LATITUDE® INTEGRATION 2.01
GUIDE

LATITUDE®
Patient Management System
LATITUDE INTEGRATION SYSTEM DIAGRAM

a. Patient environment
b. LATITUDE environment
c. Clinic environment
d. Data retrieval from LATITUDE Communicator
e. Clinician review on LATITUDE website
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g. Data import to clinic by LATITUDE Integration
h. LATITUDE Integration application
i. Data transfer to EMR/CIS
j. Clinic EMR/CIS database
k. EMR/CIS client

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Dial-up telephone connection
Secure Internet traffic
Local network traffic
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PURPOSE

The purpose of this document is to provide information technology personnel with a basic understanding of the LATITUDE® Integration software. Personnel that are responsible for administering LATITUDE Integration software at your clinic can use this document to:

- Familiarize themselves with components of the integration software,
- Determine how to configure the application,
- Understand how to maintain the application.

A basic understanding of the system components, processes, and associated terminology can help you and other administrators support the system and troubleshoot problems, should they arise.

NOTE: It is assumed that you are a Windows administrator and are very familiar with Windows administration tasks. It is also assumed that you are proficient in using the Windows operating system and understand how to implement your clinic's security policies for patient data records.

1. PRODUCT DESCRIPTION

LATITUDE Patient Management is a remote monitoring system that gathers follow-up data from patients' implanted cardiac devices and furnishes it to clinicians. The LATITUDE Communicator is the in-home monitoring system that gathers data from a patient's implanted device and sends it to the LATITUDE secure server. Using a standard Web browser, authorized clinicians can view this data on a secure website hosted on the LATITUDE server.

The LATITUDE Integration application is a software add-on that securely transfers this data to the Clinic in a format that can be imported into an existing Electronic Medical Record (EMR) or Clinical Information System (CIS).

The LATITUDE Integration application does not change, replace, or augment any existing LATITUDE functions. It does not transform or manipulate patient data content in any way. It does provide data delivery and data accuracy using industry standard mechanisms such as transmission encryption using Secured Sockets Layer (SSL), data encryption while data is at rest, authentication through the use of certificates, and hash validation checks of the data whenever possible.

2. APPLICATION OPERATING LOGIC

2.1 Environments

Three physical locations are involved in the integration process:

- Patient Environment. Physical location of the configured LATITUDE Communicator, e.g., the patient’s home.
- LATITUDE Environment. The LATITUDE secure server receives device data from the LATITUDE Communicator and sends it to the LATITUDE Integration application which
resides at the clinic. The LATITUDE website is where clinicians first review detailed device and patient data.

- Clinic Environment. The clinic environment is the final destination for the data. The clinic environment includes the EMR or CIS system, the LATITUDE® Integration component, and the physicians and clinicians who monitor the patient's data.

### 2.2 Data events

Three major data events take place in the LATITUDE Integration process:

- Data retrieval – LATITUDE receives implanted device information sent by LATITUDE Communicators using secured Internet connections.
- Patient record dismissal – After an authorized clinician reviews the retrieved data on a secured website, LATITUDE packages a copy for transmission to the clinic.
- LATITUDE data transfer – the data package is transferred to the clinic for integration into CIS/EMR.

### 2.3 User input and control

LATITUDE Integration is designed to operate seamlessly in the background. Outside interaction is limited to three areas:

- Initial system configuration during installation
- Clinician review of patient data
- Periodic security certificate renewal

File maintenance operations such as archiving patient data files and system logs are considered ordinary network administration tasks and are outside the operation of the LATITUDE Integration program.

### 2.4 Process detail

#### 2.4.1 Data retrieval

The purpose of the follow-up data retrieval process is to gather data from the implanted cardiac device and make it available in LATITUDE.

The diagram on the inside front cover of this guide illustrates the LATITUDE Data Retrieval Process.

The clinician has configured the LATITUDE Communicator to interrogate the implanted cardiac device and retrieve programmed settings, device diagnostic data, and patient therapy data on a predetermined schedule.

The LATITUDE Communicator collects the data from the implanted cardiac device as scheduled and then transmits it to the LATITUDE server.

The LATITUDE server processes the incoming data and publishes it to the LATITUDE web site for viewing by authorized clinic personnel.
2.4.2 Patient record dismissal

The patient record dismissal process takes place once a follow-up data retrieval process has successfully completed and the subject patient data has been reviewed on the LATITUDE website. This function triggers the LATITUDE Integration file retrieval process.

The term *Dismiss Patient* refers to the website button clinicians click when they have finished reviewing a patient’s recent data records on the LATITUDE® website. (The process is akin to moving actual paper records from the clinician’s desk to the clinic’s file room.) The action removes (dismisses) the patient’s records from the website’s Patients For Review page, although the data remains available in other parts of the LATITUDE application. It also flags the data as having been reviewed by a clinician.

The process also instructs the LATITUDE server to create an HL7 data file containing a summary of that patient’s latest follow-up data. The HL7 file is temporarily placed in a clinic’s EMR Outbox on the LATITUDE server before being transferred to the clinic and exported to its EMR or CIS.

Not every dismissal creates an HL7 file; other criteria must be met before an HL7 file is built. For example, weight alerts in LATITUDE do not create HL7 files. Record types that *do* create HL7 files when dismissing a patient from the Patients For Review page include patient-initiated interrogations (PII), scheduled remote follow-ups, red alerts, and device-related yellow alerts.

After this process the patient will no longer be listed on the Patient For Review page in LATITUDE®. The HL7 message will be stored in the EMR Outbox for the clinic to retrieve.

2.4.3 LATITUDE® data transfer

The LATITUDE data transfer process takes place in the clinic environment. It requires that both the follow-up data retrieval and patient record dismissal processes have been successfully completed and that an HL7 file exists in the clinic’s EMR Outbox on the LATITUDE server.

The purpose of this process is to connect the clinic EMR server to the LATITUDE server and securely retrieve the HL7 files from the EMR Outbox. The HL7 files are placed in a predetermined, secure data directory on the clinic’s network—generally on the same computer that is retrieving the files. However, this arrangement may be overridden in the configuration file settings (see "UEMR.XML configuration" on page 20.)

The following steps explain how the LATITUDE Integration application checks for any HL7 files in the clinic’s EMR Outbox on the LATITUDE secure server and securely transfers them to the clinic for further processing by an EMR or CIS. These steps assume that the default LATITUDE Integration configuration parameters are being used (see LATITUDE® Integration configuration detail on page 34 for configuration file details.)

The LATITUDE Integration application regularly checks the clinic’s EMR Outbox on the LATITUDE secure server. The default polling interval is 60 seconds.

1. If no file is found, the application waits the polling interval and then checks again.
2. Whenever new files are found, the application downloads them one at a time to the clinic's network and places them in the configured drop zone (see LATITUDE® Integration configuration detail on page 34.)
3. The HL7 files are now available for transfer to the EMR/CIS.
There may be circumstances where an HL7 file download must be rerun. The LATITUDE® website provides a mechanism for re-releasing a previously downloaded HL7 file. Clicking on the website's LATITUDE Patient Utilities / EMR Log menu option displays a page that allows a user with proper permissions to place previously downloaded records into the EMR Outbox. This will cause LATITUDE Integration to locate and transfer the HL7 file again. The data will be identical to the initial download.

3. INSTALLATION

After you install the LATITUDE Integration application your clinic will be able to securely retrieve HL7 data files from the LATITUDE secure server. These data files can then be imported into an EMR or CIS system. This section describes the step-by-step process of installing the LATITUDE Integration application. There are seven installation steps and they must be completed in sequence.

1. Make sure that all basic requirements are met and the proper hardware and software is available
2. Prepare the operating environment
3. Install the LATITUDE Integration software
4. Install security
5. Configure Windows
6. Configure the LATITUDE Integration application
7. Test the application
8. Verify the installation

NOTE: The installation assumes that you are a Windows administrator and that you are very familiar with Windows administration tasks. It is also assumed that you are proficient in using the Windows operating system and understand how to implement your clinic's security policies for patient data records.

3.1 Basic Requirements

3.1.1 Hardware and OS

The LATITUDE Integration application runs on a single computer within your clinic's network. It requires one of the following operating systems:

- Windows Server 2000
- Windows Server 2003
- Windows Server 2008
- Windows Server 2012
- Windows XP
- Windows 7
- Windows 8
- Windows 2000 Workstation
The computer must meet the following minimum hardware requirements.

- RAM - 512 MB
- Network card with Internet connectivity through port 443 (SSL) - to retrieve the HL7 files from LATITUDE®.
- Network connectivity to the EMR or CIS computer system - to provide the files to the EMR or CIS.
- Application Disk Space - 100 MB (does not include storage space for incoming HL7 files)
- Data Storage Disk Space - 1 GB minimum (see “Data storage requirements” on page 5 for a more detailed estimate)

### 3.1.2 Data storage requirements

Data storage requirements can be determined by using the following formula.

\[
s = \text{Approximate size of each HL7 file, typically 18Kb. (Note that this is a conservative estimate. Files grow larger in proportion to the number of reportable events.)}
\]

\[
n = \text{Approximate number of HL7 files to be transferred per day. This figure depends on the number of patients on the LATITUDE® system and how often data is sent from their implanted devices. On average, a clinic with 75 patients will receive 3-5 files per day. However, these estimates are based on how your clinic has configured LATITUDE remote monitoring for each patient. Thus, estimated data storage (KB) needed per year} = (s \times n) \times 365
\]

In addition, the LATITUDE Integration `uemr.activity.log` file will expand at a rate of approximately 84 MB per month, assuming a 60 second polling interval and nominal patient activity. Growth of your log file may be different. Log files should be checked on a regular basis for size and errors.

