 2) Highlight/Select Group Cleanup from the hierarchy menu.
- 3) To the right of the Group Cleanup option a new menu of filter options will be displayed; choose the filter to be used.
- 4) A new window for the filter chosen will open; enter the specific identifier that will be used for filtering.
- 5) Select OK when complete to apply the filter

Note: The user will be able to return the Historical Records that were “Soft Deleted” back into the database by right-clicking on the Group they are assigned to and then selecting Restore Deleted Items. They can also be permanently deleted the same way by selecting Empty Trash.

21.1 Records Older Than

DMS will hide the Historical Records that are older than the date the user chose to filter by.

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21.2 Point Name Contains

DMS will hide the Points based upon the name or partial name the user chose to filter by.

21.3 Location Name Contains

DMS will hide the Locations based upon the name or partial name the user chose to filter by.

21.4 Record dB Greater Than

DMS will hide the Historical Records that are greater than the decibel the user chose to filter by.

21.5 Record dB Less Than

DMS will hide the Historical Records that are less than the decibel the user chose to filter by.

21.6 Record Frequency Not Equal To

DMS will hide the Historical Records that don't match the frequency the user chose to filter by.

22. Synchronize Grease Fields

This option can be performed from the Group level of the DMS hierarchy. It organizes all the Baseline information for the lubrication related fields: Planned Strokes, Grease Type, Mass per Stroke, Grease Viscosity, Cost Per Mass, and Grease Gun Cal. Date.

Synchronize Grease Fields

Grease Fields Menu

Once established, the Baseline information for these fields will be readily viewable in the Historical Records of all current and future test Points for a specific Group.

To "Synchronize Grease Fields", perform the following steps:

- 1) Establish readings for the following fields in the Baseline of each Point: Planned Strokes, Grease Type, Mass per Stroke, Grease Viscosity, Cost Per Mass, Grease Gun Cal. Date.
- 2) Right-click the Group name.
- 3) Select "Synchronize Grease Fields" from the hierarchy menu.
- 4) DMS will then update all Historical Records for all Points within that Group.

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IV. Reviewing the Data

23. Record Information Tab

Record Information | Images | History | Chart | Alarms | Reports

1.1. General Information

Date/Time: 11/6/2017 9:38:27 AM
Module Type: RAS
dB: 16
Frequency: 30
Inspector ID:
Mode: Real Time
Sensitivity: 67
Meter Response: Fast
Offset: 0
Alarm: 25
Units: Standard
Location / Machine: MOTOR1
Scale: Relative
Point: MOB
Instrument:
Comments:
Serial Number:
☒ Baseline?
WAV File: c:\programdata\ue systems\file_data_cache\6f76043c-rdr4a0903h6e6993f72cd7518e77c7a
Record Path: Test Build 609/Bearing/Mech Room/MOTOR1/MOB.1
Open

1.2. Application Specific

Test Result: INP
Temperature: 0
Info:
Type: NE
RPM: 0
Bearing Info:
Actual Strokes: 10
Injected Mass: 10
Planned Strokes: 5
Grease Type: Mineral Base
Mass Per Stroke: 1
Grease Viscosity: 100
Cost Per Mass: 0.1
Injected Cost: 1
Grease Gun Cal. Date: 12:00:00.000 AM 12/30/1899

Record Information Data Fields

This tab contains the test information for data collected and downloaded from any Ultraprobe 401, 3000, 9000, 10,000, or 15,000 instruments. Most of the data fields can also be populated manually to allow for any potential editing that may be needed. Each table of information is linked to a specific Historical Record and therefore cannot be opened until that Historical Record located in the hierarchy has been selected.

The left side of the Record Information is for General Information that is included with all ultrasound applications. The right side is for any Application Specific Information; the applications include Bearing, Electrical, Generic, Leak, Steam, and Valve.

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23.1 General Information

The following information can be populated for all applications:

Date/Time – The date and time of data collection.

dB – Unit of measure for the intensity of sound.

Frequency – The frequency setting at time of collection.

Mode – The test mode used in the Ultraprobe: Real Time, Peak Hold, or Snapshot.

Sensitivity – The level of sensitivity selected at time of collection.

Offset – The dB minimum reference level set by the user at the time of collection.

Alarm – This can be set to a specific dB level to identify an unacceptable condition.

Location/Machine – The equipment identifier for the data collected.

Point – The specific point where data is collected.

Comments – Enter relevant comments in the box.

WAV File – If a sound is attached to the record, it can be viewed using the open button.

Record Path – To show where the record resides.

Module Type – The module used for at time of inspection. The user can choose: SCM (Scanning Module), STM (Stethoscope Module), UWC (The Parabolic Dish) CFM (Close Focus Module), LRM (Long Range Module), FLEX (Flexible probes), RAS MT (Magnetic mount probe), RAS RAM (Remote Access Sensor/Remote Access Module) or OTH (Other).

Inspector ID – The alphanumeric designator used to identify the inspector that collected the data.

Meter Response – How the intensity & dB indicators move: Fast, Medium, or Slow.

Units – Standard or Metric.

Scale – Relative or Offset (refer to the Ultraprobe user's manual for details).

Instrument – Enter the Ultraprobe used for this test.

Serial Number – enter the serial number of the instrument used for this test.

Baseline – Identifies this specific Historical Record as the baseline reading; this is also used for the high and low alarm delta.

23.2 Application Specific Information

The following information can only be populated for each specific application:

Bearing Application

Test Result – This data varies depending upon the application (The user can customize this list from "Configure Lists" in the File menu).

Temperature – A field for entering the location temperature at time of collection.

Info – Available field for additional information.

Type – Customizable list for entering type (This list can be customized from "Configure Lists" in the File menu).

RPM – The operating speed of the location.

Bearing Info – Specific information about the bearing such as part number.

Actual Strokes – The actual number of grease strokes applied.

Planned Strokes – Total number of grease strokes that is planned.

Mass Per Stroke – Total amount of grease that comes out of grease gun on one stroke.

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Cost Per Mass – Cost of grease per mass (i.e. grams).

Grease Gun Cal. Date - When grease gun was last measured for its output mass per stroke.

Injected Mass – Total amount of grease placed into the bearing housing (Actual Strokes x Mass Per Stroke).

Grease Type – Mineral Base, Synthetic & Polyurea. (The user can add other types of grease for this field from “Configure Lists” in the File menu).

Grease Viscosity – Type of viscosity used for that bearing “100, 150, 220, 460”. (The user can add more viscosities within the “Configure Lists” in the File menu).

