Medtronic

PACEART OPTIMA™ SYSTEM

POS12D Version 1.7

Paceart Optima System Software Installation and Configuration Instructions

Caution: Federal law (USA) restricts this device to sale by or on the order of a physician (or a properly licensed practitioner)

CE

Trademarks in this manual

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Medtronic, Paceart Optima, CareLink, Mainspring, Medtronic CareLink

Contents

Introduction to the Paceart Optima™ System

The Paceart Optima System is a clinic management tool that organizes patient, device, and programmer information and provides access to trend analysis, aiding a physician or clinician in their daily workflow and management of patient and cardiac data. The Paceart System supports cardiac rhythm devices from most manufacturers.

The Paceart System:

- Stores programmed device parameters
- Summarizes patient data into concise reports
- Keeps a history of patient encounters
- Offers TTM technologies, such as CardioVoice, designed to work with event recorders
- Creates correspondence documents
- Schedules patient follow-up appointments
- Assists with records processing
- Assists in charge and billing management
- Offers integration with a hospital's or clinic's HL7-compatible system
- Provides task management to streamline clinic workflow
- Provides automatic import of data from pacemakers, programmers, and other storage media

Explanation of symbols

	Consult instructions for use
CE	Conformité Européenne (European Conformity). This symbol means that the device fully complies with European Directive MDD 93/42/EEC.
! USA	For US audiences only
EC REP	Authorized Representative in the European Community
	Manufacturer
LOT	Lot number
REF	Re-order number
	Date of Manufacture
	Do not dispose of this product in the unsorted municipal waste stream. Dispose of this product according to local regulations. See http://recycling.medtronic.com for instructions on proper disposal of this product.
	Temperature Limitation

	Humidity Limitation
	Software

Indications

The Paceart System is intended for use as a 12-lead electrocardiograph, pacemaker artifact analyzer, and transtelephonic ECG receiving station. It also acts as a database for cardiac patients with or without pacemakers or implantable cardioverter defibrillators.

Precautions

Storage and installation

- Ensure there is no condensed moisture on the Paceart System software USBs.
- Paceart System software USBs must be stored within the following conditions:

Storage Environment	
Temperature	-20°C (-4°F) to +45°C (113°F)
Relative Humidity	20% to 90%

System operation

Before system operation:

- Ensure that the system is not being used with other instruments that may result in misdiagnosis or other problems.
- Ensure there is no condensed moisture on the Paceart System software USBs.
- The Paceart System software USBs must be operating in an environment within the following conditions:

Operating Environment	
Temperature	0°C (32°F) to +35°C (95°F)
Relative Humidity	20% to 90%

Additional precautions

- Do not modify the original system in any way. This includes adding any software product.
- Ensure that all patient records are updated and permanently stored before turning the PC power off.
- Double-check the data before typing the data into the system.

Transmission and transmitter settings

When recording ECGs:

- The transmitter transmission speed must match the transmit speed setting in the Paceart System.

- The transmitter transmit format must match the transmit format setting in the Paceart System.
- Discrepancies between the transmission speed or the transmission format will result in incorrect measurements that may lead to incorrect ECG interpretations.
- The Date Given field must have a date that is the same or prior to the date the transmission is recorded.
- A patient may only have one active transmitter.
- The Paceart System operator is responsible for setting the speed and format settings.

Contraindications

No known contraindications.

Authorized users

Medtronic representatives provide the Paceart Optima System orientation and training materials at the time of the installation. All users should be familiar with the Paceart System documents, including the online Help, before using the Paceart Optima System. The designated system administrator should also read the Paceart System documentation for information on using the Paceart Optima System software user interface for function and control.

An authorized person, preferably a physician, must verify the implantable device and electrode specifications entered into the database or modified in the database. An authorized person, preferably a physician, must verify the test results that are automatically entered into the database by the instrument. The data obtained from this device must be interpreted in conjunction with other clinical data and the results of other independent tests.

Technical Support

For technical support contact your local Medtronic office. In the US and Canada, Paceart Technical Services can be contacted via phone or email.

- Phone: 1-800-PACEART
- Email: paceart.support@medtronic.com
- Web: Visit the Paceart Community website at paceartcommunity.medtronic.com.

Manuals supplied with your system

Electronic versions of Paceart Optima System manuals are supplied on the documentation USB supplied with your software. You can also download or request printed copies of these manuals from www.medtronic.com/manuals.

There are two manuals installed for use with the Paceart Optima System software, the *Paceart Optima System Software Installation and Configuration Instructions* and the *Paceart Optima System Software User Manual*. The *Paceart Optima System Software Installation and Configuration Instructions* provide you with the information you need to install and configure your Paceart Optima System software. This includes optional configurations and optional software components. The *Paceart Optima System Software User Manual* provides you with information on how to use your Paceart Optima System software.

For information on the installation, configuration, and use of the Paceart ECG Module refer to the documentation supplied with the Paceart ECG Module.

All patient and clinical data displayed in Paceart Optima System software documentation are fictitious and for demonstration purposes only.

Accessing the online Help

The online Help provides additional information about the features and functionality of the Paceart Optima System.

There are five ways to access the online Help.

- Clicking **Help** > **Help** from the menu bar opens the appropriate help topic for where you are in the application.
- Clicking the **Help** button in a dialog box opens the appropriate help topic for the dialog box.
- In any add or edit dialog box, clicking the "?" and selecting an active field opens the field level Help for that field.
- Pressing the F1 key while a field is selected opens the field level Help for that field.
- Pressing the F1 key while no fields are selected opens the appropriate help topic for where you are in the application.

If your version of the Paceart System has been customized, you can view your customer build number by clicking **Help** > **About**.

Paceart System Installation and Configuration

The intent of this information is to help you as a system administrator prepare for an installation of the Paceart Optima System at your site. It will answer many of the questions you may have about how the Paceart Optima System can use your existing network infrastructure.

This manual describes each of the Paceart Optima System components and provides detailed instructions for installing them. This information will help you decide which Paceart System configuration is the best fit for your site by providing details on each type of configuration.

Components of the Paceart Optima System

You can install different components of the Paceart Optima System depending on your configuration.

You must have administrative rights on the computer to install Paceart Optima System components. If you have User Account Control (UAC) turned on, UAC might notify you before changes are made to your computer that require administrator-level permission. In the **User Account Control** dialog box, click **Yes** to confirm and start the installation.

Ensure that you are installing the components on a supported operating system. For a list of supported operating systems for each component, see the *Technical Requirements for Paceart Optima System* document.

The Paceart Database Manager

The Paceart Database Manager is a tool for performing the most common tasks of creating and managing your Paceart System databases. This tool makes it easy to complete advanced database administration tasks by using wizards.

Some of the tasks performed by the Paceart Database Manager could also be performed through other database management software such as Microsoft SQL Server Enterprise Manager.

The Application Server

The Application Server allows you to centralize security and maintenance in one location. Only one database needs updating if the database structure changes during a Paceart System upgrade.

The Client

The Paceart Optima System client is how most users interact with the Paceart System. The client is the user interface for the Paceart Optima System. You enter and view information in the Paceart System user interface. That information is then sent to the Paceart System database via the Application Server.

The client connects to the application server and the Paceart System database. In a standalone configuration, you can have the client, the application server, and the database all on one workstation. Or in a distributed system you can have multiple clients running on different workstations that all connect into an application server and a Paceart System database.

ECG

You can install the optional Paceart System ECG add-on package with the Paceart Optima System client to add the ability to capture and store ECG data for cardiac events from an external device in the Paceart System. You can also store and manage a collection of ECG strips within an ECG session. ECG hardware must be connected to the client workstation to record ECG strips.

ClickOnce Server

The ClickOnce server is an optional Paceart System server configuration that enables Paceart System users to install and run the Paceart Optima System by clicking a link in a Web page instead of running the installation on individual workstations. ClickOnce ensures that users are always running the latest version of the Paceart System by automatically downloading any updates from the Application Server each time users run the Paceart System.

Medtronic Mainspring Data Express

Mainspring Data Express is a comprehensive solution for your cardiac patients, bringing together device and patient data from the Paceart System, the Medtronic CareLink Network, the CareLink Programmer, the Boston Scientific LATITUDE® Patient Management system, the St. Jude Medical Merlin.net® Patient Care Network, your EHR System, and local network.

For installation and configuration instructions, refer to the *Medtronic Mainspring Data Express Connectivity Guide*.

Paceart System Web Access

Paceart System Web Access is an optional add-on package for use with the Paceart System. Adding Paceart System Web Access to your Paceart System allows you to access Paceart System reports through an easy-to-use Web interface.

You can search for a particular report using Paceart System Web Access. The search criteria include patient name, provider name, type of encounter, and date range of the encounter.

Paceart System Web Access can be configured to work on either an intranet or on the Internet. Depending on your access requirements, you can restrict Paceart System Web Access availability to your internal intranet, or you can access your Paceart System reports from any Internet connection in the world.

CardioVoice

The CardioVoice TTM Assistant system is an optional add-on package that enables patients and doctors to communicate information about cardiac events through an automated voice response system.

Patients call into CardioVoice from their home and are directed through a series of automated prompts. Patients can transmit an ECG, record messages for their doctor, and listen to messages from their doctor.

Doctors can access CardioVoice from a Paceart System station in the clinic or by dialing into CardioVoice remotely. When a patient records a new ECG, notification of the event is sent to the doctor by fax, email, or page. Doctors can record messages for their patients, listen to messages from patients, and view ECGs recorded by patients.

Analytics Export

The Paceart Optima System with Analytics Export allows you to manage the export of XML data from the Paceart Optima System. The Paceart Optima System Analytics Export can be configured to send XML data to an external folder automatically for integration into external systems, such as LUMEDX cardiovascular information systems.

Paceart System configuration options

The Paceart System can be configured in multiple ways to support the needs of each installation.

When deciding on the configuration most appropriate for your installation, you must take the following items into consideration:

- Number of clinical ECG-acquisition stations needed

- Need for viewing and editing ECG strips
- Number of TTM-acquisition stations needed
- Number of data entry terminals needed
- Availability of a local area network (LAN) and support
- Availability of a wide area network (WAN) and support
- Need for multiple geographic locations
- Number of places and locations for report retrieval
- Need for 24/7 TTM-acquisition
- Need for remote, disconnected data access

Paceart Optima System is scalable and configurable, providing options to best suit your installation.

Standalone Configuration

The Paceart Optima System standalone configuration is the most basic Paceart Optima System configuration option. It involves a single workstation running the following software with no network connection required:

- Microsoft SQL Server
- The Paceart Optima Database Manager
- The Paceart Optima Application Server
- The Paceart Optima MSI Client
- Medtronic Mainspring Data Express (optional)

Paceart System Hardware, such as the 12-Lead ECG/TTM ECG Module for in-clinic and transtelephonic ECG acquisition, is added to capture ECG signals.

This configuration most likely does not need a full version of SQL Server; in most cases, an Express edition of SQL Server suffices. An example of when a full version of SQL Server would be required is when the database would need to store more than 4 GB of data.

While the standalone configuration is the most straightforward to install, it is not practical if you want to run the Paceart System on multiple workstations.

Network Configuration

This configuration is the most typical Paceart System scenario in use today. In this scenario, there is one Paceart System Application Server with a single SQL Server database containing the data from all of the client workstations. These workstations could be all within the same facility, sending the data across a local area network (LAN) or in different geographies, sending data on a wide area network (WAN).

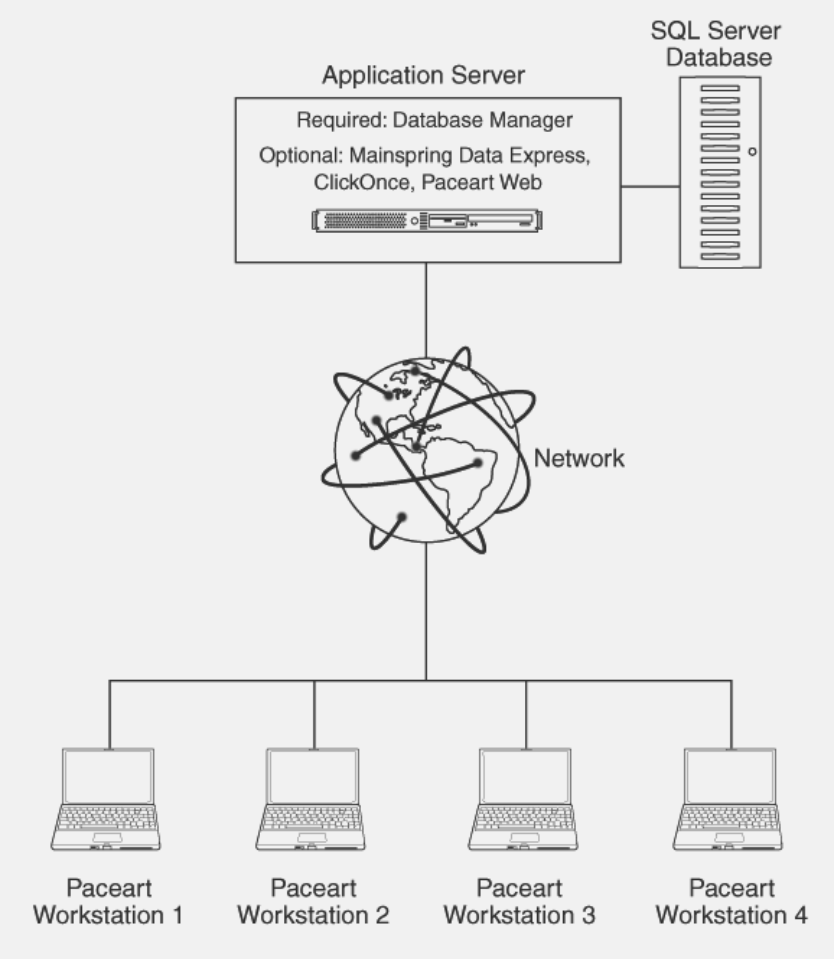
Pros of network configuration:

- This configuration has a low degree of complexity. There is only one database to maintain and no replication is needed.
- Centralized security and maintenance at the Application Server location, including a central repository for backups.
- Only one database needs updating if the database structure changes during a Paceart System upgrade.
- All patient data is stored in one database and is accessible from any client workstation on the LAN or WAN.

Cons of network configuration:

- No local copy of data if LAN or WAN fails.
- Higher bandwidth requirements as individual client workstations are saving all data, including large encounters with multiple episodes, EGMs, and ECG strips, across the LAN or WAN.
- If you are not using ClickOnce, client software upgrades must be upgraded across multiple client workstations simultaneously.
- Queries must contain extra criteria if client workstations only want to see local patients instead of all patients on the network.

While you can connect multiple instances of the Paceart System client to the same Paceart System Application Server, you must have a separate database for each instance of an Application Server. The following diagram shows a typical Paceart System network configuration including which components can be installed on the application server. The Application Server and SQL Server Database can be hosted on the same workstation.



Multiple Database Configuration

This configuration is for clinic settings that run the Paceart System on multiple databases. For example, your clinic could have separate databases for arrhythmia and pacemaker patients or adult and pediatric patients. Your clinic could also want a separate database for testing purposes. If you want to connect to multiple databases from a Paceart System workstation, install a separate Application Server for each database.

Use the ClickOnce installation method to connect to multiple databases on a single client workstation. You can be logged in to only one instance of the Application Server and one database at a time from a workstation.

Database Replication

This configuration is for clinic settings that run the Paceart System on a single, distributed database. Using replication, you can distribute data to remote or mobile users over a local area network, dial-up connection, or the Internet. Replication also allows you to enhance application performance, physically separate data based on how it is used, or distribute database processing across multiple servers. For example, your clinic could have users that want to use replication as a means of backup to an alternate computer.

Recommended Windows settings

Use the recommended Windows settings for the best view of the Paceart Optima System user interface.

The Paceart Optima System user interface is best viewed using the Windows Classic theme and the default text size. You can configure these options in the **Personalization** section of the **Control Panel**.

Configuring Internet Information Services (IIS)

Internet Information Services (IIS) is a Web server application and set of feature extension modules created by Microsoft for use with Microsoft Windows. IIS must be configured before installing the Paceart System.

The version of IIS installed on your workstation varies depending on which Windows operating system your workstation is running. You must have administrative rights on the computer to configure IIS. There are unique instructions to configure IIS for each version of Windows.

Configuring Internet Information Services (IIS) for Windows Server 2008 and Windows Server 2008 R2

Before you install the Paceart System, configure Internet Information Services (IIS).

1. Open **Server Manager**.
   The **Server Manager** window is displayed.
2. On the **Manage** menu, click **Add roles and features**.
   The **Add Roles and Features Wizard** is displayed.
3. Click **Next** to select the roles to install.
4. Select **Role-based or feature based installation** and click **Next**.
5. On the **Select Server Roles** window, select the **Application Server** and **Web Server (IIS)** check boxes.
6. Click **Add Features**.
7. Click **Next**.
8. Select the destination server and click **Next**.
9. On the Select features window, click **Next**.
10. Click **Next**
11. On the **Select Role Services** window for the Application Server, select the **Web Server (IIS) Support**.
12. Click **Add Features**.
13. Click **Next**.
14. Click **Next**.
15. On the **Select Role Services** for the Web Server, click **Next**.
16. On the **Confirm Installation Selections** window, click **Install**.
17. Click **Close**.

Internet Information Services (IIS) is configured on your computer.