Other considerations when determining disk space requirements include understanding the storage needs of the EMR or CIS system, determining how long HL7 files will be saved before removing them from the LATITUDE Integration computer, and the effects of any log file rotation scheme used at your clinic.

### 3.1.3 Software and environment requirements

In order to successfully retrieve HL7 data files from LATITUDE, the following software and system parameters are required:

- Latest version of LATITUDE Integration
- Clinic–specific certificate file (xxx.P12) from Boston Scientific.
- Java Runtime Engine 1.6.0 or greater (32-bit version) installed on the LATITUDE Integration computer. (Not included in the LATITUDE Integration package; required before beginning installation.)
- Latest version, upgrades, or patches for the EMR or CIS system may be required.
- Access to local directory or network share that EMR or CIS uses for incoming data.
- The LATITUDE Integration application should not be run on a Citrix or similar server.
- Access to the Internet, specifically port 443 (SSL).
3.1.4 User requirements

Do not attempt to install LATITUDE Integration unless a LATITUDE Integration Administration user account exists with permissions to:

- Install LATITUDE Integration on the computer
- Manipulate and configure the Java Runtime Engine
- Configure and execute the LATITUDE® Integration service on the computer
- Access local directories and/or network shares where HL7 files will be deposited

A new user account should be created instead of reusing an existing account. (See “Prepare environment” on page 6.) This will aid in troubleshooting should any issues arise.

Proper security permissions should be set on the directory where HL7 files will be deposited. The new LATITUDE Integration Administration account must have access to these directories.

Access by other accounts should be limited or completely restricted.

3.2 Prepare environment

It is essential that the machine to be used for LATITUDE Integration be properly configured before installation begins. Configuration items include creating the administrator user account, setting file access permissions, and configuring the JAVA_HOME environment variable.

3.2.1 Create the Administrator user account

The LATITUDE Integration Administrator user account is used for all LATITUDE Integration activities, including installing the application and running the Windows service. The account may be a local machine account or a network domain account, whichever is applicable to your situation. A new account should be created in order to maintain security and traceability.

When deciding to create a network or local account, consider the following:

- Your internal security policies
- Access to Java Runtime files
- Access to directories where HL7 files will be deposited
- Account traceability requirements

If you are creating a local machine account, follow the steps below. Otherwise, skip these steps and go to "Network user account" on page 8

Local user account

A local machine account may be used as the LATITUDE Integration Administrator if a network account is not possible. However, depending on your setup, additional security permissions may be required on other machines and shares.

This procedure below describes how to create a local machine account. These steps are intended only as general overview because each machine configuration could be different.
1. Log on as an administrator.

2. Open Microsoft Management Console (MMC).

3. Add the Local Users and Groups snap-in for this machine.

4. Navigate to the Users pane

5. Click **Action | New User** to display the New User window.

6. Fill out the new user information similar to the following example and click **Create**. Note that subsequent installation steps assume the user name is UEMRAdmin as shown in the example. Also note that the example suggests clicking **User cannot change password** and **Password never expires**. However, consult your local security policies for exact settings.

You have now created a local machine account for LATITUDE® Integration. Skip the next section, “Network User Account”, and go to "Ensure proper permissions" on page 10.
Network user account

Network user accounts are preferred as hosts for the LATITUDE® Integration Administrator account.

This is a general description of network user account creation. It assumes that Microsoft Active Directory is managing all network user accounts. These steps are intended only as a general overview because your network configuration may be different.

1. Log on the network using the network administration account. The computer you log in to should have the network administration tools installed.

2. Open the Active Directory Users and Computers applet under Administrative Tools.

3. Navigate to the Users pane.

4. Click Action | New | User to display the New User window.

5. Fill out the new user information similar to the following example and click Next. Note that subsequent installation steps assume the user name is UEMRAdmin as shown in the example.
6. Enter the UEMRAadmin’s **password**, select the appropriate options and click **Next**. Note that the example suggests clicking the **User cannot change password** and **Password never expires** options. However, consult your local security policies for exact settings.

7. Confirm the settings on the new user page and click **Create**.

You have now created a network account for LATITUDE® Integration.
3.2.2 Ensure proper permissions

In order for the LATITUDE® Integration application to move data from LATITUDE to your clinic, the user account that runs the service must have the proper permissions on the local machine and/or the network. Although there is no specific set of steps to perform, the following list will help you determine what permissions to grant the UEMRAdmin account.

The UEMRAdmin account must:

- **Be able to install applications.** The LATITUDE Integration application will be installed later using the UEMRAdmin account. This implies that the UEMRAdmin is able to write to the program files directory.
- **Have access to Java Runtime Engine version 1.6.0 or greater (32-bit version) installed on this computer.** LATITUDE Integration is a Java application and needs access to the runtime engine.
- **Have access to the Services applet on this computer and be able to start and stop services.** LATITUDE Integration runs as a service and it will need to be started and stopped by UEMRAdmin.
- **Have read/write access to the location where incoming HL7 files are deposited.** This may be a directory on the local machine or a shared network directory. No other users should have access to this directory as it will contain protected health information (PHI).
- **Have Internet access, specifically on port 443 (SSL).** Communication to LATITUDE is performed via the Internet through the standard SSL port (443).

3.2.3 Set the required JAVA_HOME environment variable

This ensures that LATITUDE Integration uses the correct Java instance on this machine. If Java Runtime Engine version 1.6.0 or greater (32-bit version) is not installed, please install it now then return to this step to set the JAVA_HOME environment variable.

a. Log on using the UEMRAdmin account and password.

b. From the **Control Panel** select the **System Applet**.

c. Choose the **Advanced** tab.
d. Select the Environment Variables button to display the Environment Variables pane.

e. Under System Variables, click New to add a new environment variable.
f. Fill out the **New System Variable** box as shown in the following example. For **Variable name**, enter `JAVA_HOME`. For **Variable value**, enter the drive and path to the Java installation on this machine.

![New System Variable](image)

```
Variable name: JAVA_HOME
Variable value: C:\Program Files\Java\jre1.6.0_07
```

g. Click **OK** to close the System Variable pane.

h. Click **OK** to close the Environment Variables pane.

i. Click **OK** to close the System Properties pane.

### 3.3 Install application

The LATITUDE® Integration application must be installed on a clinic computer in order to transfer data from LATITUDE to your clinic. (Note: The LATITUDE Integration application cannot be upgraded in place. It must first be uninstalled as described in Section 5.3 before beginning an upgrade.)

The following steps describe how to install the LATITUDE Integration application.

1. Log on using the UEMRAdmin account and password created earlier. If you have not created the UEMRAdmin account, please go back to "Create the Administrator user account" and complete that process before continuing.

2. Locate the LATITUDE Integration installation files on the program distribution PEN drive. (You may either copy these files to a local directory with UEMRAdmin access or you may run the installation directly from the PEN drive.) In either case, begin the installation by running `LATITUDE_integration_UEMR_6464_Setup-x.xx.exe` where `x.xx` is the version number.

3. Select **Installer Language** and click **OK**.

**NOTE:** Only languages which are installed in the operating system will appear as options in the pull-down menu. Installation error messages are presented in English with numeric error codes. Translations of these numbered messages appear in a table at the end of this guide.
4. Click **Next** on the Welcome Screen.

![Image](image1.png)

5. Read the **License Agreement** and accept the terms of the license agreement if you agree. Click the Next button to continue. Note: You must agree to the terms of the license agreement before you can install this product.

![Image](image2.png)
6. Although using the default destination folder is strongly advised, you may browse to and select another location. *(The illustrations in this manual refer to the default destination folder.)* Click **Install** to start the installation process.
7. After the installation process has completed, click **Finish** to conclude the installation and close the wizard.

Congratulations! The LATITUDE Integration application is now installed on your machine. Files have been placed in the installation directory and a new LATITUDE Integration service has been added to the Services applet. However, further configuration is required before the LATITUDE Integration can retrieve patient data. The configuration process is explained in the following sections.

### 3.4 Install certificate

Proper security credentials must be installed before the LATITUDE Integration application can transfer data from LATITUDE to your clinic. The following steps describe how to install your clinic specific certificate. This process assumes that you have received your clinic-specific security certificate from Boston Scientific.

#### 3.4.1 Installing Java Unlimited Jurisdiction Pack

Before a license file can be created from your clinic specific certificate, the Java Unlimited Jurisdiction pack must be installed. By default Java supports up to 128-bit encryption. UEMR uses 2048-bit encryption. Therefore, the Java Unlimited Jurisdiction pack must be installed in order to create and use UEMR's 2048-bit license file.

The following steps outline how to install the Java Unlimited Jurisdiction Pack. For more detailed information see Oracle's Java web site at [http://java.oracle.com](http://java.oracle.com).

1. Log on using the UEMRAadmin account and password created earlier.
2. Download the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files for your version of Java from the Additional Resources section of the Java

3. Navigate to the \lib\security area of the Java install directory. Example: C:\Program Files\Java\jre1.6.0_07\lib\security

4. Rename local_policy.jar to local_policy.jar.old

5. Rename US_export_policy.jar to US_export_policy.jar.old

6. From the downloaded Java Unlimited Jurisdiction Pack, copy local_policy.jar and US_export_policy.jar and paste them into the same location as the *.old files.

3.4.2 Creating license file

Once the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files have been installed, use the following steps to create a LATITUDE® Integration license file.

1. Log on using the UEMRAdmin account and password created earlier. If you have not created the UEMRAdmin account, please go back to "Create the Administrator user account" on page 6 and complete that process before continuing.

**NOTE:** The LATITUDE Integration service must be run on the same computer that is used to create the license file. The license file must be recreated if the application is ever moved to another machine.

2. Ensure that the LATITUDE Integration application, Java Runtime Engine version 1.6.0 or greater (32-bit version), and Java Unlimited Jurisdiction pack are installed. If not, go back to those sections and complete those processes before continuing.