Injected Cost - Total cost of grease being placed in that bearing (Cost Per Mass x Injected Mass).

Electrical Application

Test Result – This data varies depending upon the application (The user can customize this list from “Configure Lists” in the File menu).

Temperature – A field for entering the location temperature at time of collection.

Location – Customizable list for additional location information (This list can be customized from “Configure Lists” in the File menu).

Item Component – Customizable list for entering item component information (This list can be customized from “Configure Lists” in the File menu).

Voltage – Customizable list for entering voltage (This list can be customized from “Configure Lists” in the File menu).

Humidity – Field for entering the location humidity at time of collection.

Generic Application

Test Result – This data varies depending upon the application (The user can customize this list from “Configure Lists” in the File menu)

Temperature – A field for entering the location temperature at time of collection

Leak Application

Test Result – This data varies depending upon the application (The user can customize this list from “Configure Lists” in the File menu).

Pressure – A field for entering the location pressure at time of collection.

Application – Customizable list for entering application (This list can be customized from “Configure Lists” in the File menu).

Distance – Customizable list for entering distance (This list can be customized from “Configure Lists” in the File menu).

Steam Application

Test Result – This data varies depending upon the application (The user can customize this list from “Configure Lists” in the File menu).

Manufacturer – Customizable list for entering manufacturer (This list can be customized from “Configure Lists” in the File menu).

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Model – Customizable list for entering model (This list can be customized from “Configure Lists” in the File menu).

Application – Customizable list for entering application (This list can be customized from “Configure Lists” in the File menu).

Op Type – Customizable list for entering trap operating type (This list can be customized from “Configure Lists” in the File menu).

Pipe Size – Customizable list for entering pipe size (This list can be customized from “Configure Lists” in the File menu).

Orifice Size – Customizable list for entering orifice size (This list can be customized from “Configure Lists” in the File menu).

Inlet Temp. – A field for entering the inlet temperature at time of collection.

Outlet Temp. – A field for entering the outlet temperature at time of collection.

Valve Application

Test Result – This data varies depending upon the application (The user can customize this list from “Configure Lists” in the File menu).

Temperature – A field for entering the location temperature at time of collection.

Pressure – A field for entering the location pressure at time of collection.

Valve Type – Customizable list for entering valve type (This list can be customized from “Configure Lists” in the File menu).

Application – Customizable list for entering application (This list can be customized from “Configure Lists” in the File menu).

Pipe Size – A field for entering pipe size.

A – The dB level at test point A.

B – The dB level at test point B.

C – The dB level at test point C.

D – The dB level at test point D.

23.3 Database Hierarchy: Additional Information

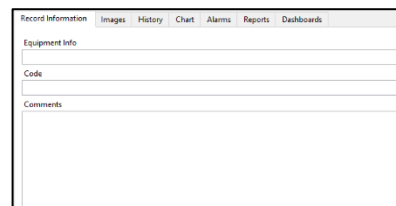
When selecting a hierarchy level other than the Historical Record, the following data fields will be shown in the Record Information Tab. These fields can be used to include additional information specific to that hierarchy level.

Location & Point Data Fields

Equipment Information – The full name of the Location or Point can be entered here for future reference.

Code – Can be used as a reference ID for data correlation with other databases and systems such as a CMMMS.

Comments – Additional Information pertinent to a specific Location or Point can be entered here.



Locations & Points Information

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Plant & Group Data Fields

Comments - Additional Information pertinent to a specific Plant or Group can be entered here.

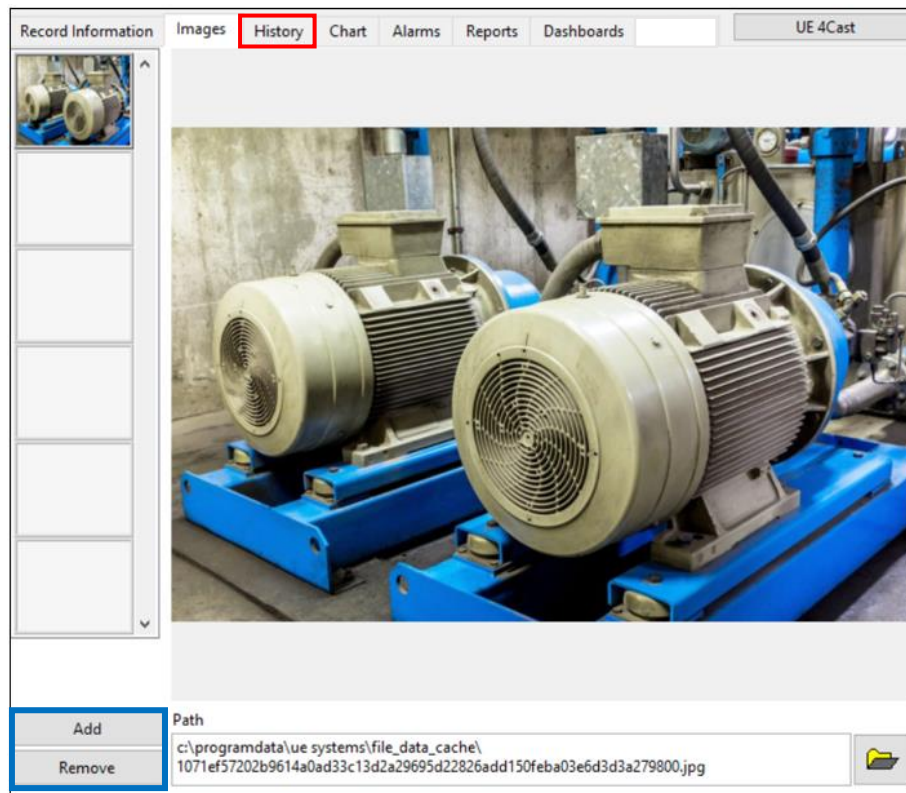
A screenshot of a web application interface. At the top, there is a horizontal menu bar with several tabs: 'Record Information', 'Images', 'History', 'Chart', 'Alarms', 'Reports', and 'Dashboards'. Below this menu, the 'Comments' section is visible, featuring a large, empty rectangular text area for input.

Plants & Groups Information

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24. Images Tab



Images Tab Screen

This tab can be used to attach images to different levels of the Ultratrend DMS database. Images can be added to any of the following hierarchy levels: Group, Location/Machine, Point, or Historical Record. Select the position in the DMS hierarchy and choose the Images tab to view what images are currently attached. There are two main functions in the Images tab, “Add” and “Remove”

Note: For Ultraprobe 15,000 users, when an image has been saved to a Point it will be automatically attached to that Historical Record when downloaded to DMS. Images attached to a Historical Record that is marked as a baseline in DMS will be uploaded to the Ultraprobe 15,000 with the baseline information.