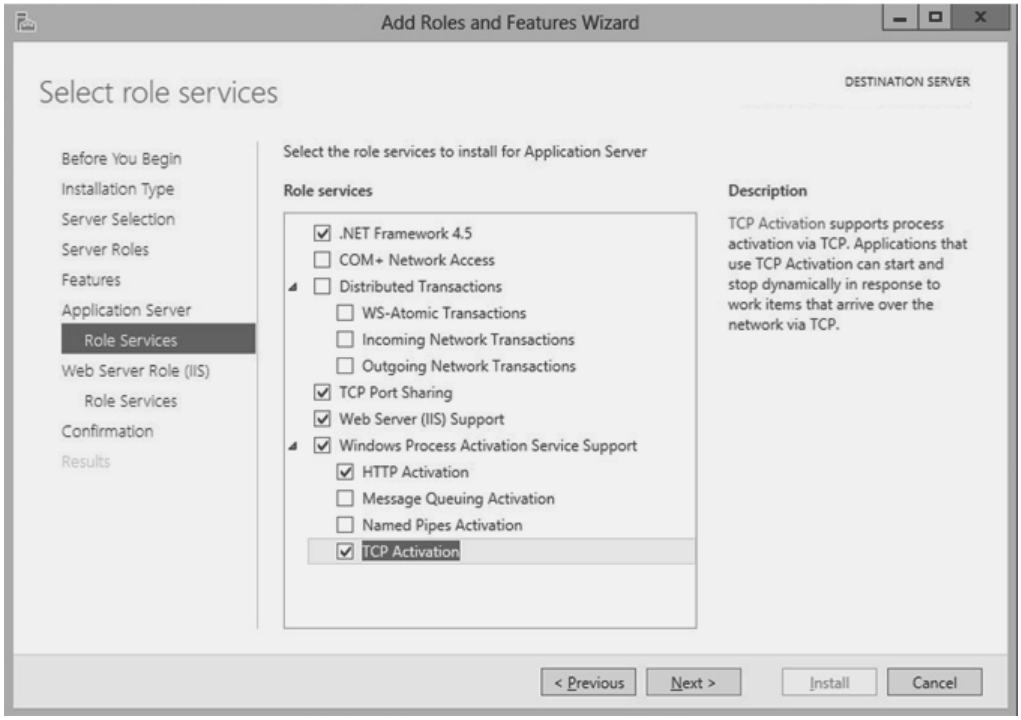
Configuring Internet Information Services (IIS) for Windows Server 2012 and Windows Server 2012 R2

Before you install the Paceart System, configure Internet Information Services (IIS).

1. Open **Server Manager**.
   The **Server Manager** window is displayed.

2. In the Quick Start box on the dashboard, click **Add roles and features**.
3. On the **Select installation type** page, select **Role-based or feature-based installation** and click **Next**.
4. On the **Select destination server** page, choose **Select a server from the server pool**, then select the server name from the Server Pool list and click **Next**.
5. On the **Select Server Roles** page, select **Application Server**.
6. Click **Next**.
7. On the **Select features** page, select the following options and then click **Next**.
   - Under **.NET Framework 3.5 Features**, select **.NET Framework 3.5** and **HTTP Activation**.
   - Under **.NET Framework 4.5 Features**, select **.NET Framework 4.5** and all options for **WCF Services**.
   - Under **Windows Process Activation Service**, select all options.
8. Click **Next**.
9. On the **Select role services** page, select the following role services for the Application Server:
   - **.NET Framework 4.5**
   - **Web Server (IIS) Support**
   - Under **Windows Process Activation Service Support**, select **HTTP Activation** and **TCP Activation**.

   Note: Accept any additional items that are suggested when you select the server role options.

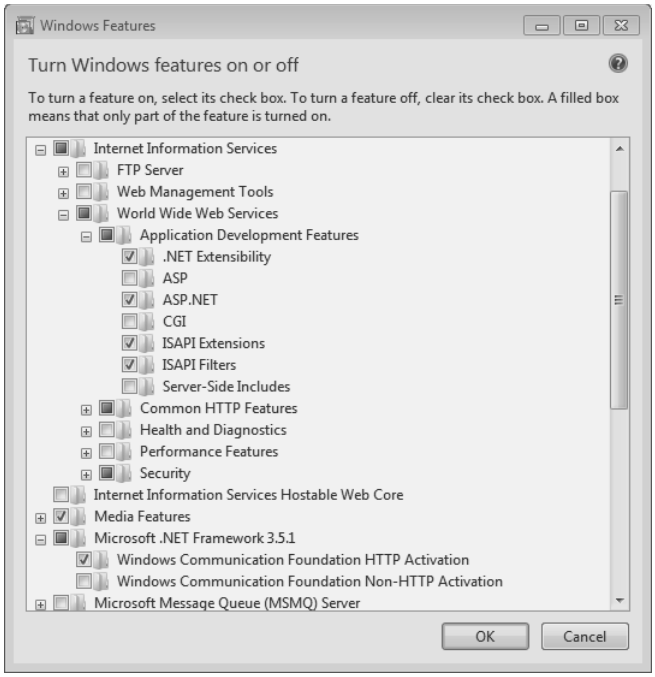


10. Click **Next**.
11. On the **Confirm installation selections** page, click **Install**.
12. Click **Close** when the installation completes successfully.

Configuring Internet Information Services (IIS) for Windows 7

Before you install the Paceart System, configure Internet Information Services (IIS). During this process, Windows may prompt you for a Windows setup disk.

1. Click **Start** > **Control Panel**.
2. Click **Programs** > **Programs and Features**.
3. Click **Turn Windows features on or off**.
4. On the **Windows Features** window, click **Internet Information Services** > **World Wide Web Services** > **Application Development Features** and select the **ASP.NET** check box.



5. Select and expand **Microsoft .NET Framework 3.5.1** and then select **Windows Communication Foundation HTTP Activation**.
6. Click **OK**.

Internet Information Services (IIS) is configured on your computer.

Configuring Internet Information Services (IIS) for Windows 8.1

Before you install the Paceart System, configure Internet Information Services (IIS). During this process, Windows may prompt you for a Windows setup disk.

1. Select **Settings** > **Control Panel**
2. Click **Programs** > **Programs and Features**
3. Click **Turn Windows features on or off**.
4. On the **Windows Features** window, select and expand **.NET Framework 3.5** and then select **Windows Communication Foundation HTTP Activation**.

5. Expand **Internet Information Services** > **World Wide Web Services** > **Application Development Features** and then select **ASP.NET 3.5**.
6. Click **OK**.

Installing the Paceart Optima System Database Manager

Install the Paceart Optima System Database Manager to control the creation, maintenance, and use of your Paceart System databases.

If you have a Paceart Optima System customization installed, uninstall it before installing a new version of the Paceart Optima System Database Manager software. For more information on uninstalling customizations, refer to *Uninstalling Paceart Optima Customizations*.

If you plan to use Database Manager for replication and publications, you must have a standard or full version of SQL Server installed on your system before installing Database Manager. Systems containing subscriptions to the publishing system can still use express versions of SQL Server, but only with like versions. For example, a system using SQL Server 2012 with Express Service Pack 1 can only subscribe to a publication hosted on SQL Server 2012 Standard Edition with Service Pack 1, not SQL Server 2008 Standard Edition.

If the Database Manager installer does not detect a supported version of SQL Server installed on your system, you will be given the option to install a supported version of SQL Server Express. The version depends on your operating system. Also, you are given the option to install the SQL Server Management Objects for your SQL Server version.

1. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.

2. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
3. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
4. Click **Next**.
5. Click **Next**.
6. On the **Paceart Installer Configuration** window, select **Database Manager** and click **Next**. The **Paceart Database Manager - InstallShield Wizard** window is displayed.
7. Click **Next**.
8. If you have a supported version of SQL server installed, you will be asked to install the SQL Server Managements Objects for that version. If you don't have a version supported version of SQL Server installed, you will be asked to install SQL Server Express. Click **Install** to install.
9. Click **Next**.
10. Click **Install**.
11. Click **Finish** to exit the Paceart System Database Manager installer.

Paceart Optima System Database Manager is installed on your computer.

Starting the Paceart System Database Manager

Use the **sa** (System Administrator) login when using the Paceart System Database Manager. Many of the features require this login.

This icon is used in this topic.

Icon	Description
	Connect

1. Double-click the Paceart System Database Manager icon on the desktop to display the **Connect to SQL Server** login screen.
2. Select the SQL Server instance to which you want to connect.
   - Select from the most recently used servers in the drop-down list.
   - Click the **Browse** button to pick from a list of all SQL Servers known to be running on your network or aliased using the **SQL Server Client Network Utility**.
3. Select either Windows Authentication or SQL Server Authentication to connect. Your choice depends on how your SQL Server DB is set up and what access rights you have. There is no difference as far as Paceart System Database Manager is concerned.
4. If you chose SQL Server Authentication enter your login name and password. The login name defaults to "sa" but it can be changed to any SQL user.
5. Click **OK**.

You are now connected to the instance of the SQL server that you selected. If you need to login to a different instance of SQL Server while you are using Paceart System Database Manager click the **Connect** icon in the upper left corner of the screen. This will display the **Connect to SQL Server** login screen again.

Creating a Paceart System Database

Paceart System databases hold patient data. The New Database Wizard takes you through the steps to create a new Paceart System database. You will name your new database, specify where it is stored, and set its initial size. You must be a member of the System Administrators server role on the SQL Server to use this function.

1. Login to the Database Manager.

2. Double-click **New Database**.
3. Click **Next**.
4. Enter a name for the database.

   It defaults to "Paceart_Database". The next database defaults to "Paceart_Database_#1". The number will increase by one for each new database.
5. Enter the database location. We recommend that you accept the default value.
6. Click **Next**.
7. Specify the initial size of the database between 50 MB and 2,000 MB. If you exceed the initial size of the database it will grow in increments of 50 MB . You can estimate the size of your database according to the size of your patient population or you can select the initial size of your database.

   - If you select the option to estimate the size based on your patient population, enter the number of Pacemaker patients and the number of arrhythmia patients, and then click **Next**.
   - If you select the option to select the size, slide the bar to the appropriate size.
8. Click **Next**.
9. Review your choices.

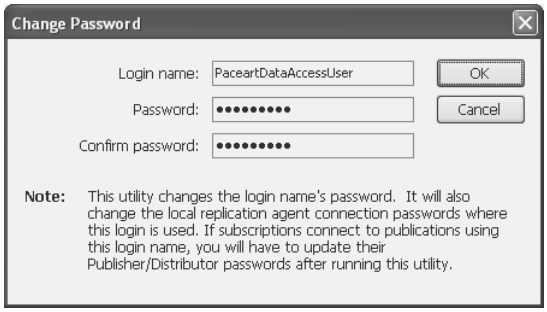
   - Click **Next** if they are accurate.
   - Click **Back** if you need to return to a previous screen to change a value.

   It may take several minutes for the wizard to create the database and initialize the database structure.
10. Click **Finish**.

Updating the password for PaceartDataAccessUser

You can update the password for PaceartDataAccessUser in Database Manager. The PaceartDataAccessUser is automatically created when you create a new Paceart System database and is used to connect to the Application Server.

1. Log in to Paceart System Database Manager.
2. Click **Tools** > **Change Password**.
   The **Change Password** window is displayed.
3. Enter **PaceartDataAccessUser** in the **Login name** field.

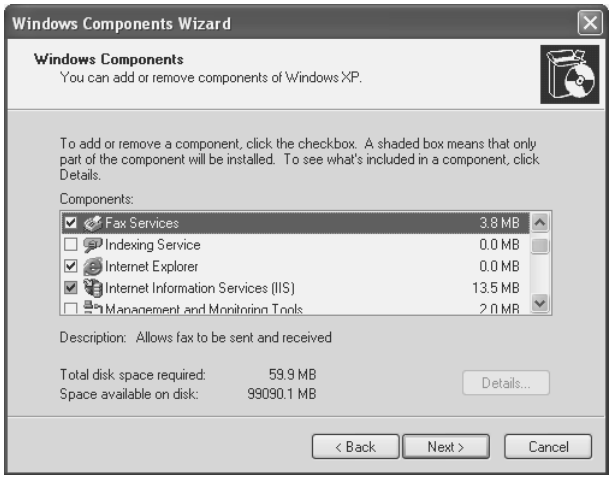


4. Enter a new password in the **Password** and **Confirm Password** fields.
5. Click **OK**.
   A message is displayed stating that the password was successfully changed.
6. Click **OK**.

Configuring Fax Services and Message Queuing

Fax Services and Message Queuing need to be configured before installing the Paceart System Messaging Service. Windows may prompt you for a Windows setup disk during this process.

1. Click **Start**.
2. Click **Control Panel**.
3. Double-click **Add or Remove Programs**.
4. Click **Add/Remove Windows Components**.
5. On the **Windows Component Wizard** window, check if the **Fax Services** and **Message Queuing** check boxes are selected.
   - If both check boxes are selected, Fax Services and Message Queuing are already configured. Click **Cancel** and continue the Paceart System installation.
   - If one or both of the check boxes are not selected, select them and click **Next**.



6. Click **Finish**.

Fax Services and Message Queuing are configured on your computer.

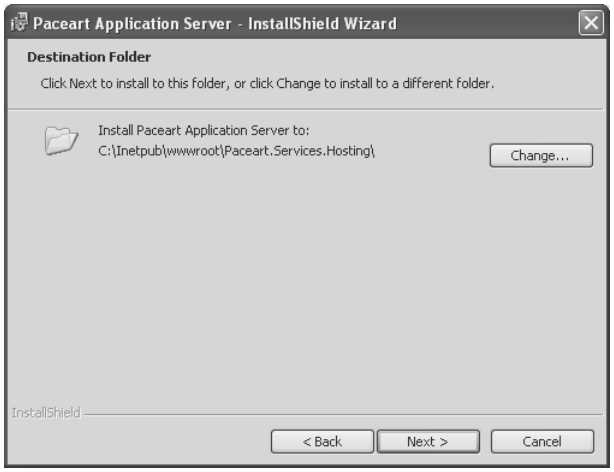
Installing the Paceart Optima System Application Server, Messaging Service, and Online Help

Install the Paceart Optima System Application Server to centralize security and maintenance for the Paceart System in one location. The Messaging Service is used by the Paceart System to send email, fax, and pager messages. It also allows you to work with the CardioVoice System. The Paceart System Online Help provides context-sensitive help throughout the Paceart System application.

If you have a Paceart Optima System customization installed, uninstall it before installing a new version of the Paceart Optima System Application Server software. For more information on uninstalling customizations, refer to *Uninstalling Paceart Optima Customizations*.

You must have Internet Information Services (IIS) configured before installing the Application Server.

1. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.
2. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
3. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
4. Click **Next**.
5. Click **Next**.
6. On the **Paceart Installer Configuration** window, select **Application Server** and click **Next**. The Application Server progress bar is displayed.
7. When the Application Server progress bar completes, click **Next** on the **Paceart Application Server - InstallShield** window.
8. Select a destination folder for the Application Server. Click **Change** to change from the default location.



9. Click **Next**.
10. Select the database server you are installing to.

- If you are installing to a local database, select the database server from the list.
- If you are installing to a remote database, enter either the database server name or the IP address.

- If you are installing to a Citrix Server database, enter the IP address.

11. Enter the password for PaceartDataAccessUser that you assigned in Database Manager in the **Password** field.
12. Click **Browse** next to the **Name of database catalog** field.
13. Browse to the desired catalog and click **OK**.
    The selected catalog is displayed in the **Name of database catalog** field.
14. Click **Next**.
15. In the **Configuration** section, select whether to use the machine name or a manual configuration for the Application Server. A manual configuration can be an IP address or a full machine name including domain. If you do not use a Domain Name System (DNS), select **Manual** and enter the IP address.

16. In the **Port Number** section, enter a port number. We recommend port number 333 for the Paceart System. If you are using SessionSync, enter a port number other than 443 because SessionSync uses that port.
17. Click **Next**.
18. Select a destination folder for the Paceart System Messaging Service. Click **Change** to change from the default location.

19. Click **Next**.
    If you do not have all the necessary components installed for the Paceart System Messaging Service, a warning message is displayed. Click **Next** to continue the installation.

20. Select a destination folder for the Paceart System Online Help. Click **Change** to change from the default location.

21. Enter the port number you want to use for the Paceart System Online Help in the **Port Number** field. The default port number is 2782.
22. Click **Next**.
23. Click **Install**.
24. Click **Finish** to exit the Paceart Optima System Application Server installer.

The Paceart Optima System Application Server, Messaging Service, and Online Help are installed on your computer.

Installing SSL Certificates

A Secure Socket Layer (SSL) certificate identifies the Paceart System as a trusted source and ensures transactions between the Application Server and the Paceart System application are secure. An SSL certificate must be installed before installing the Paceart System client.

The approach used to install the SSL certificate on your workstation varies depending on which Windows operating system your workstation is running. You must have administrative rights on the computer to install SSL certificates.

Installing an SSL Certificate for Windows 7 and Windows Server 2008

Install an SSL certificate using Internet Information Systems (IIS) before installing the Paceart System client.

You must have Internet Information Services (IIS) configured before installing an SSL certificate. Install the Medtronic Root Certificate, which is automatically installed with the Application Server, before installing an SSL Certificate.

1. Click **Start**.
2. Right-click **Computer** and click **Manage**.
   The **Computer Management** window is displayed.
3. On the **Computer Management (Local)** menu, click **Services and Applications** > **Internet Information Services**.
4. In the **Connections** section, double-click **Server Certificates**.
5. In the **Actions** section, click **Create Certificate Request**.

The **Request Certificate** window is displayed.

6. Enter the machine name or IP address you selected when installing the Application Server in the **Common name** field. Enter any other geographical information as necessary.
7. Click **Next**.
8. Select **2048** on the **Bit length** list.
9. Click **Next**.
10. Change the name of the certification request file to "certreq.mcertreq" in the **File name** field. If you want to store the file in a different location, click the **[...]** button, navigate to that location, and then click **Save**.
11. Click **Finish**.
12. Send your certificate request file to Medtronic Certification Support. When you receive a certificate file back, save the file and rename it "Cert.cer".
13. Click **Start**.
14. Right-click **Computer** and click **Manage**.
    The **Computer Management** window is displayed.
15. On the **Computer Management (Local)** menu, click **Services and Applications** > **Internet Information Services**.
16. In the **Connections** section, double-click **Server Certificates**.
17. In the **Actions** section, click **Complete Certificate Request**.