3. Locate your clinic–specific certificate (xxxxx.P12). This file should have been received under separate cover from Boston Scientific. If you have not received this certificate, please contact LATITUDE® Customer Support.
4. Locate your clinic–specific certificate password. You should have received a phone call from Boston Scientific during which you were given this password. Please contact LATITUDE Customer Support if you have not received it.

5. Copy the .P12 certificate file into the ./certs directory as shown below. Your actual certificate will have a different name than the one in the example.

![Certificate file location](image)

6. Open a Command Prompt and navigate to the LATITUDE Integration directory (e.g., C:\Program Files\Boston Scientific\LATITUDE Integration\UEMR).

7. Create your computer specific license file by issuing the following command at the command prompt:

   ```
   install_license certs\<cert filename> <cert password>
   ```

8. The command does not return messages for successful file completion or incorrect password entry. If you receive the error, “The system cannot find the path specified,” check the JAVA_HOME environment variable to ensure that it is set correctly. See “Set the required JAVA_HOME environment variable” on page 10 for more information about the JAVA_HOME environment variable.

   Upon successful completion, a license file with a .lic file extension is created in the certs directory.

You have now created an encrypted license file that the LATITUDE Integration application will use to authenticate your clinic when it connects to LATITUDE®. This license file cannot be used on any other computer in your clinic. If you reinstall the LATITUDE Integration application on a different computer, you must create a new license file for that computer by following this process again.
3.5 Configure Windows services

Since LATITUDE® Integration runs as a service inside Windows, you must configure the service within Windows before it will operate properly.

The following steps describe how to accomplish this:

1. Log on with the UEMRAdmin account and password.
2. Open the Services applet in Administrative Tools and scroll down to LATITUDE Integration.

If the LATITUDE Integration service is not listed in the services applet, there is a batch file in the LATITUDE Integration distribution that can be used to install the service.

a. Navigate to the LATITUDE Integration Installation directory (C:\Program Files\Boston Scientific\LATITUDE Integration\UEMR is the default location) in My Computer or Windows Explorer.

b. Double-click on install_service.bat to install the LATITUDE Integration service. Upon completion the LATITUDE Integration service will be added to the Services applet. Note that the windows services may need to be refreshed for the LATITUDE Integration service to show on the services list.
3. **Double-click** on the LATITUDE® Integration service to open the properties pane.

![LATITUDE Integration Properties (Local Computer)](image)

**NOTE:** The startup type should be set to **Automatic.** This causes the service to be started when the computer is started.

4. Click the **Log On** tab to open the log on information.
5. Click the **This account** radio button and fill in the information as shown in the following example.

![LATITUDE Integration Properties (Local Computer)](image)

This allows the LATITUDE Integration application run under the UEMRAadmin account as required. LATITUDE Integration will not run under the “Local System account.”
NOTE: The password will need to be entered even though dots indicate that it is already there.

6. Click OK to close the Properties pane.
7. Close the Services window.

You have just configured the LATITUDE® Integration service to a specific user account and password. If the user account ever gets deleted or if the password ever expires, the LATITUDE Integration service will fail to start and data will not be transferred from LATITUDE to your clinic.

The LATITUDE Integration service is now configured. The next step is to configure the application itself. Continue to “UEMR.XML Configuration” to properly configure LATITUDE Integration.

3.6 UEMR.XML configuration

The uemr.xml file contains configuration parameters used by the LATITUDE Integration application. This section considers only the basic settings that are required to run LATITUDE Integration. For more detailed information, including advanced configuration options, see “LATITUDE® Integration configuration detail” on page 34 of this document.

Perform the following steps to configure the LATITUDE Integration application so it can securely connect to LATITUDE®, transfer HL7 files, and deposit them in the appropriate location. These steps require that the LATITUDE Integration application and a valid license file have previously been installed.

1. Log on using the UEMRAdmin account.
2. Locate the example-uemr.xml file on the software distribution PEN drive provided by Boston Scientific.
3. Copy the example-uemr.xml file to the LATITUDE Integration installation config directory. Default location: C:\Program Files\Boston Scientific\LATITUDE Integration\UEMR\config\
4. Rename the copied \example-uemr.xml file to \uemr.xml as shown in the following example.

**NOTE:** The \wrapper.conf and the \uemr.xsd files in this directory are used by the LATITUDE® Integration application and should **never be changed** unless instructed by Boston Scientific.

5. Determine which directory the LATITUDE Integration application should deposit the incoming HL7 files. This location is referred to as the **drop zone**. This might be either an existing or a new directory, and it could be located on the local machine or a mapped network drive. In any case, make certain that the UEMRAdmin account has read/write privileges to this directory.

For this example, we'll assume the directory is C:\UEMROutbox.

6. Find the name of the license file created earlier. For this example we'll use **SC_12345.LIC** as the example license file name.

7. Edit **uemr.xml** in a standard text editor. (Notepad or WordPad will work fine.) The following is an example **uemr.xml** file before any modifications.
8. Edit the **WebDAV-path certificate** entry by searching for “ADD CERT NAME” and replace that text it with the name of the .LIC file you created earlier— including the quotes and excluding the .LIC extension. In this example it would be:

```xml
webdav-path certificate="sc_12345"
```

9. Edit the **webdav-path uri** entry by searching for “ADD LATITUDE URL” and replacing it with the URL given to you by your Boston Scientific representative, including the quotes:

```xml
uri="https://www.latitude.com/clinic/files" />
```

10. In this example the final WebDAV-path entry would be:

```xml
<webdav-path certificate="sc_12345"
              uri="https://www.latitude.com/clinic/files" />
```

**NOTE:** The uri listed in the example above is not the actual uri required by LATITUDE®.

11. Edit the **drop-zone-paths local-path** entry by searching for “ADD PATH” and replacing it with the directory where you decided LATITUDE® Integration should deposit the HL7 files in Step 5 above. Assuming the files will be deposited to C:\UEMROutbox the entry would be:

```xml
local-path uri="C:\UEMROutbox"
```

12. The final **uemr.xml** file is shown in the following screenshot. Inspect your uemr.xml file to ensure proper configuration.

![uemr.xml](image)

13. Save the **uemr.xml** file, then exit the editor.

You have now completed the configuration steps and are ready to start the LATITUDE Integration service.
3.7 Starting and stopping the service

Windows provides a number of ways to start and stop a service. All of those ways will work for LATITUDE® Integration. In the Services pane of the Windows Administrative Tools the LATITUDE Integration service will be listed as LATITUDE Integration. The service is set to start automatically, but you can use the Services pane to start and stop the service as needed.

Additionally, there are two batch files in the LATITUDE Integration distribution that can be used to start and stop the service.

Start_service.bat will start the LATITUDE Integration service.

Stop_service.bat will stop the LATITUDE Integration service.

4. TESTING

The following section describes the steps used to verify the installation and configuration of the LATITUDE Integration product. Testing should not be attempted until after the installation and configuration steps have been completed.

4.1 Test steps

Each test step must be completed before continuing to the next step. Test actions are in bold.

1. Log on to the LATITUDE® Integration computer as UEMRAadmin.

2. Open “My Computer” or other file system browser and navigate to the drop zone directory you configured in step 11.
   The directory should be empty at this point.

3. Open the Services applet and make sure that LATITUDE Integration is “Started”.


4. Open a web browser and log in to LATITUDE® as a user who has privileges to dismiss patients.

5. Find a patient entry on the Patients for Review page that shows Ready for Review or Review Started in the Disposition column (far right). Any of the patients in the following screen shot could be used for testing.
NOTE: You are working with actual patient data. Patients should not be dismissed without the consent of the clinician. All normal LATITUDE® review procedures should be followed.

6. Place a check in the box to left of the patient’s name to be dismissed and then click the Dismiss Patient button. This will remove the patient from the Patients for Review page and generate an HL7 data package which meets the Boston Scientific HL7 Specification. The HL7 file is placed in your clinic’s WebDAV Outbox folder.

Running on the clinic side, the LATITUDE Integration service monitors the WebDAV Outbox location you configured in the uemr.xml file, in cadence with the polling interval that is also set there.

When LATITUDE Integration finds a new HL7 file in your WebDAV Outbox, it downloads it from LATITUDE and places it in the LATITUDE Integration drop zone location you specified. Here it awaits further processing by the clinic’s EMR/CIS.

At this point LATITUDE Integration has completed one duty cycle. The next task in your test will be to verify the downloaded data.

7. Compare a patient’s LATITUDE on-screen data to the data in the HL7 file. Open the ALL PATIENTS tab on the LATITUDE website and find the patient whom you dismissed in Step 6 above.

In Windows, navigate to the drop box location and open the HL7 file in a text editor with word wrap enabled. If you have never seen one open before, an HL7 data file can look very intimidating because it contains several pages of dense text. Text strings that begin with three capital letters and end with a single vertical bar are
individual data records that hold several types of information. (Some data records are so long that it takes several lines on the page to hold all the data inside them.) The three capital letters at the beginning indicate the type of data record it is, the carets (^) indicate text spaces, and the vertical bars inside the record are field limiters that separate the individual data fields.

Only five pieces of data in the HL7 need to be verified in order to confirm system integrity. These are clinic name, patient name, patient date of birth, device model number, and device serial number.