24.1 Adding an Image

- 1) Select the position in the database hierarchy where an image is to be added.
- 2) Select the Images tab if it has not been previously selected.
- 3) Click the “Add” button in the bottom left of the Images Tab screen.
- 4) Locate the file path and select OK.

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24.2 Removing an Image

- 1) Select the position in the database hierarchy where an image is to be removed.
- 2) Select the Images tab if it has not been previously selected.
- 3) Highlight/select the image to be removed.
- 4) Click the "Remove" button in the bottom left of the Images Tab screen.

Note: This process doesn't delete the image, it will only remove the link to that image from DMS.

25. History Tab

Record Information	Images	History	Chart	Alarms	Reports
		dB	Low Alarm	High Alarm	Baseline
11/6/2017 9:38:27 AM	16	25	25	16	
11/12/2017 10:42:00 AM	16	25	25	16	
11/12/2017 12:12:00 PM	16	25	25	16	
11/12/2017 3:12:00 PM	16	25	25	16	
11/12/2017 4:42:00 PM	16	25	25	16	
11/12/2017 6:12:00 PM	16	25	25	16	
11/12/2017 7:42:00 PM	16	25	25	16	
11/12/2017 9:12:00 PM	16	25	25	16	
11/12/2017 10:42:00 PM	16	25	25	16	
11/13/2017 12:12:00 AM	16	25	25	16	
11/13/2017 1:42:00 AM	16	25	25	16	
11/13/2017 3:12:00 AM	16	25	25	16	
11/13/2017 4:42:00 AM	16	25	25	16	
11/13/2017 6:12:00 AM	16	25	25	16	
11/13/2017 7:42:00 AM	16	25	25	16	
11/13/2017 9:12:00 AM	16	25	25	16	
11/13/2017 10:07:34 AM	16	25	25	16	
11/13/2017 10:42:00 AM	16	25	25	16	
11/13/2017 12:12:00 PM	16	25	25	16	
11/13/2017 1:42:00 PM	16	25	25	16	
11/13/2017 3:12:00 PM	16	25	25	16	
11/13/2017 4:42:00 PM	16	25	25	16	
11/13/2017 6:12:00 PM	16	25	25	16	
11/13/2017 7:42:00 PM	16	25	25	16	
11/13/2017 9:12:00 PM	16	25	25	16	
11/13/2017 10:42:00 PM	16	25	25	16	
11/14/2017 12:12:00 AM	16	25	25	16	
11/14/2017 1:42:00 AM	16	25	25	16	
11/14/2017 3:12:00 AM	16	25	25	16	
11/14/2017 4:42:00 AM	16	25	25	16	
11/14/2017 6:12:00 AM	16	25	25	16	

History Tab Screen

The History tab allows information from numerous Historical Records under a selected test Point in the hierarchy to be displayed together in spread sheet form. This information also determines what trend lines are created in the "Chart" tab. The number of Historical Records shown can be changed by entering the number of months to be displayed from the "Chart Tab"; please reference "IV. Reviewing the Data: 25.0. Chart Tab" section of this manual for additional information.

25.1 Using the Selector Box

To create the spread sheet in the History tab, perform the following steps:

- 1) Select the desired test Point in the DMS hierarchy.
- 2) Open the History tab if it is not already opened.
- 3) Using the Selector Box highlight the desired test information item.
- 4) Use the left arrow key to move it to the spread sheet.
- 5) Use the right arrow to return any column from the spread sheet to the Selector Box.

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Note: The History tab spreadsheet can be saved as a text file by clicking on the “Export” button at the bottom of the Selector Box.

26. Chart Tab

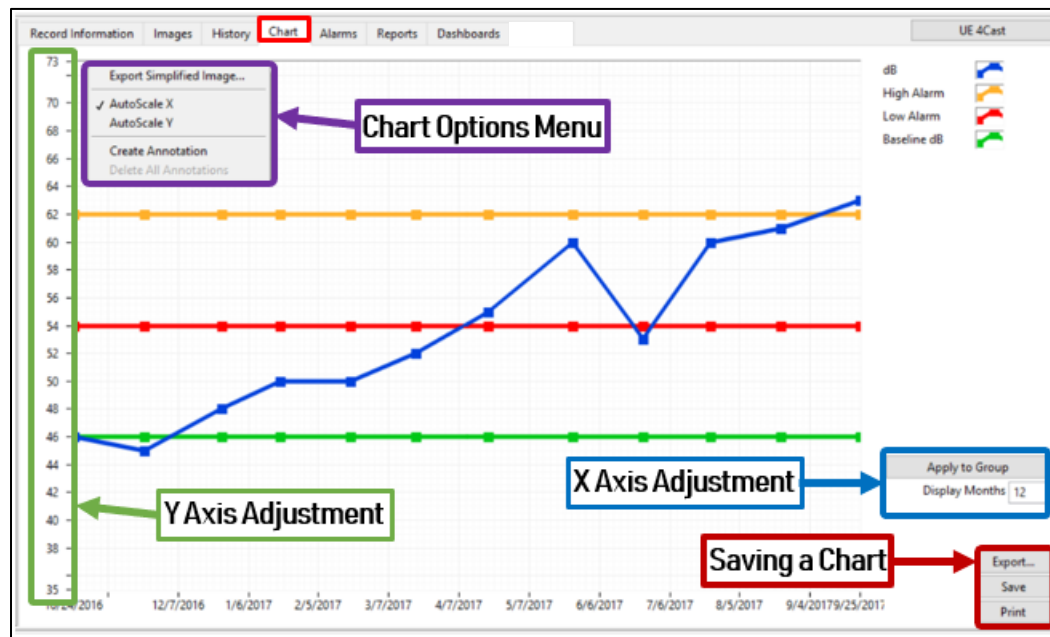


Chart Tab Screen

The Chart tab displays trend lines based upon the information selected in the “History” tab. The Y Axis displays the dB level while the X Axis shows the date. The user can customize the chart by adjusting the scale for both the X and Y Axis and by adding on chart remarks in the form of Annotations. Charts can be exported and saved in a variety of ways to allow for archiving and viewing later.

Note: The Chart function can only be accessed when selecting / highlighting a specific testing Point in the DMS hierarchy.