    The **Complete Certificate Request** window is displayed.
18. Click the **[...]** button to browse to where you saved the Cert.cer file. Select the file and click **Open**.
19. Enter a name for the certificate in the **Friendly name** field.
20. Click **OK**.
21. In the **Connections** section of the **Computer Management** window, click **Default Web Site**.
22. In the **Actions** section, click **Bindings**.
    The **Site Bindings** window is displayed.
23. Click **Add**.
    The **Add Site Binding** window is displayed.
24. Select **https** on the **Type** list.
25. Enter the port you entered when installing the Application Server in the **Port** field.
26. Select the name you entered for the SSL certificate on the **SSL certificate** list.
27. Click **OK**.

Installing an SSL Certificate for Windows Server 2008 R2

Install an SSL certificate using Internet Information Systems (IIS) before installing the Paceart System client.

You must have Internet Information Services (IIS) configured before installing an SSL certificate. Install the Medtronic Root Certificate, which is automatically installed with the Application Server, before installing an SSL Certificate.

1. Click **Start** > **Administrative Tools** > **Internet Information Services (IIS) Manager**.
   The **Internet Information Services (IIS) Manager** window is displayed.
2. Double-click on the name of the server and then click on **Server Certificates**.
   The **Server Certificates** pane is displayed.
3. Click **Create Certificate Request**.
   The **Request Certificate** window is displayed.
4. Enter the machine name or IP address you selected when installing the Application Server in the **Common name** field. Enter any other geographical information as necessary.
5. Click **Next**.

6. Select **2048** from the **Bit length** list.
7. Click **Next**.
8. Change the name of the certification request file to "certreq.mcertreq" in the **File name** field. If you want to store the file in a different location, click the **[...]** button, navigate to that location, and then click **Save**.
9. Click **Finish**.
10. Send your certificate request file to Medtronic Certification Support. When you receive a certificate file back, save the file and rename it "Cert.cer".
11. Click **Start** > **Administrative Tools** > **Internet Information Services (IIS) Manager**.
    The **Internet Information Services (IIS) Manger** window is displayed.
12. Double-click on the name of the server and then click on **Server Certificates**.
    The **Server Certificates** pane is displayed.
13. In the **Actions** section, click **Complete Certificate Request**.
    The **Complete Certificate Request** window is displayed.
14. Click the **[...]** button to browse to where you saved the Cert.cer file. Select the file and click **Open**.
15. Enter a name for the certificate in the **Friendly name** field.
16. Click **OK** to install the certificate on the server.
17. In the **Connections** section of the **Computer Management** window, click **Default Web Site**.
18. In the **Actions** section, click **Bindings**.
    The **Site Bindings** window is displayed.
19. Click **Add**.
    The **Add Site Binding** window is displayed.
20. Select **https** on the **Type** list.
21. Enter the port you entered when installing the Application Server in the **Port** field.
22. Select the name you entered for the SSL certificate on the **SSL certificate** list.
23. Click **OK**.

Your SSL certificate is installed.

Installing an SSL Certificate for Windows Server 2012 and Windows Server 2012 R2

Install an SSL certificate using Internet Information Systems (IIS) before installing the Paceart System client.

You must have Internet Information Services (IIS) configured before installing an SSL certificate. Install the Medtronic Root Certificate, which is automatically installed with the Application Server, before installing an SSL Certificate.

1. Click **Start**.
2. On the **Start** menu, type **Computer Management** in the **Search** box.
3. Click **Computer Management** in the search results.
   The Computer Management window opens.
4. Expand **Services and Applications**.
5. Select **Internet Information Services (IIS) Manager**.
   Options for the IIS Manager are listed in the content area on the right side of the screen.
6. Select the server name under **Connections**, then double-click **Server Certificates**.
7. Under **Actions** on the left side of the screen, click **Create Certificate Request**.
   The **Request Certificate** window is displayed.
8. Enter the machine name or IP address you selected when installing the Application Server in the **Common name** field. Enter any other geographical information as necessary.
9. Click **Next**.
10. Select **2048** from the **Bit length** list.
11. Click **Next**.

12. Change the name of the certification request file to "certreq.mcertreq" in the **File name** field. If you want to store the file in a different location, click the **[...]** button, navigate to that location, and then click **Save**.
13. Click **Finish**.
14. Send your certificate request file to Medtronic Certification Support. When you receive a certificate file back, save the file and rename it "Cert.cer".
15. Click **Start** > **Administrative Tools** > **Internet Information Services (IIS) Manager**.
    The **Internet Information Services (IIS) Manger** window is displayed.
16. Double-click on the name of the server and then click on **Server Certificates**.
    The **Server Certificates** pane is displayed.
17. In the **Actions** section, click **Complete Certificate Request**.
    The **Complete Certificate Request** window is displayed.
18. Click the **[...]** button to browse to where you saved the Cert.cer file. Select the file and click **Open**.
19. Enter a name for the certificate in the **Friendly name** field.
20. Click **OK** to install the certificate on the server.
21. In the **Connections** section of the **Computer Management** window, click **Default Web Site**.
22. In the **Actions** section, click **Bindings**.
    The **Site Bindings** window is displayed.
23. Click **Add**.
    The **Add Site Binding** window is displayed.
24. Select **https** on the **Type** list.
25. Enter the port you entered when installing the Application Server in the **Port** field.
26. Select the name you entered for the SSL certificate on the **SSL certificate** list.
27. Click **OK**.

Your SSL certificate is installed.

Installing an SSL Certificate for Windows 8.1

Install an SSL certificate using Internet Information Systems (IIS) before installing the Paceart System client.

You must have Internet Information Services (IIS) configured before installing an SSL certificate. Install the Medtronic Root Certificate, which is automatically installed with the Application Server, before installing an SSL Certificate.

1. Click **Start** > **Search** and search for "Administrative Tools".
2. Click **Computer Management**
3. In the **Connections** section, double-click **Server Certificates**.
4. In the **Actions** section, click **Create Certificate Request**.
   The **Request Certificate** window is displayed.
5. Enter the machine name or IP address you selected when installing the Application Server in the **Common name** field. Enter any other geographical information as necessary.
6. Click **Next**.
7. Select **2048** on the **Bit length** list.
8. Click **Next**.
9. Change the name of the certification request file to "certreq.mcertreq" in the **File name** field. If you want to store the file in a different location, click the **[...]** button, navigate to that location, and then click **Save**.
10. Click **Finish**.
11. Send your certificate request file to Medtronic Certification Support. When you receive a certificate file back, save the file and rename it "Cert.cer".
12. Click **Start**.
13. Right-click **Computer** and click **Manage**.

The **Computer Management** window is displayed.

14. On the **Computer Management (Local)** menu, click **Services and Applications** > **Internet Information Services**.
15. In the **Connections** section, double-click **Server Certificates**.
16. In the **Actions** section, click **Complete Certificate Request**.
    The **Complete Certificate Request** window is displayed.
17. Click the **[...]** button to browse to where you saved the Cert.cer file. Select the file and click **Open**.
18. Enter a name for the certificate in the **Friendly name** field.
19. Click **OK**.
20. In the **Connections** section of the **Computer Management** window, click **Default Web Site**.
21. In the **Actions** section, click **Bindings**.
    The **Site Bindings** window is displayed.
22. Click **Add**.
    The **Add Site Binding** window is displayed.
23. Select **https** on the **Type** list.
24. Enter the port you entered when installing the Application Server in the **Port** field.
25. Select the name you entered for the SSL certificate on the **SSL certificate** list.
26. Click **OK**.

Installing the MSI Client

You can install the MSI Client to run the Paceart Optima System on an individual workstation.

If you have a Paceart Optima System customization installed, uninstall it before installing a new version of the MSI Client software. For more information on uninstalling customizations, refer to *Uninstalling Paceart Optima Customizations*.

1. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.
2. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
3. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
4. Click **Next**.
5. Click **Next**.
6. On the **Paceart Installer Configuration** window, select **MSI Client** and click **Next**.
   The Paceart Optima System progress bar is displayed.
7. When the Paceart Optima System progress bar completes, click **Next** on the **Paceart Optima System - InstallShield Wizard** window.
8. Select a destination folder. Click **Change** to change from the default location.

9. Click **Next**.
10. In the **Application Server Location and Port Number** field, enter the machine name or IP address and port number of the machine that is hosting the Application Server. We recommend port number 333 for the Paceart System. The format is [machine name/IP address]:[port number]. For example, if the machine name is Paceart01 and the port number is 333, enter "Paceart01:333". If you did not specify a port number when installing the Application Server, enter the machine name only. If you are installing the Paceart Optima System Client on a Citrix Server, enter the IP address.

11. Enter the same port number you entered when installing the Online Help in the **Online Help Port Number** field. The default port number is 2782.
12. Enter an instance name in the **Paceart Instance Name** field. If you have more than one Paceart System installed, this name is used to identify which instance of the system you are using.
13. Click **Next**.
14. Click **Install**.
15. Click **Finish** to exit the Paceart Optima System installer.

Installing Paceart ECG

Install Paceart ECG to add the ability to capture and view ECG traces from an external device in the Paceart System.

The ECG components needed by Paceart Web and CardioVoice are installed with the Application Server installation. Installing Paceart ECG allows you to capture and store ECG strips. You can view and edit ECG strips with an MSI client without installing Paceart ECG, but you cannot record ECG strips without installing Paceart ECG. You must install Paceart ECG to view, edit, or record ECG strips from a ClickOnce client. ECG hardware must be connected to record ECG strips.

1. Disconnect any Paceart ECG hardware that is connected to a USB port on the installation computer.
2. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.
3. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
4. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
5. Click **Next**.
6. Click **Next**.
7. On the **Paceart Installer Configuration** window, select **ECG** and click **Next**.
   The **Paceart ECG Installer - InstallShield Wizard** window is displayed.
8. Click **Next**.
9. Click **Install**.
10. A software installation warning may be displayed. If you receive the warning, click **Continue Anyway**.
11. When the "Please attach your device to this computer any time after the installation has finished" message dialog box opens, click **OK**.
12. Click **Finish** to exit the Paceart ECG installer.
13. Connect the Paceart ECG hardware's USB module to one of the USB ports on the installation computer. The light on the USB module indicates whether the installation computer has recognized the hardware.
    - The light blinks and then turns on when the USB module is recognized. Paceart ECG has been successfully installed and is ready for use with your ECG hardware.
    - The light blinks, turns off, and then repeats that sequence indefinitely when the USB module is not recognized. You may need to update the installation computer's BIOS settings to work with the ECG hardware's USB module. BIOS settings are highly variable based on the computer's hardware and operating system. For assistance updating BIOS settings, refer to the Paceart System Community Portal or contact Paceart support.

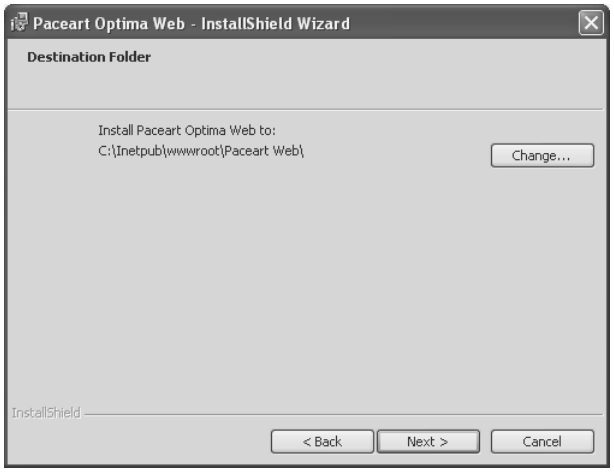
Installing Paceart Web

Install Paceart Web to access Paceart System reports through an easy-to-use Web interface.

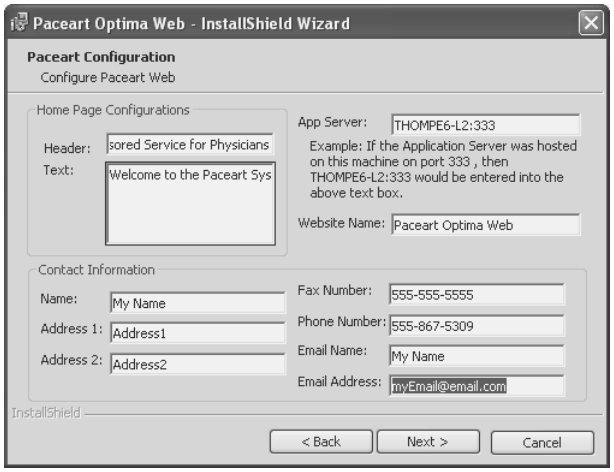
You must have Internet Information Services (IIS) configured before installing Paceart Web.

Install Paceart Web on the same machine that you installed the Application Server. If you want to view reports with ECG information in Paceart Web, install Paceart ECG on the same machine as you installed Paceart Web and the Application Server.

1. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.
2. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
3. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
4. Click **Next**.
5. Click **Next**.
6. On the **Paceart Installer Configuration** window, select **Paceart Web** and click **Next**.
   The Paceart Optima System Web progress bar is displayed.
7. When the Paceart Optima System Web progress bar completes, click **Next** on the **Paceart Optima Web - InstallShield Wizard** window.
8. Select a destination folder. Click **Change** to change from the default location.



9. Click **Next**.
10. On the **Paceart Configuration** window, enter any configuration and contact information you want for Paceart Web.



11. In the **App Server** field, enter the machine name and port number of the machine that is hosting the Application Server. We recommend port number 333 for the Paceart System. The format is [machine

name]:[port number]. For example, if the machine name is Paceart01 and the port number is 333, enter "Paceart01:333". If you did not specify a port when installing the Application Server, enter the machine name only.

12. Click **Next**.
13. Click **Install**.
14. Click **Finish** to exit the Paceart Optima System Web installer.

CardioVoice Installation

CardioVoice is a TTM assistant that works with the Paceart System to provide unattended service and receive patient ECG transmissions over a phone line.

To install and use the CardioVoice software, you must install and configure a dialogic board and its associated drivers.

Installing the Dialogic D/4PCI and D/4PCIU Boards

Install a Dialogic Board to the computer that uses CardioVoice.

1. Unplug the electrical supply to the computer.
2. Remove the outside computer cover. Refer to computer owner's manual for instructions on removing the cover.
3. Identify where existing boards are installed.
4. Insert the Dialogic Board into an open PCI slot and secure it with the included mounting screws. Avoid over-handling the board because electrostatic shock could damage the board.
5. Replace the computer cover.
6. Reconnect the electrical supply to the computer.
7. Turn on the computer power .
8. After starting up your computer, the **Found New Hardware** window may appear. Click **Cancel**.

Installing the driver

Install the drivers for the dialogic board to work with CardioVoice.

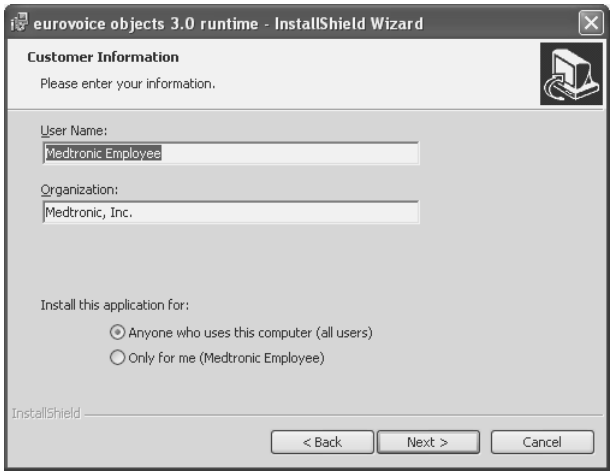
1. Open the installation USB on your computer.
2. Open the `Resources\Dialogic Board Driver\SR 6.1 for Windows` directory.
3. Double-click on **setup.exe**.

Installing CardioVoice Software

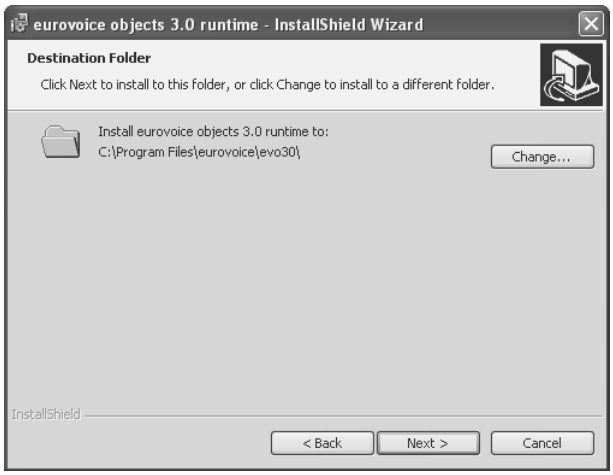
You can install CardioVoice to automatically fax, page, or email a physician when a patient calls into the CardioVoice system.

1. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.
2. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
3. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
4. Click **Next**.

5. Click **Next**.
6. On the **Paceart Installer Configuration** window, select **CardioVoice** and click **Next**.
7. Determine which action to take.
   - If you do not have the Eurovoice Objects toolkit installed and configured, it is displayed as a prerequisite. Click **Install**.
   - If you have previously installed and configured the Eurovoice Objects toolkit, go to Step 23.
8. Click **Next**.
9. On the **License Agreement** window read the license terms and click **I accept the terms in the license agreement** if you agree to the terms.
10. Click **Next**.
11. Enter your name and organization in the **User Name** and **Organization** fields.