For the purposes of this illustration, you are Berry Street Clinic and the patient whose data you dismissed on the LATITUDE® website is Sylvester Summers, born May 10, 1948. Summers has a model H219 device implanted, and its serial number is 542405. Here is the top portion of this patient’s HL7 file with the relevant record identifiers and patient data highlighted:

```
MSH|^~\&|LATITUDE|BOSTON SCIENTIFIC||Berry Street Clinic|20060925212610+0000||ORU^R01|2500001|P|2.3.1|||NE|||8859/1|
PID|1|7943581896|7943581896||Summers^Sylvester^^||19480510|M|||^^^^39219

NTE|1|LATITUDE|\br\My Alerts\br\-------------------------------\br\18 Apr 2006-\br\Atrial Tachycardia Response (ATR) for > 24 hours detected. Review episode detail in Arrhythmia Logbook within the Events tab. \br\27 Dec 2005-Low atrial intrinsic amplitude detected. Schedule in-office follow-up to evaluate atrial pacing lead. \br\24 Apr 2006-Shock therapy delivered to convert arrhythmia (Ventricular). Review episode detail in Arrhythmia Logbook within the Events tab. \br\24 Apr 2006-Shock therapy delivered to convert arrhythmia (Ventricular). Review episode detail in Arrhythmia Logbook within the Events tab. \br\21 Apr 2006-Atrial Tachycardia Response (ATR) for > 24 hours detected. Review episode detail in Arrhythmia Logbook within the Events tab. \br\NTE|2|LATITUDE|Dismissed from Review List in LATITUDE by Farmer, Luther (L602Farne) on 25 Sep 2006 at 15:26 CST|
NTE|3|LATITUDE|\br\Events Since Last Remote Follow-up(None)\br\------------------------------\br\|
PV1|1|R|||||L602Farne^Farmer^Luther^^|
OBR|1||2500759|BostonScientific-LastInterrogation^Last Interrogation|||20060428011327+0000|20060428011327+0000|||L602Far me||DR|||20060428011327+0000|||F|
OBX|1|ST|GDT-00001^Result Source^GDT-LATITUDE||Remote Interrogation|||F||
OBX|2|ST|GDT-00002^Device Manufacturer^GDT-LATITUDE||Boston Scientific|||F||
OBX|3|ST|GDT-00003^Device Type^GDT-LATITUDE||CRT-D|||F||
OBX|4|ST|GDT-00004^Device Name^GDT-LATITUDE||CONTAK|||F||
OBX|5|ST|GDT-00005^Device Model Name^GDT-LATITUDE||RENEWAL 3 RF HE|||F|
OBX|6|ST|GDT-00006^Device Model Number^GDT-LATITUDE||H219|||F||
OBX|7|ST|GDT-00007^Device Serial Number^GDT-LATITUDE||542405|||F||
```
8. These are the HL7 record identifiers and data field contents you should verify with the data shown in the patient file on the LATITUDE® website:

a. Clinic Name, in the HL7 file referred to as MSH-6
   MSH|\^~\&|LATITUDE|BOSTON SCIENTIFIC||Berry Street Clinic|

b. Patient Name, in the HL7 file referred to as PID-5.
   PID|1|7943581896|7943581896||Summers^Sylvester^^

c. Patient Birth Date, in the HL7 file referred to as PID-7. The format is YYYYMMDD.
   PID|1|7943581896|7943581896||Summers^Sylvester^^||19480510|

d. Device Model number, in the HL7 file referred to in the sixth OBX as OBX-6.
   OBX|6|ST|GDT-0006^Device Model Number^GDT-LATITUDE||H219|

e. Device Serial number, in the HL7 file referred to in the seventh OBX as OBX-7.
   OBX|7|ST|GDT-0007^Device Serial Number^GDT-LATITUDE||542405|

*The data used is fictional.*

9. Is the HL7 file written to the correct directory in the activity log file? (See the following activity log screenshot that displays where the HL7 file is written to.)

```
2007-01-23 15:07:27,740 STARTUP WrapperStartStopAppMain -  getCategory: Gateway
2007-01-23 15:07:27,750 STARTUP WrapperStartStopAppMain - global configuration: global>
2007-01-23 15:07:27,750 STARTUP WrapperStartStopAppMain - Properties: false
2007-01-23 15:07:27,750 STARTUP WrapperStartStopAppMain - log-path: log
2007-01-23 15:07:27,750 STARTUP WrapperStartStopAppMain - Configuration: LATITUDE
2007-01-23 15:07:27,750 STARTUP WrapperStartStopAppMain - Webapp path(s): /webapp path=https://www.latitude.com\clinic\file
2007-01-23 15:07:27,750 STARTUP WrapperStartStopAppMain - Drop zone path(s):
2007-01-23 15:07:27,750 STARTUP WrapperStartStopAppMain - Local path (C:\User\MyBox)
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - pollInterval: 90
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - Global configuration: global>
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - Properties: false
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - Configuration: LATITUDE
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - Webapp path(s): /webapp path=https://www.latitude.com\clinic\file
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - Drop zone path(s):
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - Local path (C:\User\MyBox)
2007-01-23 15:07:27,760 STARTUP WrapperStartStopAppMain - pollInterval: 90
```

*Drop Zone location*
10. Is the POLLINGINTERVAL=60? (See the following activity log screenshot for where the polling interval is located.)

11. Is the security certificate installed? (See the following screenshot of where the security certificate displays in the activity log file.)

12. Are there any error messages in the log file?
13. Is the uemr.xml file configured correctly?

```xml
<?xml version="1.0"?>
<config xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="config/uemr.xsd">
  <!-- Global configurations -->
  <global>
    <verbose>false</verbose>
    <polling-interval>60</polling-interval>
    <retry-count>4</retry-count>
  </global>
  <!-- LATITUDE Pickup Zone -->
  <pickup-zone name="LATITUDE">
    <pickup-zone-paths>
      <webdav-path certificate="sc_12345" url="https://www.latitude.com/clinic/files"/>
    </pickup-zone-paths>
    <drop-zone-paths>
      <local-path url="C:\UEMRCutbox"/>
    </drop-zone-paths>
  </pickup-zone>
</config>
```

Polling interval should be set to 60. Security certificate location

4.1.1 Expected results

The following table describes the expected results for the given process steps listed in the previous screen.

<table>
<thead>
<tr>
<th>Step</th>
<th>Expected Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Able to log on as LATITUDE® Integration administrator. Demonstrates that the account is active.</td>
</tr>
<tr>
<td>2</td>
<td>There should be no errors when trying to access the drop zone. Demonstrates that the drop zone path is accessible by the UEMRAdmin account</td>
</tr>
<tr>
<td>3</td>
<td>The “LATITUDE Integration” service should have a status of “started”. If the status is blank, the service must be started before continuing.</td>
</tr>
<tr>
<td>4</td>
<td>Demonstrates successful access to the LATITUDE web server and that a valid user id and password is known.</td>
</tr>
<tr>
<td>5</td>
<td>The Patients for Review page is displayed. There may not be any patients listed on the Patients for Review page. If there are none, the test can not continue.</td>
</tr>
<tr>
<td>6</td>
<td>Patient is removed from the Patients for Review page and an HL7 message is created for the LATITUDE Integration to retrieve.</td>
</tr>
<tr>
<td>7</td>
<td>The uemr.activity.log file may be inspected to demonstrate that the clinic’s WebDAV folder is being monitored.</td>
</tr>
</tbody>
</table>
### 4.1.2 Troubleshooting tips

The following table describes some troubleshooting tips for specific steps in the process. Not all process steps have troubleshooting tips in the table.

<table>
<thead>
<tr>
<th>Step</th>
<th>Troubleshooting Tip</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>The user account and password is case sensitive.</td>
</tr>
</tbody>
</table>
| 5 & 6| Selecting the **Dismiss Patient** button creates the HL7 file and places it in the EMR Outbox for the clinic.  

**Go to** **PATIENT UTILITIES | EMR Log** **to check the** **EMR Log** **for an entry for the patient that was dismissed. The status should be either “Transferred to Clinic” (LATITUDE Integration has already grabbed it), or “Placed in EMR Outbox” (the message is waiting for LATITUDE Integration to grab it).**  

If there is no log entry, then make sure the clinic is setup for LATITUDE Integration by calling LATITUDE customer support. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Troubleshooting Tip</th>
</tr>
</thead>
</table>
| 7    | 1. Check the activity log file to ensure LATITUDE® Integration is attempting to connect to the LATITUDE server. The activity log is found in `<Install Directory>/Boston Scientific/LATITUDE Integration/UEMR/log/uemr.activity.log`. An example log entry format when an HL7 file was not found on the LATITUDE server is:  
   `<date/time> File Name: https://<LATITUDEServer>…/files`  
   When a file is picked up from the LATITUDE Server the following format is used in the log:  
   `<date/time> File Name: <filename>.HL7`  
   2. An important item to remember is that a log entry does NOT mean that LATITUDE Integration was able to successfully authenticate to the LATITUDE Server. If the certificate has not been installed properly or if the LATITUDE Server has not been configured properly, there will be no error message in the activity log file. The only way to determine authentication errors is by calling LATITUDE Customer Support for assistance.  
   **NOTE:** Authentication errors are not quickly fixed.  
   3. Assuming LATITUDE Integration is configured to save the HL7 files (see Installation steps above) then a copy of the HL7 file will be placed in the SAVEDIR location. Check that file path to see if a new HL7 file has been placed there. |
| 8    | Check the WRITEDIR as configured in uemr.xml for the existence of the new file. |
| 9    | 1. Log on as the LATITUDE Integration Admin and navigate to the drop-zone-paths c:\uemroutbox directory, verify that you are able to view the HL7 file. If you are not able to view the HL7 file, try writing to that directory; ensure the LATITUDE Integration Admin account has read/write privileges to that directory.  
   2. If you are unable to write to that directory verify that you are logged on as LATITUDE Integration Admin and that the service is not running under a different account other than LATITUDE Integration Admin. |
| 11   | 1. If an error is present, check the security certificate in the activity log and service log to make sure the correct certificate is listed.  
   2. Verify that the security certificate was created using the same user id and computer that will be used to run the LATITUDE Integration. |
4.2 Verification of installation

Once you have completed the installation and configuration, we ask that you send copies of the uemr.service.log, uemr.activity.log, and uemr.xml files to Boston Scientific for our records. Please contact LATITUDE Customer Support for instructions on sending these files.