26.1 Adjusting the Chart Scale

X Axis – This scale can be adjusted by entering the number of months in the “Display Months” box; when finished press “Enter” or left-click on another area of the screen to apply. The change to the date range shown can be applied to all charts in the Group by pressing the “Apply to Group” button.

Y Axis – This scale can be adjusted by selecting the high and/or low values shown on the left side of the chart and entering a new value. The new values will determine the minimum and maximum dB values that will be shown in the chart.

Note: Both Axis can be set to “Auto Scale” from The Chart Options Menu (accessed by right-clicking the Chart plot).

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26.2 Chart Annotations

Text based Annotations can be created to identify areas of focus on the trend chart. Below are the chart options for creating and managing these Annotations:

Create Annotations – Allows the user to create an Annotation to the chart; accessed by right-clicking the Chart plot to open the Chart Options Menu

Delete All Annotations – Allows the user to delete all Annotations on the chart; accessed by right-clicking the Chart plot to open the Chart Options Menu.

Edit Annotations (Menu) – When right-clicking an Annotation, a menu will appear to edit the attributes such as color, line/pointer style, and line width. The “Snap To” feature can be accessed from here to allow an Annotation to be automatically attached to a specific trend marker in the chart. This is also where the user can delete a specific annotation if needed.

Note: When Chart Annotations are created, they will persist throughout all Points in that Group until they are deleted.

26.3 Saving a Chart

Export – Attaches a copy of the chart to the “Point” in the hierarchy.

Save – Will save the chart as a JPEG file.

Print – The user can print the chart as an HTML file in the web browser or save it as a PDF document.

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27. Alarms Tab

Record Information Images History Chart **Alarms** Reports Dashboards

68 High Alarm Level
60 Low Alarm Level
Update All Alarm Levels using values
Update All Alarm Levels using deltas

Setting Alarm Levels

0 High Alarm Delta
0 Low Alarm Delta
Update All Alarm Levels using deltas

Record Information:
52 dB
ok Alarm State
Baseline?

Alarm State Info

Alarms Tab Screen

This tab can be used to establish dB-based Alarm levels for each Point in a Group. The user has the option to set both a High- and Low-level Alarm. To use the Alarms tab, a Historical Record must be selected in the hierarchy. Historical Records that break established Low Alarms will be highlighted yellow in the hierarchy and those that break High Alarms will be highlighted red.

When the Alarms tab is open, there are two choices: “Update All Alarm Levels Using Values” or “Update All Alarm Levels Using Deltas”.

27.1 Setting Alarm Levels

When setting the Alarm levels there are two options: “Update All Alarm Levels Using Values” or “Update All Alarm Levels Using Deltas”. When one of these options are selected it will apply those Alarm settings to all current and future Historical Records for each Point in that Group hierarchy.

Note: The default Alarm setting is a value of 122 dB for both the High and Low Alarm Level until a new Alarm level is entered and established.

Update All Alarm Levels Using Values – To set the Alarm Levels to a defined value, enter those values in the High and Low Alarm Level fields, then press the “Update All Alarm Levels Using Values” button next to them to apply.

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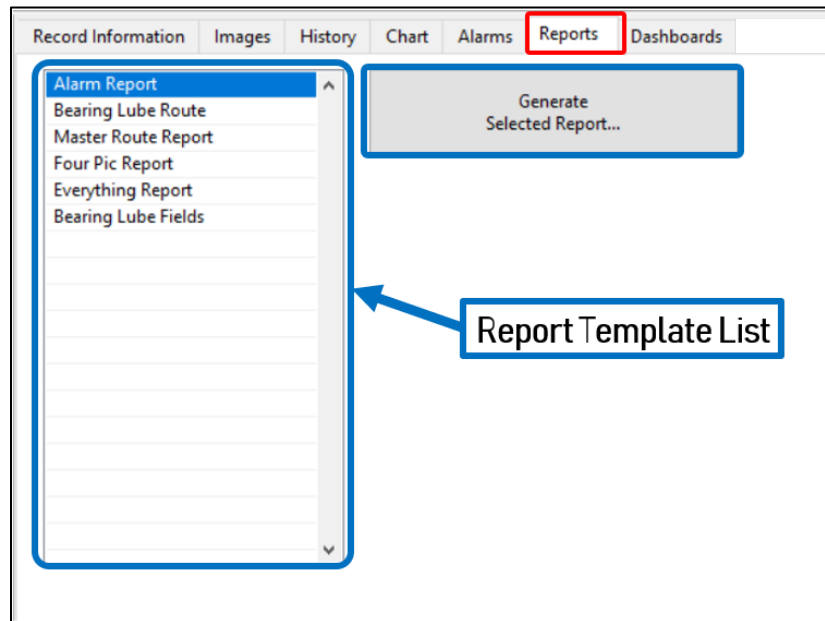
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Update All Alarm Levels Using Deltas – This can be used to determine the High and Low Alarm Levels as a rise over established Baseline Historical Recordings. Enter the High and Low Alarm Delta, then press the “Update All Alarm Levels Using Deltas” button next to them to apply. The new Alarm Levels will equal the Alarm Delta value entered plus the Baseline dB of each Point.

27.2 Alarm State Info

The record information of the specific Historical Record selected will be displayed in the box at the bottom of the Alarms tab labeled “Record Information”. This area will also identify if it is a Baseline Historical Record and if it is or is not breaking the established Alarms.

28. Reports Tab



Reports Tab Screen

The Reports tab offers additional capabilities for reviewing and data mining the information collected and entered into the DMS 6 database. This is done by providing numerous report templates based upon Application type that can be generated for any Group in the DMS database hierarchy.

Note: All reports are generated in Microsoft Excel 2010 or greater.

28.1 Creating Reports

To generate a report, perform the following steps:

- 1) Select the specific Group in the DMS hierarchy that contains the information to be included.
- 2) Open the Report tab if it is not already opened.

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- 3) Choose from the available reports on the Report Template List to the left of the “Generate Selected Reports” button.
- 4) Press the “Generate Selected Report” button.
- 5) Choose a file path where the report will be saved, name the file, and press the OK button to complete.
- 6) A notification window will inform the user when the report has been saved successfully, locate and open the file to review.

28.2 Available Report Templates

There are six different types of Applications that can be found in the DMS 6 database hierarchy. Each of these Applications determine the type of reports that can be generated from the Reports tab. The following is a brief description of each of the Report Templates:

Alarm Report

This report will only show test Points within a highlighted Group in the DMS hierarchy that exceeded established alarms during their most recent Historical Recordings. Some of the information included in this report is: hierarchy location info, date, sensitivity, frequency, dB Level, and alarm status information.