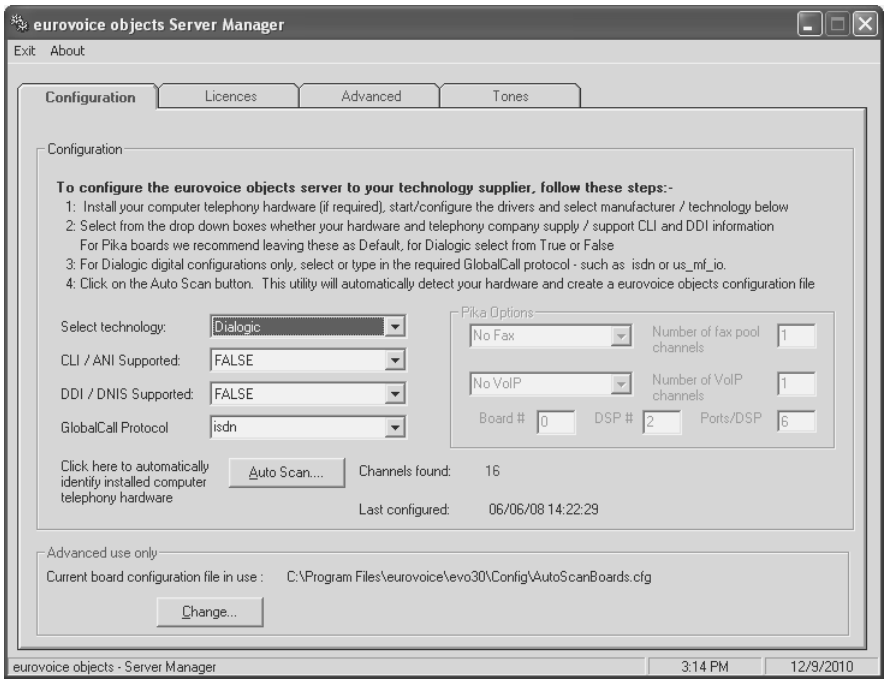


12. In the **Install this application for** field, select **Anyone who uses this computer (all users)**.
13. Click **Next**.
14. Select a destination folder for the Eurovoice Objects toolkit. Click **Change** to change from the default location.



15. Click **Next**.
16. Click **Install**.

17. Click **Finish**.
    The Eurovoice Object toolkit is installed and the **Paceart CardioVoice - InstallShield Wizard** window is displayed.
18. Open the folder where you installed the Eurovoice Object toolkit.
19. Double-click the `evoServerManager.exe` file.



    The **eurovoice objects Server Manager** window is displayed.
20. In the **Select technology** list, click **Dialogic**.
21. Click **Auto Scan** to identify the Dialogic Board automatically.
22. Click **Exit** to close the Server Manager.
23. Return to the **Paceart CardioVoice - InstallShield Wizard** window and click **Next**.
24. Select a destination folder. Click **Change** to change from the default location.

25. Click **Next**.

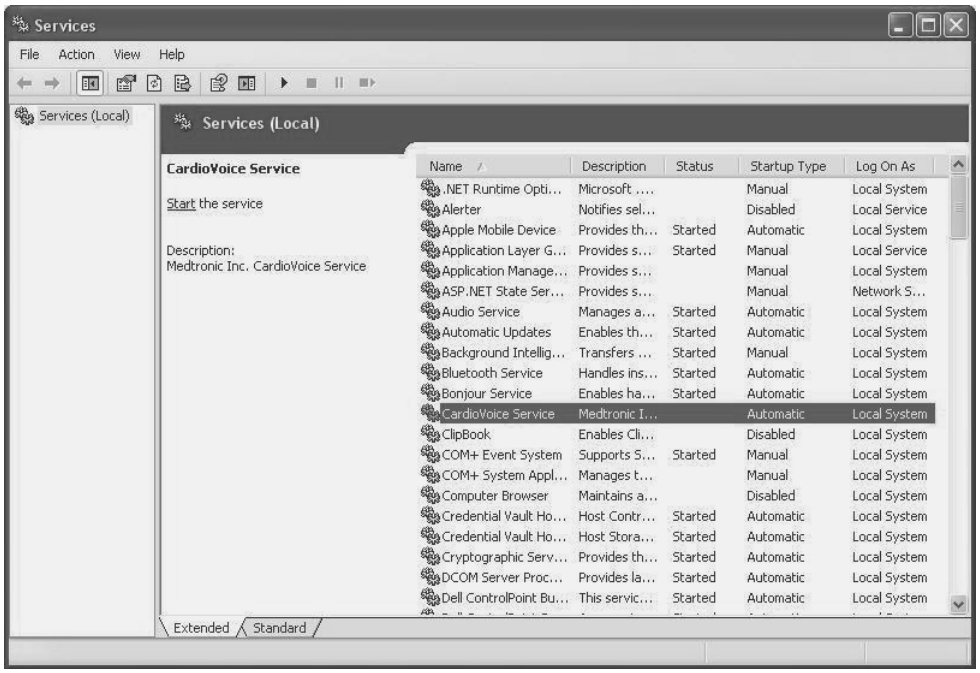
26. In the **Application Server Location and Port Number** field, enter the machine name and port number of the machine that hosts the Application Server. For example, if the machine name is Paceart01 and the Application Server is hosted on port 333, you would enter "Paceart01:333". We recommend port number 333 for the Paceart System. If you did not enter a port number when installing the Application Server, do not enter a port number.

27. Enter the same port number you entered when installing the Online Help in the **Online Help Port Number** field. The default port number is 2782.
28. Click **Next**.
29. Click **Install**.
30. Click **Finish** to exit the CardioVoice installer.

Disabling the EVO 3.0 message window

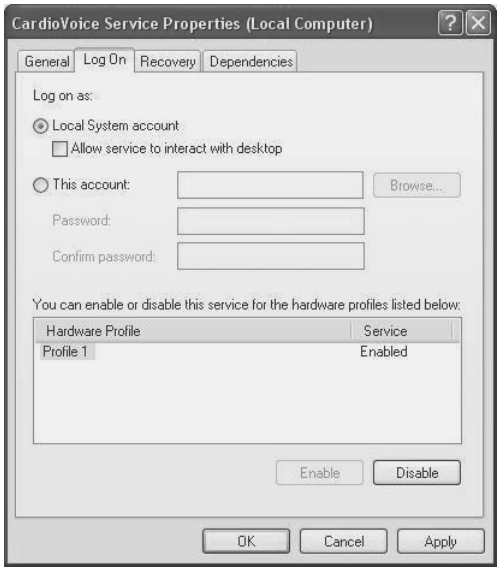
You can disable the EVO 3.0 message window that is frequently displayed while running CardioVoice.

1. Click **Start**.
2. Click **Control Panel**.
3. Double-click **Administrative Tools**.
4. Double-click **Services**.



The **Services** window is displayed.

5. Double-click **CardioVoice Service**.
   The **CardioVoice Service Properties** window is displayed.
6. Click the **Log On** tab.



7. To disable the EVO 3.0 message window, clear the **Allow service to interact with desktop** check box.
8. Click **Apply**.
9. Click **OK**.

Configuring Dialogic Drivers for Dialogic D/4PCI and D/4PCIU boards

You can configure your dialogic drivers for use with CardioVoice with the Dialogic Configuration Manager.

1. Click **Start** > **Programs** > **Dialogic System Software** > **Dialogic Configuration Manager**.
2. Click **Connect**.
   The Dialogic Configuration Manager begins the process of detecting the device.

3. In the **Configured Devices** window, you should see the device number and TDM Bus. At the top of the window, click **Service**, then **Startup Mode**, and then click **Automatic**.
4. Click the  button to start the configuration process.
5. When the process is complete, **System Status = Running** is displayed at the bottom of the window.
6. Close the Dialogic Configuration Manager.

Simulating a CardioVoice call

After you have created a test patient, call into CardioVoice and record a test ECG for that patient.

1. Start the CardioVoice phone line in the CardioVoice Administration application.
2. Dial into CardioVoice by calling the phone number that is connected to the Dialogic board.
3. When prompted, enter your test CardioVoice ID number "1111".
4. When prompted, send an ECG or whistle into the phone to simulate an ECG.
5. Exit the CardioVoice call or hang up.
   A new event is displayed in the **Call Log** section of the main **CardioVoice** window.
6. Open the test patient in the Paceart System.
7. Click the **Encounters** tab and select the new encounter.
8. Click the **ECGs** tab.
   If you are able to open and view the ECG, you have properly installed the CardioVoice software.

Installing the ClickOnce Server

ClickOnce allows you to install the Paceart Optima System client from the Application Server. It is a delivery mechanism that installs the latest version of the Paceart System client from the Application Server onto a workstation.

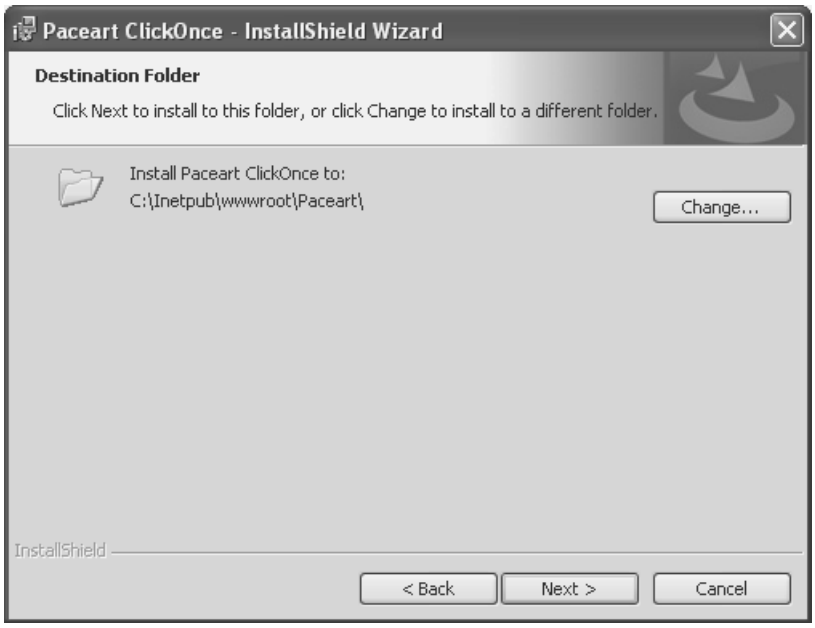
If you have a Paceart Optima System customization installed, uninstall it before installing a new version of the ClickOnce Server software. For more information on uninstalling customizations, refer to *Uninstalling Paceart Optima Customizations*.

Before installing the ClickOnce Server, you must have the following features installed on the Application Server:

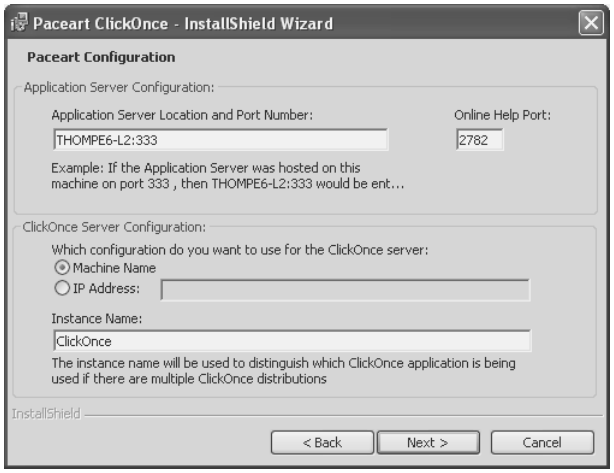
- Paceart Optima Database Manager
- MSXML 4.0
- Windows Installer 4.5
- .Net Framework version 4.5.2
- Internet Information Services (IIS) 5.0 or greater

1. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.
2. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
3. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
4. Click **Next**.
5. Click **Next**.
6. On the **Paceart Installer Configuration** window, select **ClickOnce Server** and click **Next**.
7. Click **Next**.

8. Select a destination folder. Click **Change** to change from the default location.



9. Click **Next**.
10. In the **Application Server Location and Port Number** field, enter the machine name or IP address and port number of the machine that is hosting the Application Server. We recommend port number 333 for the Paceart System. The format is [machine name/IP address]:[port number]. For example, if the machine name is Paceart01 and the port number is 333, enter "Paceart01:333". If you did not specify a port when installing the Application Server, enter the machine name only. If you are installing the ClickOnce Server on a Citrix Server, enter the IP address.



11. Enter the same port number you entered when installing the Online Help in the **Online Help Port** field. The default port number is 2782.
12. In the **Which configuration do you want to use for the ClickOnce server** field, select **Machine Name** or **IP Address**. If you are installing ClickOnce on a virtual machine or a Citrix Server, select **IP Address** and enter the IP address.
13. Enter an instance name in the **Instance Name** field. If you have more than one ClickOnce server installed, this name is used to identify which instance of ClickOnce you are using.

14. Click **Next**.
15. Click **Install**.
16. Click **Finish** to exit the Paceart System ClickOnce installer.

Installing the ClickOnce Client Prerequisites

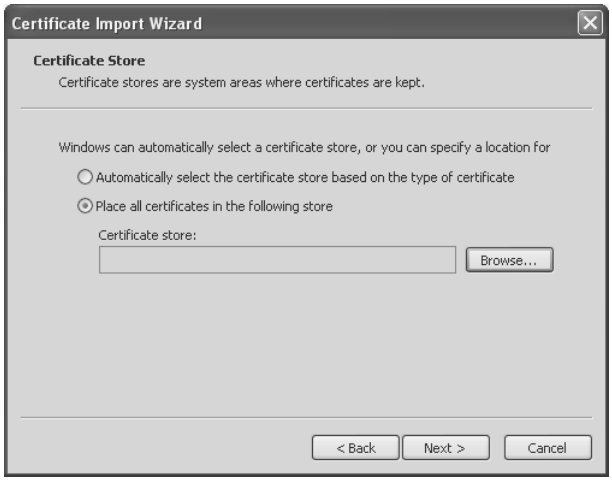
You must install and configure prerequisites on each client before you can install the Paceart System client from the ClickOnce Server.

Make sure that the ClickOnce Server was installed on a computer that is on your network and is accessible from the client computer.

1. Open the Paceart System ClickOnce webpage. The page is located at http://<Computer name or IP address>/Paceart/publish.htm, where <Computer name or IP address> is the computer name or IP address of the computer where the ClickOnce server was installed (often the application server but could be different).
2. Install Windows Installer version 4.5.
   a) Click **Windows Installer 4.5** to install.
   b) Click **Run**.
   Windows Installer version 4.5 is installed.
3. Install Microsoft .Net framework version 4.5.2.
   a) Click **Microsoft .Net 4.5.2** to install.
   b) Click **Run**.
   Microsoft .Net framework version 4.5.2 is installed.
4. If you want to record or view ECGs on this client, then click **ECG Components** to install the necessary components.
   a) Click **Run**.
   The Paceart ECG Installer launches.
   b) Click **Next**.
   c) Click **Install**.
   d) Click **Finish**.
5. Click **Medtronic SSL Root Certificate**. A root certificate is required in order for the SSL certificate provided by Medtronic to be considered trusted by your browser.
   The **File Download - Security Warning** window is displayed.
6. Click **Open**.
   The **Certificate** window is displayed.
7. Click **Install Certificate**.

The **Certificate Import Wizard** window is displayed.

8. Click **Next**.
9. Select **Place all certificates in the following store** and click **Browse**.



The **Select Certificate Store** window is displayed.

10. Select **Trusted Root Certification Authorities** and click **OK**.

11. Click **Next**.
12. Click **Finish**.
    A message is displayed that the import was successful.
13. Click **OK**.

14. Click **OK**.

Installing the Paceart System Client from the ClickOnce Server

You can install the Paceart System application from the ClickOnce Server webpage. You do not need administrative privileges to install the client.

Before installing the Paceart System, make sure you have installed the prerequisites from the ClickOnce webpage.

1. Open the Paceart System ClickOnce webpage. The page is located at http://<Machine Name or IP Address>/Paceart/publish.htm where <Machine Name or IP Address> is the machine name or IP Address of the machine where the ClickOnce server was installed (often the application server but could be different).
2. Click **Launch Paceart Application**.

After the installation, a shortcut is placed in your **Start** menu. You can use that shortcut to launch the Paceart System instead of going to the ClickOnce webpage.

Installing Paceart Optima System Analytics Export

The Paceart Optima System with Analytics Export allows you to manage the export of XML data from the Paceart Optima System. The Paceart Optima System Analytics Export can be configured to send XML data to an external folder automatically for integration into external systems, such as LUMEDX cardiovascular information systems.

Additional information

The online help provides additional information about the features and functionality of the Paceart Optima System Analytics Export. To access the online help click the "?" and select an active field.

This manual supplements the information supplied with your Paceart Optima System. For additional information on the Paceart Optima System, refer to the instructions for use provided with the software.

Installation

Determining the location of the Paceart Application Server

You need to identify which server has the Paceart Application Server installed on it. You can determine where your Paceart Application Server is installed from either the Paceart MSI Client computer or the Paceart ClickOnce Server.

1. Open the **Control Panel**.
2. Select either **Add or Remove Programs** or **Paceart ClickOnce** from the list.
3. Select either **Paceart Optima System** or **Paceart ClickOnce** from the list.
4. Click **Change** or **Modify**.
5. Click **Next**.
6. On the **Program Maintenance** window, select **Modify**.
7. Click **Next**.
8. The Paceart Application Server location is displayed on the **Paceart Configuration** window. Note the location and then click **Cancel**.
9. Click **Cancel**.
10. Click **Finish**.

Determining if the Paceart Optima System has a valid Analytics Export license

Before you begin, verify that your Paceart Optima System has a valid Analytics Export license. From within the Paceart Optima client user interface, click **Administration** > **License Management** > **License Key** and verify that Analytics Export is enabled.

Installation overview

You can install the Paceart Optima System Analytics Export components in any order. Depending on your Paceart Optima System configuration, you may not need to install all of the components.

Any prerequisites are automatically installed during the installation process.

Installing the Paceart Optima System Analytics Export application

You can install the Paceart System Analytics Export application user interface and associated Windows service on any workstation.

If you have a Paceart Optima System customization installed, uninstall it before installing a new version of the Paceart Optima System Analytics Export application. For more information on uninstalling customizations, refer to *Uninstalling Paceart Optima Customizations*.

Note: If you are not running Microsoft .NET Framework 4.5.2, the installer installs it automatically.

1. Insert the Paceart System installation USB drive to start the installation wizard. If your workstation has the Autorun feature disabled, navigate to the USB and then double-click **setup.exe**.
2. If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
3. On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
4. Click **Next**.
5. Click **Next**.
6. On the **Paceart Installer Configuration** window, select **Paceart Analytics Export** and then click **Next**. The **Paceart Analytics Export - InstallShield Wizard** window is displayed.
7. Click **Next**.
8. Click **Install** to start the installation.
9. Click **Finish** to exit the Paceart System Analytics Export installer.