5. MAINTENANCE

5.1 Certificate renewal

Each certificate used for LATITUDE Integration authentication and authorization has an expiration date. When the certificate expires it will be necessary to replace the expired certificate with a new certificate provided by Boston Scientific. Once the new certificate is received, the following steps will be used replace the expired certificate with the new, valid certificate.

1. Stop the LATITUDE Integration Windows service.

2. Copy the new certificate which has been provided from Boston Scientific to the UEMR/Certs folder. Default location is C:/Program Files/Boston Scientific/Latitude Integration/UEMR/Certs/ Please note that the old .p12 file and the new .p12 could be named the same. Overwrite the old certificate with the new one if prompted to do so.
3. Delete the old .lic file.
4. Create a new .lic file from the .p12 file by using the same methods as described in "Creating license file" on page 16 of this installation manual.
5. Update the UEMR.xml file with the new certificate name, if different, per the instructions outlined in step 8 of "UEMR.XML configuration" on page 20 of this guide.
6. Start the LATITUDE® Integration Windows service as described in Section 3.7.
7. Check the uemr.activity.log file in the UEMR/Log/ folder to insure the program is running correctly. Default location is C:/Program Files/Boston Scientific/Latitude Integration/UEMR/Log/. See section 4.1 steps 10 to 13.

5.2 Upgrade the LATITUDE® Integration software
To perform a software upgrade for UEMR, please uninstall the UEMR software as in Section 5.3, then follow the initial installation instructions in Section 3.3 to install the new version of the UEMR software.

5.3 Uninstall the LATITUDE® Integration software
The following steps will uninstall the LATITUDE Integration application from a machine. Make sure to backup any configuration and certificates before proceeding.

1. Log on using the LATITUDE Integration Admin account and password.
2. Open a Command Prompt and navigate to the LATITUDE Integration Installation directory (C:\Program Files\Boston Scientific\LATITUDE Integration\UEMR is the default location).
3. From the installation directory, run the command uninstall_service.bat which will stop the service and remove it from the Services list.
4. Copy any important files from the install directory. These may include:

<table>
<thead>
<tr>
<th>Certificates</th>
<th>.\certs*.p12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configurations</td>
<td>.\config\uemr.xml</td>
</tr>
<tr>
<td>Log Files</td>
<td>.\log\uemr.activity.log and .\log\uemr.service.log</td>
</tr>
</tbody>
</table>

5. Delete the install directory. The default directory is C:\Program Files\Boston Scientific\LATITUDE Integration\UEMR.
6. Navigate to the location where LATITUDE Integration was depositing HL7 files. Assuming the directory is empty and is no longer going to be used, delete the directory.

LATITUDE Integration has now been removed from the computer.

NOTE: The execution of all the uninstall steps previously described is essential for a correct re-installation of the UEMR.
6. REFERENCE

6.1 LATITUDE® Integration configuration detail

The LATITUDE Integration configuration file is the only means of user input into the LATITUDE Integration service. At its most basic level (as seen in the default example) it controls what files to retrieve, where to retrieve them from, and where to put them once they are retrieved. However, LATITUDE Integration allows further flexibility in its configuration. This section describes the configuration parameters available in the LATITUDE Integration software.

The configuration file is found in the \config directory of the installation directory and is named uemr.xml. Assuming the default installation directory was used the configuration file can be found here:

C:\Program Files\Boston Scientific\LATITUDE Integration\UEMR\config\uemr.xml

The LATITUDE Integration configuration is an XML file which contains the complete configuration parameters for LATITUDE Integration. There are three major sections of the file:

1. Header section
2. Global configuration section
3. Pickup Zone configuration section

Each of those sections is described below.

As is customary with XML files, each section and parameter within a section is started by a start tag and ended with an end tag (i.e., <global>…</global> or <log-path>…</log-path>).

Certain LATITUDE Integration configuration parameters must be correct in order for the LATITUDE Integration service to launch. Those parameters have suggested settings set as default values in the supplied uemr.xml file.

The following paragraphs identify the parameters and explain their suggested settings.

6.1.1 Header section parameters

The header section simply points to the XML schema documentation so the parameters used in the following sections can be validated by the LATITUDE Integration XML parser. No changes are required to this section and there are no parameters contained in this section.

The following is an example of the header section. The configuration file you received from Boston Scientific may be different from this example. You should not modify the header section in the file you received from Boston Scientific.

```xml
<config version="1.0"?
<config xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="config/uemr.xsd">
```
6.1.2 Global section parameters

The global section of the uemr.xml file contains those configuration parameters that apply to all of the pickup zone sections. The global section is opened by the `<global>` tag and closed with the `</global>` tag. Certain LATITUDE® Integration parameters are limited to the global section, while others may be used in either the global or pickup-zone sections.

For example, LATITUDE Integration has only one log file and that log file is limited to one location. Therefore, the configuration parameter log-path must only be used in the global section. Adding it to a pickup zone section will cause an error and the LATITUDE Integration service will not start.

When deciding to use a global parameter you should take into account the parameter hierarchy.

1. The system parses and sets the global parameters first.
2. If the same parameter exists in both the global and a pickup zone section, the latter parameter will override the former parameter, but only for that particular pickup zone and only if the parameter is allowed outside the global zone.
3. If only a pickup zone parameter exists, use the pickup zone parameter.

The following parameters must only be used in the global section of the configuration file. Using them elsewhere will cause an error and the LATITUDE Integration service will not start.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>verbose: The level of verbosity when logging LATITUDE Integration events. If set to true additional detail will be logged. Due to log file size, it is recommended that verbose be set to false except when troubleshooting.</td>
<td>Change</td>
<td>Boolean string – true or false</td>
<td>false</td>
</tr>
<tr>
<td>log-path: The path where the activity log file will be written. (the name of the file will always be “uemr.activity.log”)</td>
<td>Change</td>
<td>Path string</td>
<td>“./log”</td>
</tr>
</tbody>
</table>

The following parameters may be included in the global section of the configuration file. They may also be used in other sections which may override the global parameter setting. See the description of the parameter hierarchy above.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>input-file-suffix: The input file extension used by LATITUDE Integration when searching for HL7 files. This parameter is NOT case sensitive.</td>
<td>Change</td>
<td>String</td>
<td>hl7</td>
</tr>
</tbody>
</table>
Parameters available in global and pickup zone configuration sections

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>polling-interval: The number of seconds to wait between checking for input files.</td>
<td>Change optional</td>
<td>Integers between 10 and 86400 (24 hours)</td>
<td>60</td>
</tr>
<tr>
<td>retry-count: The number of times the application will retry a failed transfer attempt.</td>
<td>Change optional</td>
<td>Integers between 0 and 24</td>
<td>4</td>
</tr>
<tr>
<td>crc-mode: The mode for checksum/CRC processing.</td>
<td>Change optional</td>
<td>“Off” or “Downstream”</td>
<td>“Off”</td>
</tr>
<tr>
<td>crc-suffix: The file extension of the checksum files to be received.</td>
<td>Change optional</td>
<td>String</td>
<td>“crc”</td>
</tr>
<tr>
<td>crc-algorithm: The CRC algorithm to use when computing and comparing checksums.</td>
<td>Do not change</td>
<td>MD5</td>
<td></td>
</tr>
<tr>
<td>delete-input-files: Flag indicating whether or not input files should be deleted from the pickup-zone-path once they have been transferred.</td>
<td>Do not change</td>
<td>false</td>
<td></td>
</tr>
</tbody>
</table>

Global section example
The example global section includes all the parameters for illustration purposes. Such a configuration might not be the best configuration for your installation.

```xml
<!-- Global configuration -->
<global>
  <verbose>false</verbose>
  <log-path>./log</log-path>
  <input-file-suffix>hl7</input-file-suffix>
  <polling-interval>60</polling-interval>
  <retry-count>4</retry-count>
  <crc-mode>off</crc-mode>
  <crc-suffix>crc</crc-suffix>
  <crc-algorithm>MD5</crc-algorithm>
  <delete-input-files>false</delete-input-files>
</global>
```
6.1.3 Pickup zone section parameters

A pickup zone is a logical grouping of parameters that define the location where the program will retrieve data (pickup zone path) and where it will put it (drop zone path). As with the other sections of the configuration file, some parameters are required here and others are optional. Any number of pickup zones can be defined in the .XML configuration file.

The first pickup zone starts with the <pickup-zone name="LATITUDE"> tag and ends with the </pickup-zone> tag. Note that in the start tag the unique logical name of this pickup zone must be identified by the name attribute. Because the LATITUDE® Integration software can retrieve files from multiple pickup zones each one must be uniquely identified by the name attribute.

The following table outlines the required components of a pickup zone.

### Required pickup zone parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>pickup-zone: A logical grouping of parameters. Many of these logical groupings can exist in the configuration file.</td>
<td>Required</td>
<td>Complex XML element</td>
<td></td>
</tr>
<tr>
<td>name: The unique name that identifies a single pickup zone.</td>
<td>Required</td>
<td>String</td>
<td></td>
</tr>
<tr>
<td>pickup-zone-paths: The path where the input file(s) are located.</td>
<td>Required</td>
<td>Complex XML element</td>
<td>See “Pickup zone paths tag” on page 38.</td>
</tr>
<tr>
<td>drop-zone-paths: The path(s) where input file(s) must be written.</td>
<td>Required</td>
<td>Complex XML element</td>
<td></td>
</tr>
</tbody>
</table>

Additionally, there are a number of optional parameters available for a pickup zone. Many of these optional parameters may also be defined in the global section described earlier. Any optional parameters defined for a pickup zone will override the same parameter defined in the global section.