The following applications can generate this report: Bearing / Electrical / Generic / Leak / Steam / Valve

Bearing Lube Report

This report will only show test Points within a highlighted Group in the DMS hierarchy that exceeded established alarms during their most recent Historical Recordings. It includes all the information found in the “Alarm Report” with the addition of the type of lube and if it was lubed data fields.

The following applications can generate this report: Bearing

Master Route Report

This report will show all test Points within a highlighted Group in the DMS hierarchy based upon their most recent Historical Recordings, no matter if they broke the established alarms or not. Some of the information included in this report is: hierarchy location info, alarm status information, and any comments that were entered for that record.

The following applications can generate this report: Bearing / Generic

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Everything Report

This report will include all data entered in DMS for every Point within a highlighted Group in the DMS hierarchy. This includes all Historical Recordings to date and every possible data field for all Applications.

The following applications can generate this report: Bearing / Electrical / Generic / Leak / Steam / Valve

Bearing Lube Fields

This report will show the Historical Recordings for all test Points within a highlighted Group in the DMS hierarchy based upon the month selected when generating the report. It includes all the information found on the “Bearing Lube Report” with the added fields for performing a lubrication cost analysis. This report is customizable including only the data fields that were selected by the user while creating the report.

The following applications can generate this report: Bearing

Two Pic Report

This report can be used to communicate leak survey findings by generating two individual records per page with one image per record. It will select the first image in the Historical Record from each Point within DMS to populate in the report. This report also includes data fields that can be manually entered by the end-user to track repair completion for the leaks identified during the survey: fields such as Leak Repaired status, Date, and Initials.

The following applications can generate this report: Leak

Four Pic Report

This report can be used to communicate defects based upon ultrasound findings that can include up to four images and sound files for a test Point within a highlighted Group in the DMS hierarchy. The user can choose which sound files and images to include in the report from a Historical Record by selecting that location from the report menu hierarchy on the left and then using the drop-down menus under the ones that are shown as available options. This report also includes data fields that can be manually entered by the end-user to track repair completion for the identified defects: such as Suggested Corrective Action, Repair Date, Repairs Performed, and Repaired By.

The following applications can generate this report: Bearing / Electrical

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Mixed Compressed Gas Report

This report displays data from a leak survey; it can be used for any gas. The default gas selections in the sheet are: Compressed Air, Argon, Helium, Hydrogen, and Other. It will compute the cost of the leak and the impact on the plant's Carbon Footprint. The user may adjust the local carbon gas emissions in the coefficient located on the bottom of the Compressed Gas report sheet.

There are tabs on the bottom of the spread sheet which will guide the user to: Cost, Report (annualized updated report), Month (Monthly results), Master (this blank sheet is only used to facilitate importing of data and does not need to be used), Flow Rate Chart (for setting the CFM "Guesstimate"), and a Coefficient Table to select the greenhouse gas results by the state/area where the test was performed. It will report the savings per month and globally update the Report Sheet to review the results on an annualized basis.

The following applications can generate this report: Leak

Compressed Air Report

This report is identical to the "Mixed Compressed Gas Report" except it does not include any of the specialty gases.

The following applications can generate this report: Leak

Steam Report

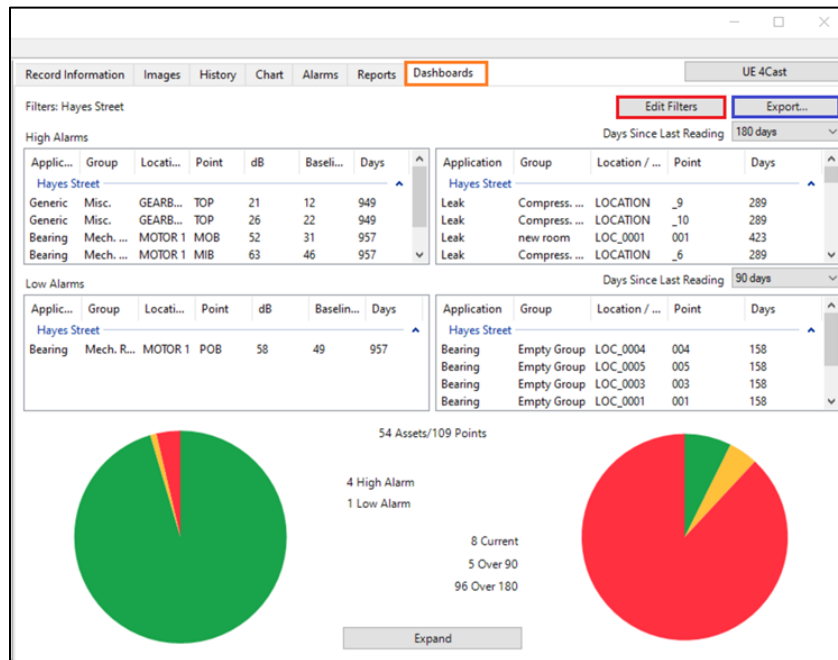
This report details the steam trap survey results and the steam trap condition for the most recent Historical Recordings for all the test Points in the Group. It includes all the pertinent data fields for determining additional steam costs due to defective conditions identified. This report is customizable including only the data fields that the user selects when creating the report.

The following applications can generate this report: Steam

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29. Dashboards Tab

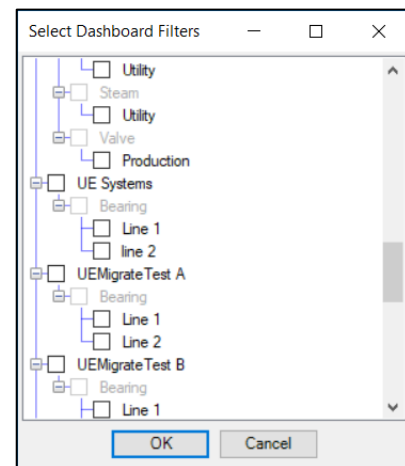


Dashboards Tab Screen

The Dashboards tab can be used to provide an overview of the alarming and collection status of test Points for multiple Plants and Groups from the DMS hierarchy. The pie charts at the bottom of the Dashboard provide a visual component to view the data that can also be expanded to make them easier to read.

To determine the test Points that will be shown in the Dashboard, press the “Edit Filters” button and enter a check in the boxes next to the Plants and/or Groups that will be included. When the selections have been made, press OK to apply the filter changes to the Dashboard. The filters that are currently applied can be seen in the top left area of the Dashboard.