The Paceart Analytics Export application is installed in the **Program Files** > **Medtronic** > **Paceart Analytics Export** folder.

The Windows service associated with the Paceart Analytics Export application is called **Paceart Analytics Service**. By default, the service is set to an **Automatic** start-up type. This service is required to implement automatic export activities on the configured export schedule.

Configuration

Configuring Paceart Optima System Analytics Export

After you have installed the application and its components, you need to configure the application for your system.

Server Connection

On the **Server Connection** tab, configure the connection to the Paceart Application Server. In the Paceart Optima client, create an External System Account user with **Patient Encounters View Data** permissions. For more information on how to add users to your Paceart Optima System, refer to the Administration section of the Paceart Optima System online Help.

To test the connection to the server, click **Test Connection**.

Run Options

The **Run Options** tab allows you to configure basic options and view the **Paceart Analytics Service** status. Configure your system to run the export continuously or based on a schedule. If you select to run the export based on a schedule, you need to configure the schedule on the **Schedule** tab.

Select the Paceart XML version that your Paceart Optima System supports, for example Paceart Optima System software version 1.7 supports Paceart XML version 11.0. Match the Paceart XML version to what your Paceart System uses in the **XML Version** field on the **Administration** > **Encounter Export** window. Also specify the export location.

The log file can be used for in-depth debugging. You can specify a location to save the log file and the retention time in days.

You can also use the **Max number of threads** field to configure the number of concurrent export tasks, or threads, you have running at the same time. Higher numbers of threads could negatively impact performance observed by other users interacting with the system.

Export Filtering

The **Export Filtering** tab allows you to configure which encounters to export. If your clinic does not use the **Signed** or **Locked** options in Paceart, you can configure the **Editable, not updated for X days** option to prevent exporting encounters that are still being edited.

Schedule

If you selected the **Run tool based on Schedule** options on the **Run Options** tab, you can configure the schedule here. A scheduled day and time makes up a scheduled run time. You can have up to 20 scheduled run times. The export start and stop time is relative to whichever workstation you are running the Paceart Optima System Analytics Export on.

Export Log

The **Export Log** tab allows you to search for exported encounters by encounter date, exported date, and export status. The export log allows you to troubleshoot export problems or mismatches.

Audit Log

The **Audit Log** tab allows you to create and configure an audit log file. It is intended to be used by administrators of the external system that is consuming the exported encounters to perform an audit. The audit log ensures that all exported data has been imported into the external system. To ensure the accuracy of exported data, you should perform a periodic audit.

To troubleshoot export issues, use the **Encounter keys to re-export** feature. Cut and paste or enter specific encounter keys to be re-exported. This list comes from the audit that is performed against the external system.

Server Connection tab

This is a list of fields and buttons and their definitions.

Fields and buttons	Definitions
Application Server	Enter your Paceart Application Server host name and port (optional). If you do not define a port, the standard https port (443) is used.
Username	Enter the username of the Paceart user that the export tool will use to access the Paceart Application Server. The Paceart user must have an External System Account and a role that includes the View Encounter permission.
Password	Enter the password for the Paceart user that the export tool will use to access the Application Server.
Test Connection	Click to test your connection to the Application Server.
Save and Exit	Click to save the changed values and exit the configuration.
Exit	Click to exit the configuration without saving changed values.

Run Options tab

This is a list of fields and buttons and their definitions.

Fields and buttons	Definitions
Run Tool Continuously	Select this option to run the tool continuously.
Run Tool Based on Schedule	Select this option to run the tool based on a schedule. Set the schedule on the **Schedule** tab.
XML version to export:	Select which version of the Paceart XML schema to export. The default value is 11.0.
Export Location:	Enter or click **Browse** to select the file export location.
Log File Location:	Enter or click **Browse** to select the log file location.
Log File Retention:	Select the log file retention time in days. The maximum log retention time is 30 days.
Max number of threads	Select the maximum number of concurrent export tasks to run at the same time. Select from 1 to 10. The more concurrent threads you have running may negatively impact the client user interface performance.
Service status:	Use the buttons to start or stop the Paceart Analytics Service Windows service. The service status is displayed. Statuses include:

Fields and buttons	Definitions
	• **N/A** - Cannot find the windows service on the local machine. • **Start Pending** - The service is starting. • **Pause Pending** - The service pause is pending. • **Continue Pending** - The service continue is pending. • **Stop Pending** - The service is stopping. • **Paused** - The service is paused. • **Running** - The service is running. • **Stopped** - The service is not running.
Start	Click to start the service. The service will operate based on the existing saved configuration.
Stop	Click to stop the service.
Save and Exit	Click to save the changed values and exit the configuration.
Exit	Click to exit the configuration without saving changed values.

Export Filtering tab

This is a list of fields and buttons and their definitions.

Fields and buttons	Definitions
Include encounters of these types:	Select which type(s) of Paceart encounters to include in the export. The following is the list of encounter types: • **Implant** • **In-Clinic** • **Remote** • **TTM** • **Programming** • **Miscellaneous** • **Phone Note**
Include encounters with these statuses:	Select which encounter status type(s) to include in the export. The following is the list of possible statuses: • **Signed** • **Locked** • **Editable, not updated for: 0-20 day(s)** The **Editable** value is configurable for the minimum number of days (0 to 20) since the last edit. This value is intended to be used with work flows that do not include locking or signing encounters. It allows you to

Fields and buttons	Definitions
	evaluate new encounters before they are exported. It is intended to avoid multiple versions being exported while edits are being made by clinicians. Only after an encounter has not been edited for the specified number of days will it be exported.
Encounters up to how many months old will be exported?	Select this option to create a rolling window from today back the selected number of months (1 to 96) to search for encounters to export. For large databases using a rolling window will result in better overall performance for inactive users of the system as well as export processing.
Encounters back to this date will be exported?	Select this option to create a specific date to search back to for encounters to export. Over time the number of encounters to be searched will increase as more encounters are added to the system. This option is intended for initial exports, smaller data sets, and systems that are performing data clean up where data that is years old may be updated.
Save and Exit	Click to save the changed values and exit the configuration.
Exit	Click to exit the configuration without saving changed values.

Schedule tab

This is a list of fields and buttons and their definitions.

Fields and buttons	Definitions
Add to Schedule	Select the day(s) to export the data.
Export Start Time:	Select the time to start the export. This time corresponds to the time of the computer the Paceart Analytics Service is running on.
Export Stop Time:	Select the time to stop the export. This time corresponds to the time of the computer running the Paceart Analytics Service.
Add to Schedule	Click to add selected day(s) and time(s) to the current schedule.
Current Schedule	The current export schedule is displayed. To remove a scheduled export day and time, select the entry and click **Remove Selected**.
Remove Selected	To remove a scheduled export day and time, select the entry and click **Remove Selected**.

Fields and buttons	Definitions
Save and Exit	Click to save the changed values and exit the configuration.
Exit	Click to exit the configuration without saving changed values.

Export Log tab

This is a list of fields and buttons and their definitions.

Fields and buttons	Definitions
Encounter Date	Select to search the export log list by the Paceart encounter date.
Exported Date	Select to search the list by the date the encounter was exported from Paceart.
Start Date/Time:	Select the search start date and time.
End Date/Time:	Select the search end date and time.
Export Status	Select to filter on the export status. Export Status values include: • **Error + Success** • **Success** • **Error**
Search	After you have defined your search criteria, click to start the search.
Removed Selected	To remove an entry from the export log, select the search criteria you would like to exclude from the search, and then click **Remove Selected**. This action will force the re-export of the encounters that have been removed. The re-export will occur the next time the encounter export processing runs. Encounters are exported based on encounter date, newest encounter date to oldest encounter date.
Search results	The search results grid contains the most recent search results. Click **Search** to update the results.
Save and Exit	Click to save the changed values and exit the configuration.
Exit	Click to exit the configuration without saving changed values.

Audit Log tab

This is a list of fields and buttons and their definitions.

Fields and buttons	Definitions
Exported Date	The audit log will search for data by the date it was exported.
Start Date/Time:	Select the audit log start date and time.
End Date/Time:	Select the audit log end date and time.
Audit Log Location:	Enter location for the audit log. The audit log file name will be created using the following format: yyyy-mm-dd hh-mm.log The audit log is intended to be used by administrators of the external system that is consuming the exported encounters to perform an audit. The audit log can be used to ensure that all exported data has been imported into the external system.
Browse	Click to browse to the audit log location.
Create Audit Log	Click to perform the search and create the audit log in the specified location.
Encounter Keys to re-export	Cut and paste or enter specific Encounter Keys to be re-exported. This list comes from the audit that is performed against the external system.
Re-Export Encounters	Click to re-export the specific Encounter Keys you entered.
Status	When you create an audit log file the status is displayed. The status includes the file name and the number of results included in the log. When you enter specific Encounter Keys and click **Re-Export Encounters**, the Encounter Key is displayed with a status message, for example "Encounter is ready to export." If you have entered an invalid Encounter Key an error message is displayed, for example "Not a key".
Save and Exit	Click to save the changed values and exit the configuration.
Exit	Click to exit the configuration without saving changed values.

Configuring the Windows service for error conditions

You may want to configure your Paceart Optima System Analytics Export Windows service to handle certain error conditions. For example, if the Paceart Application Server is not available after a system restart, you may want to configure the service to restart automatically.

1. Open **Windows Services**.
2. Find **Paceart Analytics Service**, right-click on it and select **Properties**.
3. On the **Recovery** tab, change all failure categories to **Restart the Service**.
4. Click **OK**.

Installing the Paceart Optima System Client on Citrix Server

You can install the Paceart Optima System Client to run the Paceart Optima System on a Citrix Server.

If you have a previous version of Paceart Optima System or a Paceart Optima System customization installed, uninstall them before installing the Optima Client. For more information on uninstalling customizations, refer to *Uninstalling Paceart Optima Customizations*.

Before installing Paceart System components, download the most recent version of the Citrix Client. You do not need to install the Paceart Optima System Database Manager or Application Server on Citrix Server to install the Paceart Optima System Client on a Citrix Server.

Depending on the configuration and group policies of your Citrix Server, you could need special configurations or group permissions to perform the following tasks:

- Accessing the Citrix Server to view and open the Paceart Optima System Client
- Saving to a network drive, PC, floppy disk, or USB
- In-Clinic import from a network drive, PC, floppy disk, USB, or CD
- Exporting
- Printing
- Writing to log files

Contact your Citrix administrator for more information.

The use of Citrix Server is not supported for CardioVoice, Paceart Web, Paceart ECG, and TTM.

1. Open a command prompt on your Citrix Server. At the command prompt, enter **Change User /Install**.
2. Copy the entire installation folder from the installation USB to the Citrix Server.
3. In the installation folder, open the Paceart System installer by double-clicking `setup.exe`.
4. Install the Paceart Optima System Client.
   a) If there are any prerequisites that must be installed they are displayed in a list. Select and then click **Install** for each of the prerequisites. You may need to restart your computer depending on which prerequisites are installed.
   b) On the **License Agreement** window, read the license terms, then click **I accept the terms of the license agreement** if you agree to the terms.
   c) Click **Next**.
   d) Click **Next**.
   e) On the **Paceart Installer Configuration** window, select **MSI Client** and click **Next**.
   f) When the Paceart Optima System progress bar completes, click **Next** on the **Paceart Optima System - InstallShield Wizard** window.
5. When all installations are complete, open a command prompt on your Citrix Server. At the command prompt, enter **Change User /Execute**.
6. Publish the Paceart System application using the process your company normally uses. Contact your Citrix administrator for more information.
7. To access the Paceart System application, log in to your Citrix Client and double-click the Paceart Optima System logo.

Uninstalling Paceart Optima System Customizations

You can uninstall a Paceart System customization if you are installing a new version of the Paceart System software or want to remove the customization.

1. Click **Start**.
2. Click **Control Panel**.
3. Double-click **Add or Remove Programs**.
4. In the **Currently installed programs** window, select the customization you want to uninstall.
5. Click **Remove**.
6. Click **Yes** to confirm the uninstallation.

The customization is uninstalled.

Paceart System Database Manager

The Paceart System Database Manager is a tool for performing the most common tasks of creating and managing your Paceart System databases. This tool makes it easy to complete advanced database administration tasks through the use of wizards.

Some of the tasks performed by the Paceart System Database Manager could also be performed through other database management software such as Microsoft SQL Server Management Studio.

Starting the Paceart System Database Manager

Use the **sa** (System Administrator) login when using the Paceart System Database Manager. Many of the features require this login.

This icon is used in this topic.

Icon	Description
	Connect

1. Double-click the Paceart System Database Manager icon on the desktop to display the **Connect to SQL Server** login screen.
2. Select the SQL Server instance to which you want to connect.
   - Select from the most recently used servers in the drop-down list.
   - Click the **Browse** button to pick from a list of all SQL Servers known to be running on your network or aliased using the **SQL Server Client Network Utility**.
3. Select either Windows Authentication or SQL Server Authentication to connect. Your choice depends on how your SQL Server DB is set up and what access rights you have. There is no difference as far as Paceart System Database Manager is concerned.
4. If you chose SQL Server Authentication enter your login name and password. The login name defaults to "sa" but it can be changed to any SQL user.
5. Click **OK**.

You are now connected to the instance of the SQL server that you selected. If you need to login to a different instance of SQL Server while you are using Paceart System Database Manager click the **Connect** icon in the upper left corner of the screen. This will display the **Connect to SQL Server** login screen again.

Creating a desktop shortcut to the Paceart System Database Manager

You can create a desktop shortcut to the Paceart System Database Manager.

1. Right-click on your computer desktop.
2. Click **New** > **Shortcut**.
3. Enter the same path, filename, and switches that you used in the **Run** window. If you need to navigate to your location of PaceDatabaseManager.exe, click **Browse**.
4. Click **Next**.
5. Enter a name for the shortcut. It is helpful to name your shortcut with a name descriptive of the action you are performing.

   You can set common options using the command line interface in conjunction with a shortcut.
6. Click **Finish**.

Creating a Paceart System Database

Paceart System databases hold patient data. The New Database Wizard takes you through the steps to create a new Paceart System database. You will name your new database, specify where it is stored, and set its initial size. You must be a member of the System Administrators server role on the SQL Server to use this function.

1. Login to the Database Manager.
2. Double-click **New Database**.
3. Click **Next**.
4. Enter a name for the database.

   It defaults to "Paceart_Database". The next database defaults to "Paceart_Database_#1". The number will increase by one for each new database.
5. Enter the database location. We recommend that you accept the default value.
6. Click **Next**.
7. Specify the initial size of the database between 50 MB and 2,000 MB. If you exceed the initial size of the database it will grow in increments of 50 MB . You can estimate the size of your database according to the size of your patient population or you can select the initial size of your database.

   - If you select the option to estimate the size based on your patient population, enter the number of Pacemaker patients and the number of arrhythmia patients, and then click **Next**.
   - If you select the option to select the size, slide the bar to the appropriate size.
8. Click **Next**.
9. Review your choices.

   - Click **Next** if they are accurate.
   - Click **Back** if you need to return to a previous screen to change a value.

   It may take several minutes for the wizard to create the database and initialize the database structure.
10. Click **Finish**.

Deleting a database

You can delete a Paceart System database from within the Database Manager application. You cannot reverse this action once the database is deleted.

This icon is used in this topic.

Icon	Description
	Delete

1. Login to the Database Manager.
2. Select the database that you want to delete by double-clicking on the database icon.
3. Click the **Delete** icon.
   A warning message is displayed.
4. Click **Yes** to permanently delete the database or **No** to cancel the delete operation.

SQL Server Integration Services (SSIS)

Database Manager contains a Run SSIS Package Wizard that lets you select and run the Microsoft SQL Server Integration Services package.

Running SQL Server Integration Services (SSIS)

Select and run the Microsoft SSIS package from within Database Manager.

1. Open Database Manager.
2. Connect to SQL Server.
3. Double-click the **Run SSIS** icon to start the wizard.
   The **Run SQL Server Integration Services Wizard** window is displayed.
4. Click **Next** to display the **Specify the SSIS package** window.
5. Search for and select the file that contains the SSIS package, and then click **Next**.
6. Select the way that you want to run the SSIS package, and then click **Next**.
7. If needed, update the connection managers, and then click **Next**.
8. If necessary, change any SSIS package variables in the list, and then click **Next**.
9. Click **Next** to execute the SSIS package.
10. When the execution of the package has finished, click **Finish**.
    The Paceart System completes the process.

Publications

A publication is a set of data that is configured and created by a member of the System Administrators server role on the SQL Server, and then is stored on an SQL Server that is set up to be a publisher. When you create a publication you can configure it to publish all data or a limited amount of filtered data. Once published, this data is available to other computers through subscriptions. Creating a publication is one of the steps in setting up replication. You cannot create publications when you are using SQL Server Express Edition.

When you are creating a new publication there are a variety of options you can configure that define the publication file and filter the data so that you can specify what information it will contain. Filtering data is useful in reducing the amount of unnecessary information in your publication and reduces the amount of time needed for synchronization since less data is sent across your network when the client and server synchronize.

Patient status code and patient code filters

Use this option when you want to create a new publication with data filtered on both the patient status code (**Status** field) and the patient code (**Code** field) within the Paceart System. You can enter a filter condition for each of the 4 codes. You need to enter separate filter values for each code.

ECG Strip filter

Use this filter to specify whether or not you want to publish ECG strips. You can select **All strips** to publish all of the ECG strip data, **No strips** to not publish ECG strip data, or **Front page strips only** to publish only the 6-second strips.

If your client is on a slow network or does not have a large amount of free disk space, you may want to consider not publishing the ECG strip data unless it is critical that the client see ECG strip data. Not publishing ECG strip data will cut down on the amount of time needed to synchronize the data between the client and server.

Large Data Field filters

Use this filter to exclude data items that can make up a significant size of the database.