### Optional pickup zone parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>input-file-suffix: The input file extension used by the LATITUDE Integration software when searching for HL7 files. This parameter is NOT case sensitive.</td>
<td>Change optional</td>
<td>String</td>
<td>“hl7”</td>
</tr>
<tr>
<td>polling-interval: The number of seconds the application will wait between checking for input files.</td>
<td>Change optional</td>
<td>Integers between 10 and 86400 (24 hours)</td>
<td>60</td>
</tr>
</tbody>
</table>
Each pickup zone has two complex tags that define the pickup zone paths and the drop zone paths. The following paragraphs define those tags in more detail.

### 6.1.4 Pickup zone paths tag

The pickup zone paths tag defines specifically where to retrieve the files from. It may point to a local or a WebDAV path. A pickup zone path tag must have at least one WebDAV path or one local path or the LATITUDE® Integration service will not start.

A local path is a directory on the local machine or clinic network. The LATITUDE Integration Admin user must have read/write access to this directory.

A WebDAV path is a WebDAV compliant source which could be on the local network or across the Internet. A WebDAV path may or may not use a certificate to establish a connection. A WebDAV path is used to retrieve files from LATITUDE®.

Both the local path and the WebDAV path are complex XML tags with multiple elements in each. The following table describes the elements.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>retry-count: The number of times the application will retry a failed transfer attempt.</td>
<td>Change optional</td>
<td>Integers between 0 and 24</td>
<td>4</td>
</tr>
<tr>
<td>crc-mode: The mode for checksum/CRC processing.</td>
<td>Change optional</td>
<td>“Off” or “Downstream”</td>
<td>“Off”</td>
</tr>
<tr>
<td>crc-suffix: The file extension of the checksum files to be received.</td>
<td>Change optional</td>
<td>String</td>
<td>“crc”</td>
</tr>
<tr>
<td>crc-algorithm: The CRC algorithm to use when computing and comparing checksums.</td>
<td>Do not change</td>
<td>MD5</td>
<td></td>
</tr>
<tr>
<td>delete-input-files: Flag indicating whether or not input files should be deleted from the pickup-zone-path once they have been transferred.</td>
<td>Do not change</td>
<td>false</td>
<td></td>
</tr>
</tbody>
</table>

Optional pickup zone parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>retry-count: The number of times the application will retry a failed transfer attempt.</td>
<td>Change optional</td>
<td>Integers between 0 and 24</td>
<td>4</td>
</tr>
<tr>
<td>crc-mode: The mode for checksum/CRC processing.</td>
<td>Change optional</td>
<td>“Off” or “Downstream”</td>
<td>“Off”</td>
</tr>
<tr>
<td>crc-suffix: The file extension of the checksum files to be received.</td>
<td>Change optional</td>
<td>String</td>
<td>“crc”</td>
</tr>
<tr>
<td>crc-algorithm: The CRC algorithm to use when computing and comparing checksums.</td>
<td>Do not change</td>
<td>MD5</td>
<td></td>
</tr>
<tr>
<td>delete-input-files: Flag indicating whether or not input files should be deleted from the pickup-zone-path once they have been transferred.</td>
<td>Do not change</td>
<td>false</td>
<td></td>
</tr>
</tbody>
</table>
**Pickup zone paths tags**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value Type</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>pickup-zone-paths: The path where the input file(s) are located.</td>
<td>Required</td>
<td>Complex XML element.</td>
<td></td>
</tr>
<tr>
<td>WebDAV-path: Defines a path on a WebDAV server where LATITUDE Integration software should retrieve the files.</td>
<td>Required</td>
<td>Complex XML element.</td>
<td></td>
</tr>
<tr>
<td>certificate: The name of the license to use for SSL Client Authentication (without the path or the &quot;lic&quot; extension).</td>
<td>Optional</td>
<td>String</td>
<td></td>
</tr>
<tr>
<td>uri: The specific location of the WebDAV path.</td>
<td>Required</td>
<td>String - URL</td>
<td></td>
</tr>
<tr>
<td>local-path: Defines a path on a local file system where LATITUDE® Integration software should retrieve the files.</td>
<td>Required</td>
<td>Complex XML element.</td>
<td></td>
</tr>
<tr>
<td>uri: The specific location of the local-path.</td>
<td>Required</td>
<td>String - File system path</td>
<td></td>
</tr>
</tbody>
</table>

See the following example for proper use of these complex XML structures.

**Example pickup zone section**

The following is an example pickup zone section showing many of the optional parameters. The example shows how the parameters would be used for a pickup zone of the configuration file although it may not make sense to use such a configuration for your installation.

```xml
<!-- LATITUDE Pickup Zone -->
<pickup-zone name="LATITUDE">
  <pickup-zone-paths>
    <webdav-path certificate="my_cert" uri="https://myserver/myurl"/>
  </pickup-zone-paths>
  <drop-zone-paths>
    <local-path certificate="my_cert" uri="C:\UEMROutbox"/>
  </drop-zone-paths>
  <input-file-suffix>hl7</input-file-suffix>
  <polling-interval>60</polling-interval>
  <retry-count>4</retry-count>
  <crc-mode>off</crc-mode>
  <crc-suffix>crc</crc-suffix>
  <crc-algorithm>MD5</crc-algorithm>
  <delete-input-files>false</delete-input-files>
</pickup-zone>
```
6.2 Sample configuration file

The following is a sample configuration file with a single pickup zone that uses SSL and WebDAV to download files from the LATITUDE® server.

```xml
<?xml version="1.0"?>
<config xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="config/uemr.xsd">

  <!-- Global configuration -->
  <global>
    <input-file-suffix>HL7</input-file-suffix>
    <verbose>false</verbose>
    <log-path>./log</log-path>
  </global>

  <!-- Latitude Pickup Zone -->
  <pickup-zone name="LATITUDE">
    <pickup-zone-paths>
      <webdav-path certificate="My_Certificate" uri="https://www.server.com/files" />
    </pickup-zone-paths>
    <drop-zone-paths>
      <local-path certificate="My Certificate" uri="C:\UEMROutbox" />
    </drop-zone-paths>
  </pickup-zone>

6.3 Event logging and log files

The LATITUDE Integration software will log its actions to log files. Actions are classified into three categories:

- Startup
- Exception
- Transmission

Startup actions are those actions that are executed while the LATITUDE Integration Windows service is starting. They include such things as reading the configuration file and verifying configuration parameters.

Exception actions might also be classified as errors. When things go wrong within LATITUDE Integration software an exception error will be logged.

Transmission actions are all other actions that may occur. Checking for files, transferring files, or writing files to the destination are all examples of transmission actions.

As actions occur a log entry is made in the log file. Log entries will include a date/time stamp, a location id, an action category, and the message. An example log entry might be:

Although this log entry is more than one line, it is a single action log. The log entry can be broken down into its components.

<table>
<thead>
<tr>
<th>Date/time stamp</th>
<th>2007-05-23 15:08:44</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location id</td>
<td>339</td>
</tr>
<tr>
<td>Action Class</td>
<td>TRANSMISSION</td>
</tr>
</tbody>
</table>

The date/time stamp is the date and time this particular log entry occurred. It is taken from the date and time of the computer.

The location id is an identifier for the location in the program where this error occurred. This information will only be useful when debugging problems with Boston Scientific.

Action class is the type of log entry as described above.

Message is the action message. It always starts with an identifier which will most commonly be the pickup zone name from the configuration file.

The LATITUDE® Integration software uses two log files: uemr.service.log and uemr.activity.log. See the sections below for additional information about these log files.

### 6.3.1 Log file configuration

There are two configuration parameters in the LATITUDE Integration configuration file that pertain to the logging function. Both parameters are optional but they must be in the global section of the configuration file if they are used. See "Global section parameters" on page 35 for more detail.

- Log-path - this is the path were the log files will be written to. The default is ./log.
- Verbose - Sets the level of verbosity when logging actions. Can be set to “true” or “false.” False is the default configuration.

### 6.3.2 uemr.service.log file

The uemr.service.log file is the log file where startup actions are written while the application is starting up. The path and filename for this log file are static and non-configurable.

The uemr.service.log file is used for all action messages that need to be logged during the program startup process - during the time the uemr.xml configuration is still being read and validated. Once the LATITUDE Integration service is running, the application copies the action messages from the uemr.service.log file to the uemr.activity.log file and writes additional information there.
The following example is a uemr.service.log file showing a successful startup.

```
--> Wrapper Started as Service
Launching a JVM..
Wrapper (Version 3.1.2) http://wrapper.tanukisoftware.org
2007-04-11 17:10:27,529 STARTUP [WrapperStartStopAppMain] -
=======================================
2007-04-11 17:10:27,529 STARTUP [WrapperStartStopAppMain] -
Starting up, Version: 0.1
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
Global configuration: <global>
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
Properties:
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
verbose: false
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
log-path: ./log
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
polling-interval: 60
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
input-file-suffix: hl7
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Configuration: Endurance01
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Pickup Zone path(s):
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Drop Zone path(s):
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Local Path (c:\UEMROutbox\)
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Properties:
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
polling-interval: 60
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
input-file-suffix: hl7
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Configuration complete, starting thread
2007-04-11 17:11:02,609 STARTUP [Wrapper-Connection] - About to shutdown
2007-04-11 17:11:02,609 STARTUP [Wrapper-Connection] - Shutdown complete
2007-04-11 17:11:02,609 STARTUP [Wrapper-Connection] -
=======================================
<-- Wrapper Stopped
```
6.3.3 uemr.activity.log file

As noted previously, the activity log file is the main log file for the LATITUDE® Integration software. Upon successful startup, all activities are logged to this log file - including the startup activities from the service log file.

The LATITUDE Integration software will create a new uemr.activity.log file every night at midnight. The previous day's log file will be renamed and saved with a date tag in yyyyymmdd format, e.g., uemr.activity.20100520.log is the log file from May 20, 2010.

The following is an example activity log file.