The information displayed on the Dashboard is separated into two sides, one based upon “High & Low Alarms” and the other on “Days Since Last Reading”, below is a detailed description for both:



Select Dashboard Filters Window

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29.1 High & Low Alarms

The left side of the Dashboard screen includes information for each test Point that is in an Alarm State from the Plants and Groups selected in the filter. The upper portion shows the information for the test Points in High Alarm and the one below it shows those that are in Low Alarm. A pie chart can be found at the bottom of the Dashboard that visually depicts the overall Alarm State of all test Points from the Plants and Groups the user has selected. In the pie chart: Green = No Alarm, Yellow = Low Alarm, Red = High Alarm.

29.2 Days Since Last Reading

The right side of the Dashboard screen includes information based upon the last day data was collected for each test Point from the Plants and Groups selected in the filter. It comes in two portions that the user can customize by selecting the number of days next to “Days Since Last Reading”. The choices range from 7 to 1,080 with one consideration; the upper portion must have a higher number of days than the lower portion. The upper portion will also take precedence over the lower portion during the filtering process, ensuring anything included in the upper portion will not be duplicated in the bottom portion. A pie chart can be found at the bottom of the Dashboard that visually depicts the overall number of days from each portion customized by the user. In the pie chart: Green = Points that were Current (or below the number of days selected in the bottom portion), Yellow = Points that exceeded the number of days in the bottom portion, and Red = Points that exceeded the number of days in the top portion.

For Example: If there are 20 test Points with 10 collected in the last 30 days, 7 in the last 60 days, and 3 in the last 90 days; with the upper portion of the “Days Since Last Ready” set to 90 days and the lower portion set to 60 days; the results in the pie chart would look like: Green = 10 Points that were Current (or below the number of days selected in the bottom portion), Yellow = 7 for the Points that exceeded the number of days in the bottom portion, and Red = 3 for the Points that exceeded the number of days in the top portion.

29.3 Export

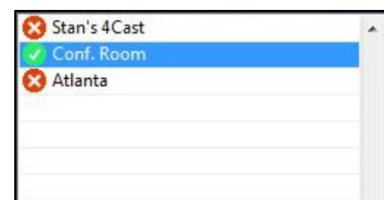
Exporting the Dashboard will be in a spreadsheet format. It will give the breakdown of “high”, “low” alarms along with “Days Since Last Readings”

V. Configuring the 4Cast System

30. Introducing the 4Cast Manager

Once the 4Cast is connected to the computer that will be retrieving the data, the user can configure it with the 4Cast Manager by pressing the “UE 4Cast” button in the upper-right corner of the DMS 6 software.

When the 4Cast Manager opens, a list of 4Casts connected to the computer will be seen on the left. A “green circle with a checkmark” next to a 4Cast indicates it is connected and operating properly. A “red circle with a x” indicates it was once connected, but it is currently experiencing connection or operation issues.



4Cast Manager List

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To perform any modifications in the 4Cast manager, the user will need to press the “Start Editing” button in the upper-right corner.

30.1 UE 4Cast Configuration Tab

The screenshot displays the 'UE 4Cast Configuration' tab within the Ultratrend DMS 6 software. The interface is divided into several sections. On the left, there is a sidebar with 'Add' and 'Remove' buttons. The main area features a 'Path' field and a list of 4Cast devices. On the right, there are two main configuration sections: 'Data Archiving Settings' and '4Cast Info Section'. The 'Data Archiving Settings' section includes a 'Name' field (UE 4Cast), 'Keep Readings For # Days' (30), and 'Keep Readings and WAVs for # Days' (30), with a 'Set' button. The '4Cast Info Section' includes a 'UUID' field (D88039609F36), 'IP Address' (192.168.5.58), and 'Current Firmware Version' (1.2.3 beta), with 'Update Firmware' and 'Reset' buttons. A 'Stop Editing' button is located in the top right corner.

4Cast Manager: UE 4Cast Configuration Tab Screen

The Configuration tab of the 4Cast Manager can be used to view specific information unique to each 4Cast such as their UUID and IP Address. The user can also use the tab to add and remove images, update the 4Cast firmware and change how long a 4Cast will archive data.

Data Archiving Settings

Name – The user can enter a specific name for the 4Cast in this field.

Keep Readings For # Days – This is for the number of days an individual 4Cast will archive the dB only readings before it will begin writing over the old data.

Keep Readings and WAVs For # Days – This is for the number of days an individual 4Cast will archive the readings with WAV files before it will begin writing over the old data.

Set – This button is used to save any changes made to the Data Archiving Settings.

4Cast Info Section

UUID – The Universal Unique ID for the 4Cast.

IP Address – The address for that specific 4Cast.

Current Firmware Version – The version of firmware installed on the 4Cast.

Update Firmware - If there is an update for the 4Cast, this button can be used to update it.

Reset - This button can be used to reset the individual 4Cast.

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Note: Resetting the 4Cast will NOT delete settings that had been previously entered.

Add / Remove Images

Add – The user can link an image to the 4Cast by selecting this button and then choosing the file location.

Remove - To remove a link to an image associated with that 4Cast, highlight that image and then select the “Remove” button.

30.2 UE 4Casts Points Tab

UE 4Cast Configuration | **UE 4Cast Points** | Sensor Setup | Reading Schedule | WAVs Schedule | Stop Editing

Sensor 1 Sensor 2 Sensor 3 Sensor 4

Plant: Stan's Test Plant 2
Application: Bearing
Group: Mech Room
Machine: BNA 3 MOTOR

DMS Hierarchy Links

MOB: MIB: PIB: POB:

Get Readings Now Get Reading Now Get Reading Now Get Reading Now Get Reading Now
Get Readings With WAVs Now Get Reading With WAV Now Get Reading With WAV Now Get Reading With WAV Now Get Reading With WAV Now

Archive Access

Sensor	Start	End	Action
1	1/1/2017 07:00:00 PM		Get Readings Between Dates
Max			
1	1/1/2017 07:00:00 PM		Get Readings and WAVs Between Dates
Max			

Set All

4Cast Manager: UE 4Cast Points Tab Screen

With this tab the user can link the 4Cast to an existing DMS database where data will be downloaded and stored. This tab also provides the user with multiple options to manually request the immediate downloading of data from the 4Cast to the DMS database.

DMS Hierarchy Links

The dropdown fields can be used to map the 4Cast sensors to the DMS hierarchy. For this to work, the corresponding hierarchy must already be created in the DMS database. The user can select from the Plant to Point level with the dropdown lists based upon the available options from the DMS hierarchy. Once the options have been selected, press the “Set All” button to save the changes.