Auditing filter

Use this filter to specify if you want to include the data stored in the audit log in the publication.

The audit log can become large, and may not need to be published. It can also contain personally identifiable information in the database and should not be included if your subscribers are restricted in viewing information in the database such as name, address, and phone number.

Even though you do not include auditing data in your publication, you can still capture your subscriber's audit data if auditing is enabled on both the publication and subscription databases. Whether or not you choose to publish your auditing information, audit data from your subscribers will be transferred back to the publisher if auditing is enabled.

Name the Publication

Use this option to give the publication a unique descriptive name that makes it easy to understand what it contains. By default, the Paceart System names the publications sequentially based on the number of publications currently existing in the database.

Snapshot Location

Use this option to specify the location to store the initial snapshot of the published data. The snapshot data is used when a new subscription is created in order to give the subscriber an initial set of data from the publisher. This option is only shown the first time a publication is created on a given SQL Server. All subsequent publications will use the location that you specify.

The **Snapshot Location** must be specified in UNC (universal naming convention) format. For example, use \\ServerName\ReplData, where the `D:\Program Files\Microsoft SQL Server\MSSQL\ReplData` directory on the ServerName computer is shared as 'ReplData'.

If your publication has a large amount of data and your subscribers will be connecting over a slow network connection, you may choose to copy the contents of the snapshot folder to external media and send the media to your subscribers. When your subscribers initialize their subscription to your publication, they have the option of pulling the snapshot data over the direct connection on the network, or loading from a snapshot folder location, for example a CD-ROM drive.

Distributor Replication Agent Login

Use this option to select the login used for your distribution database to connect to your publication database on your Publication/Distribution computer. If your operating system is Windows 7 then you must use Windows authentication.

Select **Impersonate the SQL Server Agent Account of the Publisher** if you want to use the Windows Authentication of the current login properties of the SQL Server Agent service on the Publisher server.

Select **Use SQL Server Authentication** if you want to use a specific SQL Server authenticated login on the SQL Server containing the distribution database. You will have to specify the login name, password, and confirm

the password for the account you wish to use. This account must exist as a login on the Publication/Distribution SQL Server.

After you create your publication you must give your subscribers a login and password to use when connecting to the Publisher/Distributor database. When the subscription is created using the wizard this information must be provided. You must make sure that this login has access to both the Distribution and Publication databases.

Setting up a new publication

You can use the new publication wizard to create a new Paceart System publication. The publication allows other computers to gain access to patient data stored in the current Paceart System database. You can define the patients that will be published, whether to publish ECG strips or CardioVoice data, and whether to publish auditing data. Once you have defined your new publication you can give it a unique name and save it.

Login to Database Manager and open the database in which you want to create a new publication.

1. Double-click the **Publications** icon.
2. Double-click the **New Publication** icon to open the new publication Welcome window.
3. Click **Next**.
   The **Status and Patient Code Filters** window is displayed. You can filter on patient status and patient codes.
4. Enter a patient code or status code to identify the patients that can be published. The code must be in the patient's record for the patient to be published. You can enter a filter condition for each of the 4 codes. You need to enter separate filter values for each code.
5. Click **Next**.
   The **ECG Strip Filter** is displayed.
6. Click the option that describes the ECG strips that you want to publish, and then click **Next**.
7. Remove the check mark from any of the large data fields that you **do not** want to publish. Limiting the number of data fields in the publication may significantly reduce the size of the publication.
8. Click **Next**.
9. Place a check in the check box if you want to include auditing data, and then click **Next**.
10. Give a unique and descriptive name to your publication. When there are multiple publications on the same server that have the same name it gives confusing results in the Synchronization History dialog.

    For example, if you are creating a publication for patients with a status of "A" and the publication contains no ECG strips, a descriptive name could be "Patients with Status=A, No ECGs".

    Best practice is to use an underline to represent a space so that there are no spaces in the name. For example, "Patients_with_Status=A,_No_ECGs".

11. Click **Next**.
    The **Create Publication** window is displayed showing you the tasks that the wizard will perform to create your publication.
12. Review the attributes that you selected for your publication.

    - If any are incorrect or if you want to add an attribute, click **Back** to return to a previous window.
    - If everything is correct, click **Next**.

    The Paceart System starts creating your publication. The amount of time it takes to create your publication is determined by how large the data set is.
13. Click **Finish** to complete the wizard.

    You will perform the next series of steps only if you have not defined a snapshot location.
14. Select the directory where the initial snapshot of the published data will be stored. The snapshot must be stored in a Windows shared directory that will be visible from all subscribing computers.

    This option is only shown the first time a publication is created on a given SQL Server. All subsequent publications will use the location that you specify.

15. To share the directory, open Windows Explorer and navigate to the location of your snapshot.
16. Right-click the folder and select **Sharing**.
17. Click **Share this folder**.
    After you have shared the folder, it will appear when you click the **[...]** button.
18. Click **Next**.
    The **Distributor Replication Agent Login** window will display if your SQL Server has not yet been set up to act as a distributor and publisher participating in replication.
19. Select the login used for your distribution database to connect to your publication database on your Publication/Distribution computer.

    If your operating system is Windows 7 then you must use Windows authentication.
20. Click **Next**.
21. Review your configuration selections.
22. Click **Next**.
    Depending on the size of your Paceart System database and the speed of your database server, publication creation can take several minutes or hours. If you wish to manually copy the snapshot data to external media to transfer to remote computers, click the shortcut.
23. Click **Finish**.

After you create your publication, you must give your subscribers a login and password to use when connecting to the Publisher/Distributor database. You can do this by either giving your subscribers a specific SQL Server login, or by changing the login properties of the SQL Server Agent to an account that has access to the Publication and Distribution databases. When the subscription is created using the **Paceart System New Subscription Wizard** this login information must be provided.

Maintaining existing publications

You can display synchronization and conflict information for an existing publication to see if you need to do any maintenance to the publication.

Select the icon of an existing publication in the Paceart System Database Manager to display the following publication information.

Publication Information	Description
ECGs	Shows if the publication has been set to publish **all ECG strips**, **no ECG strips**, or **front-page ECG strips only**.
Patient Codes	Shows the filters applied to the patient code field, or **All** if no filter is applied to this publication.
Status	Shows the filters applied to the status code field, or **All** if no filter is applied to this publication.
CardioVoice	Shows whether or not the publication has been configured to publish CardioVoice recordings.
Attachments	Shows whether or not the publication has been configured to publish attachments.
Provider Signatures	Shows whether or not the publication has been configured to publish provider signatures.
Programmer Import Files	Shows whether or not the publication has been configured to publish programmer import files.
Auditing Data	Shows whether or not auditing data is included in the publication.

Subscriptions

You can access the options to create and manage subscriptions through the **Subscriptions** wizard. You can specify a server that contains published data, specify which publication to exchange data with, and specify how to obtain an initial snapshot of the data. This feature is only available when the user logged into the Paceart System Database Manager is a member of the System Administrators server role on the SQL Server.

Subscriptions are set up on database servers to receive replicated data that has been published on a remote database server. Subscribers can make changes to the data that is propagated back to the publishers using the replication that is offered in the Paceart System Database Manager wizards.

Choose Publishing Server window

Options on this window allow you to specify the server that contains the publication that you wish to subscribe to. You need to specify the connection properties to connect to the Publication server. This connection information is not stored permanently in your subscription; it is only used to return a list of publications.

Choose Publication window

Options on this window allow you to select the publication from the Publishing database. The list shows all of the available and valid publications to which the subscriber can subscribe. You can see all of the publication attributes in the window on the right side.

Initialize Subscription window

Options on this window allow you to specify whether the subscription needs to be loaded with an initial snapshot of the published data, and if so, how to initialize the publication data on the subscribing computer.

Before a new subscriber can receive incremental changes from a publisher, the subscriber's database must contain tables with the same schema and data as the tables in the publication's database. The initial snapshot contains the complete initial database, including tables and data.

When setting up a new subscription, it is possible to load the initial snapshot into the subscriber's database manually instead of sending it over a network. This is done if the publication is very large or the network bandwidth is very small.

Sometimes it is more efficient to copy the initial snapshot to a tape or other storage device, express courier the external media to the subscriber, and reload the database instead of sending it over a slow network connection.

These are your choices.

- **Initialize the data directly from the publisher**: The initial snapshot is sent over the established connection directly from the snapshot folder on the publisher. This option should be selected if there is a fast network connection between the subscriber and publisher, or there is only a small amount of patient data being published.
- **Initialize the data from a bulk copy of the initial snapshot**: Select this option if the initial snapshot has already been copied to the subscribing computer and is available locally on the computer. This option should be used if there is a slow network connection between the publisher and subscriber and there is a large amount of patient data being published. In this case, the user will need to specify the location of the snapshot folder by clicking the **[...]** button.
- **Do not initialize the subscription, the subscriber already has the data**: Select this option if the publishing and subscribing databases are initially the same, or if the initial snapshot of the published data has already been imported into the subscribing database by other means. This option is for advanced users only. If the publishing and subscribing databases do not contain the same data or schema the first time synchronization is run, the databases will not synchronize properly.

Subscriber Login window

Options on this window allow you to specify the permanent connection properties of the subscription to the subscription database. This connection is used during synchronization. These are your choices.

- **Impersonate the SQL Server Agent Account of the Subscriber**: This option will use the Windows Authentication of the current login properties of the SQL Server Agent service on the subscription server.
- **Use SQL Server Authentication**: Use this option to use a specific SQL server authenticated login on the SQL server containing the subscription database. You will have to specify the login name, password, and confirm the password for the account you wish to use. This account must exist as a login on the subscription SQL server.

Publisher/Distributor Login window

Options on this window allow you to specify the permanent connection properties of the subscription to the publication and distribution databases. This connection is used during synchronization. These are your choices.

Impersonate the SQL Server Agent Account of the Publisher/Distributor: This option will use the Windows Authentication of the current login properties of the SQL Server Agent service on the publication/distribution server.

Use SQL Server Authentication: Use this option to use a specific SQL server authenticated login on the SQL server containing the publication and distribution databases. You will have to specify the login name, password, and confirm the password for the account you wish to use. This account must exist as a login on the publication/distribution SQL server.

Creating and configuring a new subscription

A subscription lets a computer exchange data with a publication of a database on a remote computer.

You must have a publication configured before you can configure a subscription. You can only have one subscription created on each database. If you already have a subscription created for the selected database the **New Subscription** icon will be disabled.

Login to Database Manager and open the database in which you want to create a new subscription.

1. Double-click the **New Subscription** icon.
2. Click **Next**.
3. Select the publishing server that contains the publication. If necessary, click the **[...]** button for a list of SQL Servers running on your network.
4. Select how you want to connect to your database.
    - If you want to connect using Windows Authentication, select **Windows Authentication**. This option is available for all supported operating systems.
    - If you want to connect using SQL Server Authentication, select **SQL Server Authentication**. You must also specify a **Login Name** and **Password** for a valid login on the publication SQL Server.
5. Click **Next**.
6. Select a publication from one of the databases on the selected server, and then click **Next**.
7. Select one of the options on the **Initialize Subscription** window, and then click **Next**.
8. Select one of the options on the **Subscriber Login** window, and then click **Next**.
9. Select one of the options on the **Publisher/Distributor Login** window. The Paceart System Database Manager assumes that the publication database and distribution database are contained on the same physical SQL server. If you have a Remote Distributor you must use Microsoft SQL Server Management Studio.
10. Click **Next** through to the end of the wizard.
11. Click **Finish**.

After initial synchronization, you must perform the following steps in order to create unique Paceart System generated Patient IDs on a subscribing database. The ID will be whatever the prefix entered is, plus an incremental number starting with 10000000. Failure to do these steps could result in conflicts in Patient IDs.

a) Open SQL Server Management Studio.
b) Click **New Query**.
c) Select the subscribing Paceart System database.
d) In the query window run the command `Exec Paceart.UpdateSystemIDPrefix 'xxx'` where xxx is an up to 3 character prefix that is unique to the subscriber.

Maintain existing subscriptions

The Paceart System Database Manager gives you the ability to maintain existing subscriptions. You can use the **Synchronize Subscription** window options to synchronize your subscription with the publication. For more information on synchronization, refer to the SQL Server Synchronization section in the Database Replication chapter.

You can use the **Publisher Login** option to update your password for the connection to the Publisher/Distributor.

From this window you can change the logins that the subscription uses to connect to the distribution and publication databases. The Paceart System Database Manager assumes that the publication database and distribution database are contained on the same physical SQL Server. If you have a Remote Distributor you must use Microsoft SQL Server Management Studio.

Select one of the following:

- **Impersonate the SQL Server Agent Account of the Subscriber**: Select this option to use the Windows Authentication of the current login properties of the SQL Server Agent service.
- **Use SQL Server Authentication**: Select this option to use a specific SQL Server authenticated login on the SQL Server containing the publication and distribution databases. You will have to specify the login name, password, and confirm the password for the account you wish to use. This account must exist as a login on the publication/distribution SQL server.

Maintaining existing subscriptions

You can use the Paceart Database Manager to maintain existing subscriptions by synchronizing your subscription with the publication and updating your password for the connection to the Publisher/Distributor if your publisher has changed their publisher/distributor password.

If the publisher has changed their publisher/distributor password, the password must be updated before the synchronization by clicking **Publisher Login** and updating your password for the connection to the Publisher/Distributor. You can then perform the synchronization.

1. Click the icon of an existing subscription.
   The **Synchronize Subscription** window is displayed.
2. Synchronize your subscription.

Bulk copy

The **Bulk Copy Wizard** gives you the ability to bulk copy data into and out of a Paceart System database. You can only use the import operation for databases not participating in replication either as a publisher or a subscriber.

The wizard exports or imports Microsoft SQL Server data to or from a data file using native format by using the SQL Server utility called BCP. Since the exported data file is saved in native format it can only be read by the **Bulk Copy Wizard** import function or by calling the BCP application directly.

When you bulk copy data out of the database, you can specify filters, including removing personally identifiable information in the database from the exported data.

In the Paceart System, the Database Manager does not enforce single user mode when performing actions on the database.

Performing a bulk copy import

You can bulk copy data into an SQL Server database from a data file that was created using the import option. You must be logged in as a member of the System Administrators server role on the SQL Server to use this feature.

You cannot perform an import on a database that has current publications or subscriptions. If you have publications or subscriptions already configured, cancel the wizard, delete the publications and subscriptions, and re-run the wizard. After you import the data you will be able to re-establish replication.

Optima does not put the DB in single-user mode but it is recommended that all users be out of the system when doing an import because it will delete all existing data for the tables being imported.

1. Open the database from which you want to bulk copy data.
2. Double-click **Bulk Copy**.
   The **Welcome** window is displayed.
3. Click **Next**.
4. Select **Import data to database** to bulk copy data into the selected database.
5. Click **Next**.
6. Select the folder where the data to be imported resides. You can accept the default location or click **Browse** to navigate to a folder location.
7. Click **Next**.
8. Review your settings, and then click **Next**. The import may take several minutes to complete depending on the amount of data in your database.
9. Click **Finish**. The database now contains the data contained in the files that you imported.
10. When you have successfully completed the import or export operation in the Paceart System Bulk Copy Wizard click **Finish** to close the wizard.

Performing a bulk copy export

You can bulk copy data out of your Paceart System database into a data file. You must be logged in as a member of the System Administrators server role on the SQL Server to use this feature.

Database Manager cannot put the database in single-user mode but it is recommended that all users log out of the system.

1. Open the database from which you want to bulk copy data.
2. Double-click **Bulk Copy**.
   The **Welcome** window is displayed.
3. Click **Next**.
4. Select **Export data from database** to bulk copy data out of the selected database.
5. Click **Next** to display the **Patient Status Filter** window.
6. Select one or more of the patient statuses of patients that you want to include in your bulk copy. Leave this field empty if you do not want to filter the bulk copy data on a patient's status.
7. Click **Next** to display the **Patient Code Filter** window.
8. Enter a value for one or more patient codes of patients that you want to include in your bulk copy. Leave this field empty if you do not want to filter the bulk copy data on a patient's code.
9. Click **Next** to display the window where you can limit patient identifying data.
10. Select the check box if you want all of the personally identifiable information removed from the output data.
11. Click **Next** to display the **Data Location** window.

12. Specify the folder to which you want the data in the bulk copy operation exported.
13. Click **Next** to display a list of tasks that the system will perform during the bulk copy export.
14. Click **Next**.
    Database Manager begins the bulk copy export. It may take several minutes to complete the export.
15. When you have successfully completed the export operation in click **Finish**.

Rename database

You can change the name of your Paceart System database using the **Rename Database** function. You must be a member of the System Administrators server role on the SQL Server to use this function.

Renaming a database

You can rename a database by running the Rename Database wizard.

Make sure that all publications and subscriptions in the database have been deleted.

You must be the only user logged into the database before you can rename it. If other users are logged into the database you will be prompted to run the **Active Connections** tool.

1. Open the database that you want to rename.
2. Double-click the **Rename Database** icon.
   The Welcome screen is displayed.
3. Click **Next**.
4. Enter the new database name using no spaces.
5. Click **Next**.
6. Confirm that you want to rename the database by clicking **Next**.
   The Paceart System Database Manager will rename the current database and tell you that the process is complete.
7. Click **Finish**.

Delete strips

Permanently deleting ECG strips from your Paceart System database will decrease your database size and free up disk space. You can use the **Delete Strips** function of the Paceart System Database Manager to perform this task. You must be a member of the System Administrators server role on the SQL Server to use this function.

Deleting strips

You can delete ECG strips in your current database. The two filter options for selecting the strips are the strip type and the date the strip was recorded.

You must be the only user logged into the database before you can begin deleting ECG strips. If other users are logged into the database you will be prompted to run the **Active Connections** tool.

No applications on any other computer can use the Paceart System database while the Paceart System is deleting strips.

In Optima, Database Manager does not enforce single user mode when performing actions on the database.