```
2007-04-11 17:10:27,529 STARTUP [WrapperStartStopAppMain] -
=================================
2007-04-11 17:10:27,529 STARTUP [WrapperStartStopAppMain] -
Starting up, Version: 0.1
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
Global configuration: <global>
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
Properties:
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
verbose: false
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
log-path: ./log
2007-04-11 17:10:28,220 STARTUP [WrapperStartStopAppMain] -
polling-interval: 60
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
input-file-suffix: hl7
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Configuration: Endurance01
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Pickup Zone path(s):
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Drop Zone path(s):
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Local Path (c:\UEMROutbox\)
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Properties:
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
polling-interval: 60
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
input-file-suffix: hl7
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Configuration complete, starting thread
2007-04-11 17:10:28,230 STARTUP [WrapperStartStopAppMain] -
Creating and running thread(s)
2007-04-11 17:11:02,609 STARTUP [Wrapper-Connection] - About to shutdown
2007-04-11 17:11:02,609 TRANSMISSION [LATITUDE] - The thread was interrupted
2007-04-11 17:11:02,609 TRANSMISSION [LATITUDE] - Thread has stopped
```
Note that the contents of the service log in the previous section are included in the activity log.

### 6.4 Error code messages

<table>
<thead>
<tr>
<th>Error Code Number</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unable to obtain installed JRE version. Please install JRE version 1.6 or higher prior to installing UEMR.</td>
</tr>
<tr>
<td>2</td>
<td>Unable to obtain installed JRE version. Please install JRE version 1.6 or higher prior to installing UEMR.</td>
</tr>
<tr>
<td>3</td>
<td>Installed JRE version x.x not compatible. Please install JRE version 1.6 or higher prior to installing UEMR.</td>
</tr>
<tr>
<td>4</td>
<td>Unable to determine the value of the system environment variable JAVA_HOME. Please set the JAVA_HOME environment variable to the directory of your current Java installation</td>
</tr>
</tbody>
</table>

### 6.5 Example HL7 file

The following example HL7 file shows what a LATITUDE® HL7 message might look like. This is only one example of the many possible outcomes. Data within the example message is hypothetical and all LATITUDE HL7 terms are not represented.