Get Readings & Get Readings with WAVs Now

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Get Readings Now – With this button, the user can download an immediate dB only reading from a single sensor and send that to the DMS database. This is normally done to establish an initial Baseline Record for that Point in the database. Each sensor has this feature and if the user wants to capture dB readings for all four sensors, they can select the first button on the far left. The first button is for a global retrieval of a dB only reading for all four sensors.

Get Readings with WAVs Now – This is the same as “Get Readings Now”, except the user will also receive a WAV file with a dB reading when it is collected. The first button on the left labeled, “Get Readings with WAVs Now”, is for a global retrieval of a dB reading with WAV file for all four sensors.

Note: Please reference the “V. 4Cast System: 30.3. Sensor Setup Tab” section of this manual to ensure the sensors have been properly adjusted before establishing baselines. This will mitigate any data collection quality issues that could occur due to over- or under-range conditions with those sensor(s).

Archive Access

The user will be able to download dB readings and WAV files from a certain date and time range based upon the parameter information entered below. After the parameter information has been entered, the user can select either “Get Readings Between Dates” or “Get Readings with WAVs Between Dates” to start the download.

Sensor – This is used to identify which 4Cast sensor the data is to be downloaded from.

Start – The user can enter the Start Date & Time for the data to be downloaded.

End – The user can enter the End Date & Time for the data to be downloaded.

MAX – The user can choose the number of Readings / WAV files to be download.

With the given parameters, the 4Cast will then be able to download the data from its internal storage and send that information to DMS to be stored.

30.3 Sensor Setup Tab

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	Sensor 1	Sensor 2	Sensor 3	Sensor 4
Sensor Signal Level	0% (Red bar)	0% (Blue bar)	0% (Blue bar)	0% (Blue bar)
Sensor Reading	19 dB	23 dB	23 dB	55 dB
Sensor Reading Averaging	20	20	20	20
Sensor Reading Offset	0 dB	0 dB	0 dB	0 dB
Alarm State	Red dot	Blue dot	Blue dot	Blue dot
Alarm Level	5 dB	55 dB	95 dB	95 dB
Alarm Delay	60 s	5 s	0 s	10 s
Alarm Release	0 dB	0 dB	0 dB	-2 dB
Auto Sensitivity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Auto Sensitivity High Trigger Level	30	30	30	30
Auto Sensitivity Low Trigger Level	20	20	20	20
Sensitivity	58	55	57	0
Live Mode Toggle	Stop	Stop	Stop	Stop
Buttons	Set All	Set	Set	Set

4Cast Manager: Sensor Setup Tab Screen

The Sensor Setup tab can be used to make any necessary adjustments to ensure the sensors connected to the 4Cast are collecting quality ultrasound readings and sound files. If the adjustments are correct, the 4Cast will always receive quality data, even if the sensor is in an alarm state.

Live Mode Toggle

This will allow the user to turn on Live Mode when needed to actively view the current dB output of each sensor. Each sensor can be toggled in and out of Live Mode individually with a Start / Stop button located at the bottom of the “Sensor Setup Tab”. This can be especially useful when setting up sensors initially, to ensure the Sensor Settings are properly adjusted.

Sensor Settings

Any Sensor Setting changes can be permanently saved by pressing the “Set” button at the bottom of the sensor from where those changes were made. This can also be done for all sensors at one time by pressing the “Set All” button to the left of the “Set” button for the individual sensors.

Sensor Signal Level – This is the intensity of the signal going through the sensor. This is important when it comes to recording quality sound to analyze through the UE Spectralyzer software. The optimum intensity level is typically considered to be around 25%. The user can adjust the intensity through the Sensitivity or Auto Sensitivity settings.

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Sensor Reading – This is the measure of sound that the sensor is reading shown as a dB value. If the user sees (>>) instead of a dB value, it means that the sensor is under-range and that the sensitivity needs to be increased. If the value is (<<), it means that the sensor is over-range and the sensitivity needs to decrease.

Sensor Reading Averaging – This is the number of averages per second that the sensor will take when data is collected. This can help smooth out the dB value by averaging out transient events that may be causing the data to appear chaotic and difficult to use in some scenarios. The user will be able to select the number of averages up to a maximum of 20 samples per second.

Sensor Reading Offset - If the 4Cast is going to be taking readings on an existing route that an Ultraprobe was taking readings from in the past, the user can use an offset to adjust for the dB difference as needed. This will ensure that the readings stay consistent between both data collection methods.

Alarm State – This provides indication of a sensor that is exceeding the established Alarm Level; “red” circle indicates it is in alarm and a “blue” circle indicates it is not.

Alarm Level - Once the dB is established, the user can set a dB value for the Alarm level on that sensor. If the sensor has a dB value higher than the Alarm Level dB, it will trigger the 4Cast to start recording the dB value and sound file, so it can be sent to DMS.

Alarm Delay – This setting can be adjusted up to a maximum of 60 seconds and it will start from when the sensor hits the established Alarm Level. Once the adjusted time is exceeded, and if the sensor is still in alarm, it will trigger the 4Cast to start taking a reading for that sensor. If the dB level falls below the Alarm Level after time has exceeded, no reading will be taken to mitigate unwanted data being uploaded to the DMS database.

Alarm Release - When a sensor constantly goes in and out of an Alarm State, the Alarm Release can be used to establish a lower dB value to determine when that sensor leaves alarm. Enter the dB value to be subtracted from the Alarm Level, up to a maximum of 9 dB, to determine what dB value the sensor must fall below before it is no longer considered to be in alarm.

For Example: If the Alarm Level is set to 30 dB and the Alarm Release is set to 3 dB, a sensor that exceeded 30 dB would stay in an Alarm State until it fell below 28 dB.

Auto Sensitivity – This represents the percentage of scale for the Sensor Signal Level of each sensor. By checking or unchecking the box, the user can enable or disable the High and Low Trigger Levels. When enabled, this can be used to automatically adjust Sensitivity based upon specific Sensor Signal Level positions established by the user.

Note: It is recommended that the High and Low Trigger levels be established with a 30% separation to maintain a consistent reading from the sensor.

Auto Sensitivity High Trigger Level - Based upon a percentage scale from (0-100%), the user can establish a High Trigger Level for the Sensitivity to be automatically adjusted. When the sensor exceeds the High Trigger Level, the 4Cast will automatically reduce the Sensitivity until the Sensor Signal Level is

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below the level entered by the user. This setting can assist the user to ensure the sensor will be in range to show a dB value and able to record a quality sound file that can be analyzed through the UE Spectralyzer software.