1. In Database Manager, double-click the database from which you want to delete strips.
2. Double-click the **Delete Strips** icon.
3. Select the strip type on which you want to filter.
4. Enter a date into the date field.
   Strips recorded before this date and that also meet the selected strip type criteria will be deleted.

5. Click **Next**.
   The window lists the action that Database Manager is going to perform when you click next.
6. Click **Next** to delete the strips.
   The utility calculates the number of strips that will be deleted, and then deletes the strips from the database. The amount of time this takes is dependent on the size of your data set.
7. Click **Finish** to complete the wizard.

Delete patients

The criteria for deleting patients is based on the status code or the patient code. You must be a member of the System Administrators server role on the SQL Server to use this function.

The **Delete Patients** wizard takes you through the steps to delete patients in your current database. Use this wizard to specify the delete criteria; examine, print, and save a list of potential patients to delete; backup the selected patients before the data is deleted; and delete all of the patients in the given list for the criteria that is specified

Delete Criteria window

If you enter a status code, all patients in your Paceart System Database with the status code you specify will be deleted. If you make it a practice to give your patients status codes of "D" when they are deceased, or "L" if they are lost to follow-up, it will be very easy to remove these groups of patients periodically from your database.

If you enter an patient code, all patients in your Paceart System Database with the patient code you specify will be deleted.

Review Patients for Deletion window

This window displays the patients that match your search criteria and that the Paceart System will delete from the database. You can save the data of the selected patients before deleting them from the database. The data is exported in a format called BCP.

If you need to retrieve the deleted data you can recover it into a new database. Best practice is to back up the data to a backup folder and also back up the selected folder as part of your system backup procedures.

Deleting patients

This function enables you to delete patients and their associated events from your Paceart System database. Decreasing the number of patients in your database can help you to meet licensing or database size requirements.

You must be the only user logged into the database before you can rename it. If other users are logged into the database you will be prompted to run the **Active Connections** tool.

In Optima, Database Manager does not enforce single user mode when performing actions on the database.

1. Open the database from which you want to delete patients.
2. Double-click **Delete Patients**, and then click **Next**.
3. Select the patient status and patient code filters for the patients you want to delete, and then click **Next**.
   The search results display the patients to be deleted.
4. Review the list and decide what you want to do.
   - Click **Back** if you want to change the search criteria.
   - Click **Save** to save the search results to a comma-separated value (CSV) file. The CSV file can be opened in a spreadsheet application such as Microsoft Excel.
5. Click **Next**.

6. Enter the path to the backup folder. The BCP data will be overwritten with each backup. To prevent overwriting the BCP data you can change your backup folder or move the BCP data out of the selected backup folder before continuing.

   As best practice we recommend that you back up the deleted patient data. If you do not wish to do this, check the **Do not backup data** option.
7. Click **Next**.
8. Review your selections. Click **Back** if you want to change any selections.
9. Click **Next**.
10. Click **Finish**.

SQL Users

You can create new SQL database users and maintain existing SQL users in your current Paceart System database using this wizard. You will be able to select an existing login or create a new SQL server login, specify a user role, and specify a user name. This functionality can be used to grant users access to the database but does not give them access to use the Paceart System. You must be a member of the System Administrators server role on the SQL Server to use this function.

Creating a new user

All Database Manager users have to be associated with a SQL Server login. When you create a new user you can select an existing login or create a new login.

There are two types of authentication that you can select from when creating a new user, Windows and SQL Server.

With Windows authentication the SQL Server login information is taken from the user's Windows domain user ID and password and validated with Windows authentication. This is sometimes referred to as Windows Integrated Security.

With SQL Server authentication the SQL Server login information is taken from the account you create directly in the database. The login is validated by SQL Server and does not use Windows Authentication. This is sometimes referred to as Standard Security.

1. Open the database in which you want to create a new user.
2. Double-click **Users**.
3. Double-click **New User**.
4. Click **Next**.
5. To associate the new user with a new login, select **<New>**.
6. Click **Next**.
7. Select either Windows or SQL Server as the type of authentication you want to use to login to the SQL Server.
8. Click **Next**. Depending on the authentication you chose you will see one of these windows.

   If you selected **Windows** follow these steps.

   a) Enter a few characters and click **Search** to search for the Windows login to associate with your new user.
   b) If the login is not listed you can type the name in the **Add Name** text box.

      If you add your own, use either of the following formats:

      - Domain\UserName
      - Domain\GroupName

      You will not be able to add a Windows authenticated login if the given login is already a member of a Windows group and the group has already been assigned a login on the SQL Server.

c) Click **Next**.

If you selected **SQL Server** follow these steps to create a new SQL Server login to associate with the new user.

a) Enter a login name.
b) Enter a password.
c) Renter the password to confirm your first entry was correct.
d) Click **Next**.

9. Assign one or more roles to your new user. The roles that display in the **Roles** window are the roles created in your Paceart System database.
10. Click **Next**.
11. Type the new user's name in the text box.
12. Click **Next**.
    The **Create User** window is displayed. This lists the tasks the wizard will perform to create the new user.
13. Review the user creation tasks, and then click **Next**.
14. Click **Finish.**

Maintaining existing users

In addition to creating new users, you can use the Paceart System Database Manager to change existing users passwords and assign or un-assign user roles. You can only change the user's password from this window if the user is assigned SQL Server authentication. If the user is using Windows Authentication, you must use one of the tools in Windows to change their Windows domain account information.

1. Double-click the **Users** icon in the Paceart System Database Manager.
   You will see icons for each user created on your Paceart System database along with the type of login authentication assigned to each user (NT or SQL).
2. Double-click a user's icon.
   The **Maintain user Paceart** dialog box is displayed.
3. Perform the desired maintenance.
   - Change the user's password if the user is assigned SQL Server authentication.
   - Assign or un-assign roles for the user.
4. Click **OK**.

Enable or disable auditing

The Paceart System Database Manager auditing feature gives you the ability to audit your database. This will start logging changes to your Paceart System database so that you can run audit reports. Turning on auditing will generate a lot of data and needs to be monitored and archived periodically to avoid running out of space. This feature is only available when the user logged into the Paceart System Database Manager is a member of the System Administrators server role on the SQL Server.

One way to quickly determine the state of auditing on your Paceart System database is to select your database icon, and then look at the database properties displayed at the bottom of the window. The **Auditing Enabled** field will either display **True** (auditing is enabled) or **False** (auditing is not enabled).

Depending on the current state of auditing on your Paceart System database, you will either be given the option of enabling auditing or disabling auditing.

Enabling and disabling auditing

You can enable or disable database auditing for a Paceart System database.

1. Open the database in which you want to enable or disable auditing.

2. Double-click **Disable Auditing** or **Enable Auditing**.
   The Database Manager will display a message asking you to confirm your selection.
3. Click **Yes** if you want to perform the action.

Audit Data Archiving

You can use this tool to archive auditing data. You can select the date up to which you want the data archived and specify the folder to which the data will be archived. During the archiving process the Paceart System will archive the auditing data to the location you specified, and then it will delete the auditing data that you archived.

Set Multi-User

You can set the database mode to multi-user by clicking the **Set Multi-User** icon within the selected database in Database Manager. This feature is intended to change the database to multi-user mode only. It is available only when the database uses Single-user or Restricted-user mode.

In Optima, Database Manager does not enforce single user mode when performing actions on the database.

Tools

The Paceart System Database Manager supplies you with a variety of tools that you can access from the **Tools** menu.

- Network configuration: use to configure SQL Server components.
- Change password: use to change the user's password.
- Active connection: manages the active connections to the databases.

Network configuration

The SQL Server Configuration Manager provides basic configuration management for SQL Server services, server protocols, client protocols and client aliases.

You can perform the following operations using this utility.

Client

- Create network protocol connections to servers.
- Change the default network protocol.
- Display information about the network libraries installed on the client.
- Show and configure DB-Library information.

Server

- Enable and disable network protocols for a SQL Server instance.
- Force protocol encryption.
- Display information about the network libraries installed on the server.

Using the network configuration tool

The network configuration tool is a Microsoft product. Refer to the Microsoft SQL Server Configuration Manager online help for information on using this application.

1. To access online help, click **Network configuration** in the **Tools** menu to start the Microsoft SQL Server Configuration Manager.
2. Click the **Help** button to display the Microsoft SQL Server Configuration Manager online help.

Change password

SQL Server system administrators can change their password or the passwords of other logins by using the **Change Password** feature.

This utility will change the following passwords:

- The password of the login specified in the **Login Name** field.
- The replication agent connection passwords if the login name is used for any of these connections. Specifically, this means the following password changes occur depending on the type of computer you are running the Change Password tool on.

  Publisher/Distributor: Changes the replication agent connection to the publisher from the distributor.

  Subscriber: Changes the replication agent connection to the subscription database and publisher/distributor database.

If the password for the replication agent connection is modified on the publisher/distributor computer, all subscriptions to publications on this computer will need to have their publisher/distributor passwords changed.

Changing the login password

You can change the password of the user logged in if you have administrative privileges.

You must be logged in as a member of the System Administrators server role on the SQL Server to use this feature.

1. Click **Tools** > **Change Password** from within the Paceart System Database Manager.
2. Enter the name of the login whose password you wish to change in the **Login Name** field.
3. Enter the new password in the **Password** text box.
4. Confirm the password by typing it again in the **Confirm Password** text box.
5. Click **OK** to set the password.

Active connection

The **Active Connection Management** tool allows system administrators using the Paceart System Database Manager to see all active connections to either the Microsoft SQL Server or the Paceart System Database.

Using the Active Connection Management tool

You can use this tool to view and kill active connections to the server and the Paceart System database. The connections you see depend on where you are in the Database Manager.

- To see all of the connections to the SQL Server select **Tools** > **Active Connections** when you are in the window with the **New Database** icon.
- To see all of the connections to a Paceart System database, open a database in the Paceart System Database Manager, and then select **Tools** > **Active Connections**.

Server Active Connections Management Window

This topic contains the definitions for the column headings or buttons that are on the **Active Connections to Server** window.

The **Active Connections** window has these columns. If you are unable to see all of the columns displayed in the window use the scroll-bar at the bottom of the window.

Column name	Displayed data
SPID	System process identifier

Column name	Displayed data
Login	Login name associated with the SPID
Database	Database used by the SPID
Computer	Computer name of the client connection used by the SPID
Program	Name of the application or the program that has invoked the SPID
Status	Current status of the SPID
Command	Last command run by the SPID
CPU Time	Cumulative time that the computer has spent processing the SPID
Disk I/O	Number of reads and writes the SPID has made to the hard disk
Last Batch	Timestamp of the last activity of the SPID

The **Active Connections** window has these buttons.

Button name	Action
Refresh	Re-queries the SQL Server for the active connections
Kill process	Terminates the user process on the highlighted SPID in the table This feature is only available when the user logged into the Paceart System Database Manager is a member of the System Administrators server role on the SQL Server. Use caution when performing a Kill process. You cannot kill system processes, and you cannot kill your own process. You should not kill critical processes such as these: • Awaiting Command • Checkpoint Sleep • Lazy Writer • Lock Monitor • Select • Signal Handler
Close	Closes the **Active Connections** window

Database Active Connections Management

You can manage the active connections to the currently opened database using this tool.

There are many functions that the Paceart System Database Manager performs where it needs to be the only connection to the Paceart System database.

- Rename Database
- Delete Strips
- Delete Patients
- BCP - Bulk Copy Import and Export

When you encounter one of these situations you are given the ability to see all of the active connections to the database and if necessary, the ability to kill the connections.

Command Line Interface

The command line interface feature lets you set connection information or start Database Manager at specific screens.

You can use this feature to create shortcuts that perform very specific tasks. For example, you could set up a command line to start the program, connect to a particular database as a given user, and click on your subscription.

Command Line Switches

Refer to this topic for some command line switches that are available to you in the Database Manager.

The following table lists the command line switches available to you when starting the Paceart System Database Manager. Characters between the brackets ([ ])are optional.

Switches	Description	Notes
-S[erver]	Server Name	The switch must be followed by the name of the server. Will use the local server if not specified.
-E		This switch without a parameter is used to connect to SQL Server with Windows Authentication.
-U[serID]	User ID	Used to connect to SQL Server with SQL Server Authentication.
-P[assword]	Password	Used to connect to SQL Server with SQL Server Authentication. This is not recommended because it stores the password in plain text. It also can be possible for other users to see command line switches in a process viewer.
-D[atabase]	Database	
-C[ommand]1	Selects a command to run for the specified database	-D must also be specified.
-C[ommand]2	Select sub-command to run	If required by specified -C1.
-M[ultiple]	Allow multiple instances of Paceart System Database Manager to run	

The command switches, C1 and C2, allow you to start the program at a particular point in the Paceart System Database Manager by scripting the navigation of the icons. The following table shows the commands you can give for C1 and C2.

-C[ommand]1	-C[ommand]2
Publications	New Publication Any publication name you have set up on the database
Subscriptions	New Subscription Any subscription name you have set up on the database

-C[ommand]1	-C[ommand]2
Bulk Copy	
Delete Strips	
Rename Database	
Delete Patients	
Users	New User Any user name you have set up on the database
Enable Auditing	

The commands are the names of the icon labels in the Paceart System Database Manager.

Action	Example
Open the New Publication wizard in database Paceart_Database on the local server	DatabaseManager.exe -D Paceart_Database -C1 Publications -C2 New Publication…
Open the Run SSIS window on database Paceart_Database on server CORPDB. Connect using user id jdoe and password mysqlpassword	DatabaseManager.exe -S CORPDB -D Paceart_Database -U jdoe -P mysqlpassword -C1 Run SSIS
Open a second instance of the Paceart System Database Manager while one instance is currently running	DatabaseManager.exe -M

Running the Paceart System Database Manager from Command Line

The command line interface feature lets you set connection information or start Database Manager at specific screens.This task shows you the basic steps that you can use to create shortcuts for specific Database Manager tasks.

1. Click **Start** > **Run.**
2. In the **Run** window do one of the following.
   - Enter "C:\Program Files\Medtronic\Paceart Database Manager\DatabaseManager.exe" <your switches here>, replacing "<your switches here>" with the switches needed to perform your operation. Make sure that your switches are entered outside the path and filename quotation marks.
   - Click **Browse** to navigate to your PaceDBM.exe location if you installed the Database Manager in a location other than the default location.
3. Click **OK** to run the Database Manager.

Database Replication

Your Paceart System has the ability to utilize a feature of Microsoft SQL Server called Database Replication. Replication is a set of technologies for copying and distributing data and database objects from one database to another and then synchronizing between databases for consistency.

Using replication, you can distribute data to remote or mobile users over a local area network, dial-up connection, or the Internet. Replication also allows you to enhance application performance, physically separate data based on how it is used, or distribute database processing across multiple servers.

Database replication requires a full version of SQL Server on both the publisher and subscriber, and both must be the same version. For example, a subscriber using SQL Server 2008 is limited to subscribing to a publication hosted on a system using the full version of SQL Server 2008.

When to use replication

Replication can be used in a variety of situations. Scenarios where replication may be used with your Paceart System include the following:

- Sites with notebook computers that are periodically logged off the network and run remotely.
- A multiple-site user with a slow connection between sites.
- A site where the user would like to use replication as a means of backup to an alternate computer.
- A site with an unreliable network where the user would like workstations to be able to run locally on demand.

Replication topologies

There are three possible topologies that can be set up and maintained by the Paceart System Database Manager: Central Publisher, Publishing Subscriber, and Central Subscriber. Paceart Technical Support staff should be consulted in selecting the topology that will best suit the needs of your site.

Other more complex topologies exist but they must be set up using Microsoft SQL Server Management Studio. You can use Microsoft SQL Server Management Studio Express or Microsoft SQL Server Management Studio which is only available to clients who purchase full licenses of SQL Server. If you decide that a more complex topology is required at your site, consult the Paceart Technical Staff to determine if the manual setup of the replication topology could be integrated with the built-in utilities for replication found in the Paceart System Database Manager.

Central subscriber

The Central Subscriber replication topology is used by customers who want to maintain multiple Paceart System databases.

An example of this is monitoring services that wish to keep client databases separate. In this scenario, each individual client site would publish its data. At the site that will serve as the central repository for all of the data, a separate database will be created for each client, and then subscriptions will be created in each database to the corresponding client publication. By making the central computer the Subscriber, it gives that computer more control over when synchronization will take place with the various client sites

Publishing subscriber

The Publishing Subscriber replication topology is used by customers with multiple sites that are connected by a slow (or expensive) network link.

In this scenario, one computer is designated as the main Publisher and Distributor, Publisher A. At the remote site, a second computer, Publisher B, is configured to subscribe to Publisher A. Publisher B is configured to publish its data that it receives from Publisher A, and will act as a Publishing Subscriber. All computers at the remote location can now subscribe to the local copy of the publication stored on Publisher B. This Publishing Subscriber acts as a gateway to Publisher A, and eliminates the need for individual connections from each Subscriber.

Central publisher

The Central Publisher replication topology is the most common. In this scenario, one computer is designated as the Publisher, and one or more computers are acting as Subscribers.

The Subscribers can either be computers on a local area network, or computers at a remote site. This scenario would be used at sites that have notebook computers that must be disconnected from the network to work remotely, or sites that have multiple locations connected by a slow (or expensive) network link.

Replication security

Using a login other than "sa" requires the use of Microsoft SQL Server Management Studio.

SQL Server Agent service

The SQL Server Agent is a Windows service that executes jobs for your SQL Server, including replication jobs. This service is only available on full versions of SQL; it is not available on express versions of SQL. If you will be performing replication, it is important that you specify an account that the service should use to log in to your system, and not rely on the **Local System** account.

1. From your desktop, click **Start** > **Settings** > **Control Panel**.
2. Double-click **Administrative Tools**.
3. Double-click **Services**.
4. Double-click **SQL Server Agent**.
5. Click the **Log On** tab.
6. Select the **This account** option.
7. Enter the user name in **This account**.
8. Enter a password, and then re-enter the same password in the **Confirm Password** box.
9. Click **OK**.