```
MSH|\~\&|LATITUDE|BOSTON SCIENTIFIC||Berry Street Clinic|20060925212610+0000||ORU^R01|2500001|P|2.3.1|||NE|||8859/1|
PID|1|7943581896|7943581896||Summers^Sylvester^^||19480510|M|||^^^^39219||
NTE|1|LATITUDE|\br\My Alerts\br\-------------------------------\br\18 Apr 2006-Atrial Tachycardia Response (ATR) for > 24 hours detected. Review episode detail in Arrhythmia Logbook within the Events tab.\br\27 Dec 2005-Low atrial intrinsic amplitude detected. Schedule in-office follow-up to evaluate atrial pacing lead.\br\24 Apr 2006-Shock therapy delivered to convert arrhythmia (Ventricular). Review episode detail in Arrhythmia Logbook within the Events tab.\br\24 Apr 2006-Shock therapy delivered to convert arrhythmia (Ventricular). Review episode detail in Arrhythmia Logbook within the Events tab.\br\21 Apr 2006-Atrial Tachycardia Response (ATR) for > 24 hours detected. Review episode detail in Arrhythmia Logbook within the Events tab.\br\18 Apr 2006-Atrial Tachycardia Response (ATR) for > 24 hours detected. Review episode detail in Arrhythmia Logbook within the Events tab.\br|NTE|2|LATITUDE|Dismissed from Review List in LATITUDE by Farmer, Luther (L602Farme) on 25 Sep 2006 at 15:26 CST|NTE|3|LATITUDE|\br\Events Since Last Remote Follow-up(None)\br\------
PV1|1|R|||L602Farme^Farmer^Luther^^|
```
<table>
<thead>
<tr>
<th>OBX</th>
<th>ST</th>
<th>GDT-00001</th>
<th>Result Source</th>
<th>GDT-LATITUDE</th>
<th>Remote Interrogation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00002</td>
<td>Device Manufacturer</td>
<td>GDT-LATITUDE</td>
<td>Boston Scientific</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00003</td>
<td>Device Type</td>
<td>GDT-LATITUDE</td>
<td>CRT-D</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00004</td>
<td>Device Name</td>
<td>GDT-LATITUDE</td>
<td>CONTAK</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00005</td>
<td>Device Model Name</td>
<td>GDT-LATITUDE</td>
<td>RENEWAL 3 RF</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00006</td>
<td>Device Model Number</td>
<td>GDT-LATITUDE</td>
<td>H219</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00007</td>
<td>Device Serial Number</td>
<td>GDT-LATITUDE</td>
<td>542405</td>
</tr>
<tr>
<td>OBX</td>
<td>DT</td>
<td>GDT-00108</td>
<td>Device Implant Date</td>
<td>GDT-LATITUDE</td>
<td>20040209</td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00008</td>
<td>Battery Gauge</td>
<td>GDT-LATITUDE</td>
<td>93</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00009</td>
<td>Monitoring Voltage</td>
<td>GDT-LATITUDE</td>
<td>3.16 V</td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00010</td>
<td>Charge Time</td>
<td>GDT-LATITUDE</td>
<td>4.4 s</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00011</td>
<td>Last Reform</td>
<td>GDT-LATITUDE</td>
<td>20060328</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00012</td>
<td>Counters Since</td>
<td>GDT-LATITUDE</td>
<td>None</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00013</td>
<td>VF Episodes</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00014</td>
<td>VT Episodes</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00015</td>
<td>VT-1 Episodes</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00016</td>
<td>Non-Sustained Ventricular Episodes</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00017</td>
<td>ATR Mode Switches</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00020</td>
<td>Atrial Percent Paced</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00021</td>
<td>RV Percent Paced</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00022</td>
<td>LV Percent Paced</td>
<td>GDT-LATITUDE</td>
<td></td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00023</td>
<td>Right Atrial Lead Status</td>
<td>GDT-LATITUDE</td>
<td>OK</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00027</td>
<td>RV Intrinsic Amplitude</td>
<td>GDT-LATITUDE</td>
<td>Paced</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00028</td>
<td>RV Pace Impedance</td>
<td>GDT-LATITUDE</td>
<td>523 Ohms</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00030</td>
<td>LV Intrinsic Amplitude</td>
<td>GDT-LATITUDE</td>
<td>5.6 mV</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00031</td>
<td>LV Pace Impedance</td>
<td>GDT-LATITUDE</td>
<td>440 Ohms</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00032</td>
<td>Shock Vector Status</td>
<td>GDT-LATITUDE</td>
<td>OK</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00033</td>
<td>Shock Impedance</td>
<td>GDT-LATITUDE</td>
<td>41 Ohms</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00034</td>
<td>V-Tachy Mode</td>
<td>GDT-LATITUDE</td>
<td>Monitor + Therapy</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00036</td>
<td>Brady Mode</td>
<td>GDT-LATITUDE</td>
<td>DDD</td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00037</td>
<td>Lower Rate Limit</td>
<td>GDT-LATITUDE</td>
<td>70 bpm</td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00038</td>
<td>Maximum Tracking Rate</td>
<td>GDT-LATITUDE</td>
<td>130 bpm</td>
</tr>
<tr>
<td>OBX</td>
<td>NM</td>
<td>GDT-00039</td>
<td>Maximum Sensor Rate</td>
<td>GDT-LATITUDE</td>
<td>120 bpm</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00040</td>
<td>Sensitivity RA</td>
<td>GDT-LATITUDE</td>
<td>Nominal</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00042</td>
<td>Sensitivity LV</td>
<td>GDT-LATITUDE</td>
<td>Nominal</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00043</td>
<td>Paced AV Delay</td>
<td>GDT-LATITUDE</td>
<td>120 ms</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00044</td>
<td>Sensed AV Offset</td>
<td>GDT-LATITUDE</td>
<td>Off</td>
</tr>
<tr>
<td>OBX</td>
<td>ST</td>
<td>GDT-00047</td>
<td>A-Refractory (PVARP)</td>
<td>GDT-LATITUDE</td>
<td>240 - 250 ms</td>
</tr>
</tbody>
</table>
OBX|45|ST|GDT-00048^RV-Refractory (RVRP)^GDT-LATITUDE||240 - 250 ms|||F||
OBX|46|NM|GDT-00049^LV-Refractory (LVRP)^GDT-LATITUDE||250 ms|||F||
OBX|47|NM|GDT-00050^LV Protection Period^GDT-LATITUDE||400 ms|||F||
OBX|48|ST|GDT-00051^Ventricular Pacing Chamber^GDT-LATITUDE||BiV|||F||
OBX|49|NM|GDT-00052^Ventricular Pacing Chamber LV Offset^GDT-LATITUDE||0 ms|||F||
OBX|50|ST|GDT-00053^Pacing Output - RA^GDT-LATITUDE||2.4 V @ 0.5 ms|||F||
OBX|51|ST|GDT-00054^Pacing Output - RV^GDT-LATITUDE||2.4 V @ 0.5 ms|||F||
OBX|52|ST|GDT-00055^Pacing Output - LV^GDT-LATITUDE||6.0 V @ 1.0 ms|||F||
OBX|53|ST|GDT-00056^ATR Mode Switch Mode^GDT-LATITUDE||VDIR|||F||
OBX|54|ST|GDT-00057^ATR Mode Switch Rate^GDT-LATITUDE||170 bpm|||F||
OBX|55|NM|GDT-00074^VF Zone^GDT-LATITUDE||200 bpm|||F||
OBX|56|NM|GDT-00075^VF Shock 1 Energy^GDT-LATITUDE||41 J|||F||
OBX|57|NM|GDT-00076^VF Shock 2 Energy^GDT-LATITUDE||41 J|||F||
OBX|58|NM|GDT-00077^VF Max Shock Energy^GDT-LATITUDE||41 J|||F||
OBX|59|NM|GDT-00078^VF Number Of Additional Shocks^GDT-LATITUDE||6|||F||
OBX|60|NM|GDT-00079^VT Zone^GDT-LATITUDE||180 bpm|||F||
OBX|61|ST|GDT-00080^VT Zone ATP1 Type^GDT-LATITUDE||Scan|||F||
OBX|62|ST|GDT-00081^VT Zone ATP1 Number of Bursts^GDT-LATITUDE||4|||F||
OBX|63|ST|GDT-00082^VT Zone ATP2 Type^GDT-LATITUDE||Disabled|||F||
OBX|64|ST|GDT-00083^VT Zone ATP2 Number of Bursts^GDT-LATITUDE||Off|||F||
OBX|65|ST|GDT-00084^VT Shock 1 Energy^GDT-LATITUDE||26 J|||F||
OBX|66|ST|GDT-00085^VT Shock 2 Energy^GDT-LATITUDE||41 J|||F||
OBX|67|ST|GDT-00086^VT Max Shock Energy^GDT-LATITUDE||41 J|||F||
OBX|68|NM|GDT-00087^VT Number Of Additional Max Energy Shocks^GDT-LATITUDE||3|||F||
OBR|2|2500759|BostonScientific-Implant^Implant|||20040209|||F||
OBX|1|ST|GDT-00001^Result Source^GDT-LATITUDE||Implant|||F||
OBX|2|ST|GDT-00002^Device Manufacturer^GDT-LATITUDE||Boston Scientific|||F||
OBX|3|ST|GDT-00003^Device Type^GDT-LATITUDE||CRT-D|||F||
OBX|4|ST|GDT-00004^Device Name^GDT-LATITUDE||CONTAK|||F||
OBX|5|ST|GDT-00005^Device Model Name^GDT-LATITUDE||RENEWAL 3 RF HE|||F||
OBX|6|ST|GDT-00006^Device Model Number^GDT-LATITUDE||H219|||F||
OBX|7|ST|GDT-00007^Device Serial Number^GDT-LATITUDE||542405|||F||
OBX|8|DT|GDT-00108^Device Implant Date^GDT-LATITUDE||20040209|||F||
OBX|9|ST|GDT-00098^ARA Intrinsic Amplitude^GDT-LATITUDE||mV|||F||
OBX|10|ST|GDT-00099^ARA Pace Impedance^GDT-LATITUDE||Ohms|||F||
OBX|11|ST|GDT-00100^ARA Pace Threshold^GDT-LATITUDE||V @ ms|||F||
OBX|12|ST|GDT-00101^RV Intrinsic Amplitude^GDT-LATITUDE||mV|||F||
OBX|13|ST|GDT-00102^RV Pace Impedance^GDT-LATITUDE||Ohms|||F||
OBX|14|ST|GDT-00103^RV Pace Threshold^GDT-LATITUDE||V @ ms|||F||
OBX|15|ST|GDT-00104^LV Intrinsic Amplitude^GDT-LATITUDE||mV|||F||
OBX|16|ST|GDT-00105^LV Pace Impedance^GDT-LATITUDE||Ohms|||F||
OBX|17|ST|GDT-00106^LV Pace Threshold^GDT-LATITUDE||V @ ms|||F||
OBX|18|ST|GDT-00107^Shock Impedance^GDT-LATITUDE||Ohms|||F||
### 7. TERMS AND DEFINITIONS USED IN THIS MANUAL

<table>
<thead>
<tr>
<th>Component or Actor Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Information System (CIS)</strong></td>
<td>Software package used at clinics and hospitals to electronically store patient data.</td>
</tr>
<tr>
<td><strong>Clinic Environment</strong></td>
<td>Site where the EMR/CIS applications are installed and used.</td>
</tr>
<tr>
<td><strong>Clinician</strong></td>
<td>Person with the role of caring for patients who have implanted devices. Could be a physician or an allied health professional.</td>
</tr>
<tr>
<td><strong>Electronic Medical Record (EMR)</strong></td>
<td>Software package used at clinics and hospitals to electronically store patient data.</td>
</tr>
<tr>
<td><strong>EMR/CIS Client</strong></td>
<td>Software component that provides a user interface for clinicians to access EMR information.</td>
</tr>
<tr>
<td><strong>EMR/CIS Database</strong></td>
<td>Relational database that contains and manages the EMR/CIS data.</td>
</tr>
<tr>
<td><strong>HL7 (Health Level 7)</strong></td>
<td>International medical IT group which manages the HL7 messaging standard. LATITUDE® Integration software uses HL7 messaging structure to transfer data to EMR/CIS.</td>
</tr>
<tr>
<td><strong>Patient Environment</strong></td>
<td>Patient’s home (or location) where LATITUDE Communicator gathers data from implanted cardiac device.</td>
</tr>
<tr>
<td><strong>Implanted Cardiac Device</strong></td>
<td>Implanted Cardiac Devices operate within the human body in both monitoring and therapy delivery capacities. These devices are categorized as pacemakers, implantable cardioverter defibrillators (ICDs), and cardiac resynchronization therapy (CRT) devices.</td>
</tr>
<tr>
<td><strong>Internet</strong></td>
<td>Public data framework used to transfer data. <strong>NOTE:</strong> All data flows in this system are secured and encrypted using standard encryption and data transfer techniques.</td>
</tr>
<tr>
<td><strong>Integration Engine</strong></td>
<td>Software component responsible for transferring data from external systems into EMR/CIS database. Many EMR packages include an Integration Engine. LATITUDE Integration software does not include an Integration Engine.</td>
</tr>
<tr>
<td><strong>LATITUDE Communicator</strong></td>
<td>Communications device that interrogates the implanted cardiac device via RF and transfers data to LATITUDE server over the Internet.</td>
</tr>
<tr>
<td><strong>LATITUDE Integration</strong></td>
<td>Application run at clinic site to securely retrieve LATITUDE data.</td>
</tr>
</tbody>
</table>
### Component or Actor Name | Definition
---|---
LATITUDE® Secure Server | Centralized computer system that stores from LATITUDE Communicator. Provides data content for LATITUDE website and transfer to clinic
Patient | The person that has the implanted cardiac device that is being followed by your clinic.
PHI | Protected Health Information.
Web Browser | The Internet browser used by the clinician to access the LATITUDE system.

#### 8. SOFTWARE AND RELATED FILES
The following files and documents are provided by Boston Scientific:

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LATITUDE_Integration_UEMR_6464_Setup-x.xx.exe</td>
<td>The LATITUDE Integration installation program containing all software required to run the LATITUDE Integration service where x.xx indicates the version number.</td>
</tr>
<tr>
<td>Example- uemr.xml</td>
<td>An example uemr.xml configuration file which uses the most common configuration options.</td>
</tr>
<tr>
<td>Expanded- uemr.xml</td>
<td>An example uemr.xml configuration file that shows all configuration parameters and their options.</td>
</tr>
<tr>
<td>file_checksum.md5</td>
<td>Hex key listing of all the LATITUDE Integration files.</td>
</tr>
<tr>
<td>LATITUDE Integration Guide</td>
<td>User documentation including an overview of the LATITUDE Integration feature and installation.(this document)</td>
</tr>
<tr>
<td>xxxxx.p12</td>
<td>Clinic-specific security certificate.</td>
</tr>
</tbody>
</table>
Once the LATITUDE® Integration package is installed, the following files and directories are available in the installation directory (default is C:\Program Files\Boston Scientific\LATITUDE Integration\UEMR).

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>./certs</td>
<td>Directory for all .p12 certificates and license files.</td>
</tr>
<tr>
<td>./config</td>
<td>Directory where the uemr.xml configuration file is located.</td>
</tr>
<tr>
<td>./lib</td>
<td>Contains the JAVA code and libraries for LATITUDE Integration.</td>
</tr>
<tr>
<td>./log</td>
<td>Directory where the uemr.service.log will be written. Also the default location of the uemr.activity.log file.</td>
</tr>
<tr>
<td>./tmp</td>
<td>Temporary space for LATITUDE Integration</td>
</tr>
<tr>
<td>Classpath.bat</td>
<td>Sets appropriate environment variables for JAVA.</td>
</tr>
<tr>
<td>Install_license.bat</td>
<td>Used to create a machine specific license file from a .p12 certificate provided by Boston Scientific.</td>
</tr>
<tr>
<td>Install_service.bat</td>
<td>Installs LATITUDE Integration as a Windows service. This is normally done automatically during the installation process.</td>
</tr>
<tr>
<td>Run_from_cmd_line.bat</td>
<td>Allows LATITUDE Integration to run from the command line and not as a Windows service. This should be used for testing purposes only.</td>
</tr>
<tr>
<td>Start_service.bat</td>
<td>Starts the LATITUDE Integration service.</td>
</tr>
<tr>
<td>Stop_service.bat</td>
<td>Stops the LATITUDE Integration service.</td>
</tr>
<tr>
<td>Uninstall_service.bat</td>
<td>Removes the LATITUDE Integration service from the Windows Services.</td>
</tr>
<tr>
<td>Wrapper.exe</td>
<td>The executable that allows the LATITUDE Integration JAVA application to run as a Windows service.</td>
</tr>
</tbody>
</table>

9. LATITUDE® CUSTOMER SUPPORT

LATITUDE Customer Support is available in the U.S. and Canada by calling 1.800.CARDIAC (227.3422).