Auto Sensitivity Low Trigger Level - Based upon a percentage scale from (0-100%), the user can establish a Low Trigger Level for the Sensitivity to be automatically adjusted. When the sensor is below the Low Trigger Level, the 4Cast will automatically increase the Sensitivity until the Sensor Signal Level is above the level entered by the user. This setting can assist the user to ensure the sensor will be in range to show a dB value and able to record a quality sound file that can be analyzed through the UE Spectralyzer software.

Sensitivity - Used to adjust the intensity of sound that comes through the sensor. This is manipulated manually and will help with under and over-ranged conditions.

30.4 Reading Schedule Tab

	Sensor 1	Sensor 2	Sensor 3	Sensor 4
Storage Interval	12 hours	1 hours	1 hours	1 hours
Send-to-DMS Interval	24 hours	4 hours	3 hours	2 hours
Storage Interval When In Alarm	6 hours	1 hours	6 hours	1 hours
Readings Before Alarm to send to DMS	15	15	15	15
Readings During Alarm to send to DMS	3	3	3	3
Readings After Alarm to send to DMS	3	3	3	3
Trigger on dB Level	6 dB	5 dB	5 dB	5 dB
Delay Start Up	30 s	5 s	15 s	60 s

Buttons: Set All, Apply To All (x4), Set (x4)

4Cast Manager: Reading Schedule Tab Screen

The Reading Schedule Tab can be used to configure the automatic collection of dB only readings by the 4Cast. It can also be used to determine when the data stored in the 4Cast is sent to the DMS database. There are numerous Scheduling Options available to customize the 4Cast's data acquisition process.

Apply to All – After one sensor has been configured, press the “Apply to All” button under that sensor and the rest of the sensors will then be set with the same configuration.

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Scheduling Options

Any Scheduling Options changed can be permanently saved by pressing the “Set” button at the bottom of the sensor from where those changes were made. This can also be done for all sensors at one time by pressing the “Set All” button to the left of the “Set” button for the individual sensors.

Storage Interval – This determines how often a sensor will take readings and store them internally in the 4Cast. The interval can be expressed in minutes, hours, days, or weeks.

Send-to-DMS Intervals – This determines how often data will be sent from the 4Cast to the DMS 6 database. The interval can be expressed in minutes, hours, days, or weeks.

Storage Interval When in Alarm – This determines how often a reading will be taken and stored on the 4Cast once a sensor goes into alarm. The interval can be expressed in minutes, hours, days, or weeks.

Readings Before Alarm to send to DMS - The user can set the number of readings the 4Cast will send to the DMS database prior to the sensor going into alarm.

Readings During Alarm to send to DMS - The user can set the number of readings the 4Cast will send to the DMS database while the sensor is in alarm.

Readings After Alarm to send to DMS - The user can set the number of readings the 4Cast will send to the DMS database after the sensor comes out of alarm.

Trigger on dB Level - This option works well with machines that turn on and off frequently. The user can set the Trigger on dB Level to allow a scheduled reading to be taken only if it exceeds the value that was set. If the dB value did not exceed the Trigger on dB Level, the scheduled recording will not be taken to limit any unwanted data from being sent to the DMS database.

Delay Start up - This option works well with machines that turn on and off frequently. The Delay Start Up option can be used to add a timed delay of up to 60 seconds to allow a machine to get up to full speed after it is turned on. When the set time for the delay is exceeded, the 4Cast will then start its reading schedule as previously established by the user for that sensor. This function is dictated by the Trigger on dB Level.

Note: It's strongly advised not to take readings with the 4Cast at 10 minutes or below intervals.

30.5 WAVs Schedule Tab

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	Sensor 1	Sensor 2	Sensor 3	Sensor 4
WAV Storage Interval	12 hours	1 hours	1 hours	1 hours
WAV Send-to-DMS Interval	24 hours	4 hours	3 hours	2 hours
WAV Storage Interval When In Alarm	6 hours	1 hours	6 hours	2 hours
WAVs Before Alarm to send to DMS	15	15	15	15
WAVs During Alarm to send to DMS	3	3	3	3
WAVs After Alarm to send to DMS	3	3	3	3
WAV Record Time (s)	5	5	5	5
WAV Record Time in Alarm (s)	20	20	20	20
WAV Record Time for Manual (s)	5	5	5	5

Buttons: Set All, Set, Apply To All (x4)

4Cast Manager: WAVs Schedule Tab Screen

The WAVs Schedule Tab can be used to configure the automatic collection of a WAV file by the 4Cast. It can also be used to determine when the data stored in the 4Cast is sent to the DMS database. There are numerous Scheduling Options available to customize the 4Cast's data acquisition process.

Apply to All – After one sensor has been configured, press the “Apply to All” button under that sensor and the rest of the sensors will then be set with the same configuration.

Scheduling Options

Any Scheduling Options changed can be permanently saved by pressing the “Set” button at the bottom of the sensor from where those changes were made. This can also be done for all sensors at one time by pressing the “Set All” button to the left of the “Set” button for the individual sensors.

WAV Storage Interval - This determines how often a sensor will take WAV files and store them internally in the 4Cast. The interval can be expressed in minutes, hours, days, or weeks.

WAV Send-to-DMS Interval - This determines how often WAV files will be sent from the 4Cast to the DMS 6 database. The interval can be expressed in minutes, hours, days, or weeks.

WAV Storage Interval When in Alarm - This determines how often a WAV file will be taken and stored on the 4Cast once a sensor goes into alarm. The interval can be expressed in minutes, hours, days, or weeks.

WAVs Before Alarm to send to DMS - The user can set the number of WAV files the 4Cast will send to the DMS database prior to the sensor going into alarm.

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WAVs During Alarm to send to DMS - The user can set the number of WAV files the 4Cast will send to the DMS database while the sensor is in alarm.

WAVs After Alarm to send to DMS - The user can set the number of WAV files the 4Cast will send to the DMS database after the sensor comes out of alarm.

WAV Record Time (s) - The user can adjust how long to record the WAV file during a normally scheduled collection (0-60 seconds).

WAV Record Time in Alarm (s) – The user can adjust how long to record the WAV file when the sensor is in an Alarm State (0-60 seconds).

WAV Record Time for Manual (s) – The user can adjust how long to manually record the WAV file.

Note: It's strongly advised not to take sound recordings with the 4Cast at 10 minutes or below intervals.