Publisher/distributor security

The Paceart System Database Manager configures your Publisher/Distributor security the first time you create a publication on your SQL Server if the SQL Server has not already had its replication enabled through programs outside of the Paceart System.

The Paceart System New Publication Wizard sets up the Distributor Replication Agent Login. This is the connection that the distribution database uses to connect to the publication database. You can choose to use the Windows authenticated login of your SQL Server Agent service running on your Publisher, or specify an SQL Server login and password.

Subscriber security

Subscriptions under Microsoft SQL Server replication require three logins when performing a synchronization.

Each login is to a different database.

- The first login is to the Subscription database.
- The second login is to the Distribution database.
- The third login is to the Publication database.

Since the Paceart System assumes local distributors (i.e., the Distribution and Publication databases reside on the same physical SQL Server), the login information for the Distribution and Publication databases is identical.

When you run the **New Subscription Wizard** in Database Manager you are asked to specify the login information for the Subscription Database on the **Subscriber Login** screen. You are also asked to specify the login information for the Distribution and Publication databases on the **Publisher/Distributor Login** screen.

For these logins, you can choose either Windows Authentication by impersonating the SQL Server Agent account, or SQL Server Authentication by specifying a login that resides on the SQL Server.

If you choose to impersonate the SQL Server Agent account, you will be using the login information specified in the SQL Server Agent service on the Subscription computer when connecting the Subscription database, or the Publication/Distribution computer when connecting to the Publication and Distribution databases.

Setting up replication

There are various tasks you need to perform to set up replication for use with your Paceart System. Medtronic Paceart requires that all Paceart System deployments using replication must have a full version of SQL Server on the publishing computer. SQL Server Express cannot be used as publishers in a replicated environment.

Setting up replication for use with your Paceart System involves performing the following tasks:

- Establishing a connection
- Configuring publishing and distribution
- Creating publications
- Creating subscriptions
- Applying the initial snapshot of data to the Subscriber

If you wish to perform advanced replication setups, you can make use of SQL Server tools (Management Studio for SQL Server 2008).

Establishing the connection

The first step in setting up replication is to make sure that you have a connection between your publishing and subscribing computers. You can verify that you have established this connection when you can see the other computer on your network.

The connection can be in the form of a permanent network connection such as an established LAN or WAN. If your Paceart System configuration does not have a permanent LAN or WAN, replication can still be achieved by using **Windows Dial-Up Networking**. This type of connection should be used as a last resort if other permanent, faster connections do not exist in your Paceart System environment.

You must make sure both computers have the appropriate network protocols installed in their Windows Networking Components. Also, you must make sure that the instances of SQL Server that are running on both computers can communicate with each other. Although most SQL Servers will be able to connect to each other using the default settings, special installations that use uncommon network protocols or ports may need to be configured using the **Client Network Configuration** or **Server Network Configuration** tools in the Paceart System Database Manager.

Setting up a Windows Network is beyond the scope of this guide. Please consult your Microsoft Windows Networking documentation or consultant if you have questions on creating and configuring a Windows Network.

Replication using the Paceart System Database Manager

The replication wizards in the Paceart System Database Manager make it easy to set up replication. If you set up replication using the wizards in the Paceart System Database Manager your replication will be set up as merge replication with a local distributor and pull subscriptions.

The Paceart System Database Manager creates replication with the following features:

- **Merge Replication** - Used when subscribers are disconnected for periods of time from the publishing database. Data is updated at the subscriber and conflicts are handled at the row level.
- **Local Distributor** - The distributor and publisher are located on the same physical server. In the Paceart System Database Manager, when you create a publication on a computer, that computer also becomes a distributor. The opposite of a local distributor is a remote distributor.
- **Pull Subscriptions** - The subscriptions are created on the subscriber computer. The subscriber chooses when the data will be synchronized, either by scheduling synchronization or performing it on demand. The opposite of pull subscriptions are push subscriptions.
- **Snapshots Stored In Native SQL Server Format** - All publications created in the Paceart System Database Manager have snapshots stored in native SQL Server format. This requires that all subscribers must be servers running SQL Server.
- **Anonymous Subscriptions** - Detailed information about the subscriptions and subscribers are not stored on the publisher/distributor. In the Paceart System Database Manager, all subscriptions are set to anonymous.

- **Synchronization Enabled with Windows Synchronization Manager** - All subscriptions created in the Paceart System Database Manager will automatically be set up in Windows Synchronization Manager.
- **Subscription Security** - All subscriptions created in the Paceart System Database Manager are set to login to the publisher/distributor using SQL Server Security and either the specified SQL Server authenticated login, or by impersonating the SQL Server Agent service on the publisher/distributor.

Configuring publishing, distribution, and publications with Paceart System Database Manager

In the Paceart System Database Manager, publishing and distribution is configured at the same time you create your first publication. The **New Publication Wizard** will set up a local distributor in addition to creating a publication.

To configure publishing and distribution, and to create a publication on your Paceart System Database, click the **New Publications** icon in the Paceart System Database Manager while connected to your publishing database. This starts the **New Publication Wizard**.

Creating subscriptions and applying the initial snapshot with Paceart System Database Manager

In the Paceart System Database Manager, you can create subscriptions to publications on your subscriber database. When creating the subscription, you will also have the opportunity to apply the initial snapshot.

To do this, double-click the **New Subscription** icon in the Paceart System Database Manager while connected to your subscriber database to start. This starts the **New Subscription Wizard**.

Creating a publication using the Paceart System Database Manager

You can create publications on your subscriber database using the Paceart System Database Manager.

1. Connect to the Publication server using the port number (e.g. FR2-W7X32-03\,1433).
2. Create a new Paceart System Database named "Paceart_Database_Pub".
3. Create an alias on the local machine with the same name as the Publication server instance (e.g. FR2-W7X32-03\SQL_2012).
4. Create a new publication on the Paceart System Database using the default settings in the **New Publication Wizard**.
5. Delete the created alias.

Subscribing to a publisher only accessible by port number

In the Paceart System Database Manager, you can subscribe to a publisher only accessible by port number.

1. Create an alias on the subscriber with the same name as the Publication server instance (e.g. johnsm25\SQL2008R2).
2. Specify the port and server instance for the alias.
3. Connect to the subscribing database using Paceart System Database Manager.
4. Create a new Paceart System Database named "Paceart_Database_Sub".
5. Log in to Database Manager and open the "Paceart_Database_Sub" database.
6. Double-click the **New Subscription** icon.
7. Click **Next**.
8. Create a new subscription. When specifying the publishing server, use the alias name (e.g. johnsm25\SQL2008R2). Everything else in the subscription creation should be the same as if the default port was being used.

Replication using SQL Server Management Studio

As an advanced alternative to using the Paceart System Database Manager, you can use Microsoft SQL Server Management Studio to set up your replication.

To set up your initial publications and subscriptions, we recommend that you use the **Publication** and **Subscription** wizards in the Database Manager. These wizards perform actions that the replication wizards in SQL Server Management Studio do not provide, including setting the table relationships on the subscriber as **NOT FOR REPLICATION** and do not publish DRI (Declarative Referential Integrity).

The Paceart System wizards also preserve the security permissions on the subscriber database when it is initialized with the schema from the publisher. Once the initial publications and subscriptions have been set up, changes to the default settings can be made with SQL Server Management Studio.

Management Studio gives you advanced functionality when designing your replication topology. Here are a few of the available advanced features.

- You can choose different replication methods including merge, transactional, and snapshot replication.
- You can set up a remote distributor where the distributor and publisher are two different computers.
- You can set up your subscriptions to be either push subscriptions or pull subscriptions.

Even the most advanced SQL Server users will find it convenient to use the Paceart System Database Manager for performing specific Paceart System functions such as creating a Paceart System database, publication, or subscription. After these are created using the Paceart System Database Manager, advanced users can switch to the Microsoft SQL Server Management Studio for advanced management of their Paceart System databases.

For more detailed information on using replication in Microsoft SQL Server SQL Management Studio, consult your SQL Server Books Online. This online help ships with your SQL Server.

SQL server synchronization

Synchronization is the act of moving data from the publisher to the subscriber, and from the subscriber to the publisher, after the initial snapshot has been applied.

Once you have replication set up on your Paceart System database you have to perform synchronization.

Under **Merge** replication, which is the default replication method in the Paceart System Database Manager, synchronization means that data updates made on multiple subscriber computers are merged, any conflicts are detected and resolved, and data converges to the same values in both the publisher and subscriber databases.

Using **Pull** subscriptions, the default subscription method in the Paceart System Database Manager, synchronization can either be scheduled to occur at certain times or on-demand.

The following sections discuss the three different tools that can be used for synchronization:

- Paceart System Database Manager
- Microsoft SQL Server Management Studio
- Windows Synchronization Manager

Certain tools have more advanced features than others. Some of the tools will only work in certain environments, so check to see that the tool you choose will work in your specific Paceart System environment.

Synchronization using the Paceart System Database Manager

You can use the Paceart System Database Manager to perform on-demand synchronization. At the same time you can also update your subscription with a new password.

1. Double-click the **Subscriptions** icon.
2. Double-click the individual subscription icon that you want to synchronize.
3. To initiate synchronization, click **Synchronize**.

4. You can update your subscription with a new password by clicking **Publisher Login**.
   The Paceart System displays the **Change Publisher/Distributor Login** dialog box.
5. Enter the new password in the **Password** and the **Confirm Password** fields, and then click **OK**.

Synchronization with SQL Server Management Studio

You can use SQL Server Management Studio to synchronize your subscriptions. For more detailed information on using synchronization in Microsoft SQL Server Management Studio, consult your SQL Server Books Online. This online help ships with your SQL Server.

1. In SQL Server Management studio, connect to the subscriber and expand the server node.
2. Expand the Replication folder.
3. Expand the local Subscriptions folder.
4. Right-click the subscription you want to synchronize.
5. Select **View Synchronization Status**.
6. In the **View Synchronization Status** dialog box click **Start**.
7. When complete, click **Close** to the synchronization completed message.

Synchronization with Windows Synchronization Manager

The majority of Paceart System installations use Windows Synchronization Manager to manage their database synchronization. Once your subscriptions appear in Windows Synchronization Manager, you can synchronize your subscriptions manually via on-demand synchronization, automatically at login or logoff from the network, or automatically via scheduled synchronization.

If Windows Synchronization Manager cannot be found, search your Windows directory to find and run the **mobsync.exe** program. If Windows Synchronization Manager does not appear in your start menu and you do not have the Mobsync utility, upgrade your version of Internet Explorer to version 5.0 or greater.

Windows Synchronization Manager is installed anywhere Microsoft Internet Explorer 5.0 or higher is installed.

1. Open Windows Synchronization Manager. One way you can do this is by finding and double-clicking **mobsync.exe**.
2. Select the check boxes next to the items that you want to synchronize.
3. Click **Synchronize**.

Getting subscriptions to appear in Windows Synchronization Manager

Subscriptions created using SQL Server Management Studio do not automatically appear in Windows Synchronization Manager. You can make them appear by following this process. Subscriptions created using the Database Manager will automatically appear in Windows Synchronization Manager.

This process is based on SQL Server Management Studio 2008. Your steps may vary slightly.

1. Open SQL Server Management Studio.
2. Navigate to your subscription by selecting **Replication** > **Local Subscriptions**.
3. Right-click the subscription that you want to appear in Windows Synchronization Manager and select **Properties**.
4. In the **Synchronization** section click the **Use Windows Synchronization Manager** option.

   This option determines whether this subscription can be synchronized using Windows Synchronization Manager.
5. Set the option to**Enable**.
6. Click **OK**.

Performing on-demand synchronization

On-demand synchronization is a one-time synchronization with the master publication database that is initiated by the user.

1. Open Windows Synchronization Manager. One way you can do this is by finding and double-clicking **mobsync.exe**.
2. Select the check boxes next to the items that you want to synchronize.
3. Click **Synchronize**.

Configuring synchronization on log on/log off

You can configure your subscriptions to automatically synchronize when you log on to your network, log off the network, or both.

1. Open the **Windows Synchronization Manager**.
2. Click **Setup**.
3. Select the network connection to which this automatic synchronization on log on and/or log off should apply from the list. For example, if you want to set up automatic synchronization when you connect to your local area network, select **LAN Connection**.
4. Select the check boxes next to the subscriptions you want to set up for automatic synchronization on log on and/or log off.
5. Select the appropriate check boxes to set up automatic synchronization when you log on to your computer, log off of your computer, or both. You can also select the option to have the Synchronization Manager ask you before performing synchronization.
6. Click **OK**.
7. Click **Close**.

Configuring scheduled synchronization

Windows Synchronization Manager has an easy-to-use Scheduled Synchronization Wizard that allows you to set up your synchronization on a schedule. This option is often used if you have replication set up on your network and you wish to synchronize your databases unattended at a specific time, for example, every evening at 11 PM.

1. Open **Windows Synchronization Manager**.
2. Click **Setup**.
3. Select the **Scheduled** tab.
4. Click **Add**. This will start the Scheduled Synchronization Wizard.
5. Click **Next**.
6. On this page, you must select three items:
   - The network connection that the synchronization will use to transfer the data between the publisher and subscriber.
   - The items to synchronize. Select the subscription or subscriptions from the list that you wish to include in your scheduled synchronization.
   - Choose whether or not you want to automatically connect your computer to the network connection if it is not connected when the synchronization is scheduled to start.
7. Click **Next**.
8. Select the start time, frequency, and start date of your scheduled synchronization.
9. Click **Next.**
10. Give your scheduled synchronization a descriptive name and click the **Next** button.

11. Click **Finish**.
Your scheduled synchronization will appear in the **Current Synchronization Tasks** window.

Current Synchronization Tasks window

You can add or delete a scheduled synchronization, or edit scheduled synchronization options, from the **Current Synchronization Tasks** window.

Perform the desired task by clicking the appropriate button.

Button	What the button does
Add	Add a scheduled synchronization.
Remove	Delete the selected scheduled synchronization.
Edit	Edit the options for the selected scheduled synchronization. This also gives you access to the advanced scheduled synchronization options not available in the **Scheduled Synchronization Wizard**.

The first time you run a scheduled synchronization, you may see a dialog box allowing you to choose whether you want the scheduled synchronization to run unattended from then on. If you want it to run unattended, select the **Do not show me this again** check box.

From the next window, you can specify the subscriber login, the publisher login, and the distributor login. This information usually will be pre-filled with information that was specified when you created the subscription. Make any necessary changes to this information and click **OK**.

Synchronization management and replication conflicts

Once you have set up replication and synchronization, you will want to periodically administer the synchronization, verify that your synchronization is succeeding, and resolve any synchronization conflicts.

To open the Publication Information window, double-click a publication in Database Manager to display the **Publication Information** window containing the selected publication's synchronization history.

The topmost node in the tree is the publication name.

The child nodes to the publication represent each subscription to the publication. The subscription names are based on the subscribing server name in the format \\ServerName\DatabaseName.

The child nodes of each subscription represent each time the subscription was synchronized with the publisher. These names are based on the date and time the synchronization began and the outcome of the synchronization.

The child nodes of the synchronization represent the individual steps that occurred in the synchronization process. There names are based on the time they occurred and a text description of the action that occurred.

Click the **Refresh History** button to update the synchronization history and display it in the **Synchronization History** window.

Click the **Resolve** button to display the Microsoft Replication 'Conflict Viewer. This viewer helps you view and resolve conflicts that may have occurred during replication synchronization.

Microsoft Replication Conflict Viewer

This viewer helps you view and resolve conflicts that may have occurred during replication synchronization. Conflicts occur when the same data is modified at two separate servers, for example, at a publisher and subscriber, or at two different subscribers.

Click the **Resolve** button on the **Publication Information** window to open the **Microsoft Replication Conflict Viewer**.

The following types of conflicts can occur:

- **Update and insert conflicts**: This conflict happens when the same data is changed at two locations. One change wins, the other one loses. For these conflicts, you have the option to keep the existing data (the data that won) or overwrite the existing data with the data that conflicted with it (the losing data). If you keep the existing data, it remains in the replica that won and the Microsoft Replication Conflict Viewer adds it to the replica whose update or insert operation initially lost. If you overwrite the existing data with the conflicting data, the replicas are changed to include the data that was originally lost.
- **Delete conflicts**: This conflict occurs when the same row is deleted at one location and changed at the other.

Conflicts are automatically resolved using the conflict resolver selected when the publication or subscription article was created. As conflicts are resolved during synchronization, the data from the losing row is written to a conflict table in the database. The **Replication Conflict Viewer** allows you to review these conflict records and, potentially, modify your data.

By default, when the **Microsoft Replication Conflict** viewer opens, it will be synchronized to the Publisher server, the publication database, and the publication currently being viewed. If there are any data conflicts, each table with conflicts will be listed, along with a count of the conflicts that occurred. To view these conflicts, click **View**. This will open up a window showing more information about the conflict.

When you resolve a conflict using **Replication Conflict Viewer**, you can choose to accept the original resolution or submit an update to the data based on the winning or losing row. In each instance, the logged conflict row is deleted from the conflict table. Thereafter, you should periodically review conflicts to help reduce the size of the conflict tracking tables.

Replication Conflict Viewer options

The following options are available in the **Replication Conflict Viewer** dialog box for merge publications.

Option	What the option does
Reason for conflict	View the reason for the conflict, including where data modifications occurred.
Show only columns with conflicts	Select to display only those columns where data modifications conflict.
Show all columns	Select to show all columns regardless of whether there is a conflict.
Show	Select Conflict Winner or Conflict Loser to view the data modifications made by the winner or loser that caused the conflict.
Show or edit for resolution	Select Conflict winner or Conflict Loser to view or edit the data modifications made by the winner or loser that caused the conflict.
Keep winning change	Select to keep the winning change. The losing change will be disregarded and the winning change will be propagated to the other servers in the replication topology.
Resolve with this data	Select to resolve the conflict with the data listed. This data will be accepted and propagated to the other servers in the replication topology.
Postpone resolution	Postpones any resolution to the conflict and closes the Replication Conflict Viewer for this table.
Log the details of the conflict for later reference	Logs the details of the conflict in system tables.

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