Meridium APM Process Data Integration

V3.6.1.6.0

meridium

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About This Document

This file is provided so that you can easily print this section of the Meridium APM Help system.

You should, however, use the Help system instead of a printed document. This is because the Help system provides hyperlinks that will assist you in easily locating the related instructions that you need. Such links are not available in a print document format.

The Meridium APM Help system can be accessed within Meridium APM itself or via the Meridium APM Documentation Website ([https://www.me-ridium.com/secure/documentation/WebHelp/Home.htm](https://www.meridium.com/secure/documentation/WebHelp/Home.htm)).

> 🗒 **Note**: If you do not have access to the Meridium APM Documentation Website, contact GE Global Support (https://www.ge.com/digital/asset-performance-management).

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Overview of Process Data Integration

Process Data Integration allows you to collect data from OPC-compliant process historians, which are specialized databases used for recording real-time process data, such as temperature or pressure. For example, Process Data Integration allows you to collect data from the PI Server software, which is a process historian developed by OSIsoft®.

The transfer of data between the Meridium APM system and the OPC Server is accomplished using OPC Xi, which is a set of standard specifications and interfaces.

In addition, if you are using the *PI Server* as your process historian, when you [browse the PI Server for the tags that you want to import](#), the connection to the PI Server is accomplished in one of two ways:

- **Using OPC Xi**. This approach will be used if either of the following conditions has been met:
  - The OPC Interfaces license has been activated but the OSI PI Interfaces license has not been activated.

    -or-

  - The OSI PI Interfaces license has been activated but you have not selected *OSIPI* in the Type field in the Xi System record that identifies the PI Server.

  -or-

- **Using a direct connection to the PI Server**. This approach will be used if *both* of the following conditions have been met:
  - The OSI PI Interfaces license has been activated.
  - You have selected *OSI PI* in the Type field in the Xi System record that identifies the PI Server.

Process Data Integration System Requirements

The Process Data Integration (PDI) feature allows you to collect data from OPC-compliant process historians, which are specialized databases used for recording real-time process data, such as temperature or pressure. For example, you can use the PDI feature to collect data from the OSIsoft® PI Server software.

The *Meridium APM Framework Tools* license is required to take advantage of Process Data Integration functionality. In addition, your system must contain the basic Meridium APM system architecture and the following additional components:

- **Meridium APM Process Data Integration Server:** A machine on which the Meridium APM Process Data Integration Service is installed. The Meridium APM Process Data Integration Server must contain the following components:

  - Microsoft Message Queuing (MSMQ)

  > ⓘ **Note:** While MSMQ is not a prerequisite to installing the Meridium APM Process Data Integration Service, it must exist on the machine before users begin using the Process Data Integration feature.

  - Oracle Data Access Components 11.2, including ODP.NET and Oracle Services for MTS

  This requirement applies only if the Meridium APM Database Server is an *Oracle* database server. Both 32-bit and 64-bit Process Data Integration Servers require the 32-bit version of ODP.NET and Oracle Services for MTS.

  > **Note:** The process for installing Oracle Data Access Components on the Meridium APM Process Data Integration Server is the same as the process for installing it on the Meridium APM Application Server.

If you are using a virtual machine (VM) to host your Meridium APM Process Data Integration Server, we recommend that:

- You increase the physical server CPU and hard drive space requirements by 20% to ensure that the application will perform equivalently in a virtualized environment.
- You double the physical server memory requirements.
- Each VM have its own dedicated processor cores and memory allocation to ensure appropriate performance.

Meridium, Inc. supports Hyper-V and VMWare platforms.

These requirements may not be sufficient, depending upon how your system is configured. Parameters that affect the hardware requirements include the number of users, modules purchased, database size, and other factors that can vary from one customer to another. For help refining your specific system requirements, consult a member of the Meridium Inc. Global Support Services or Professional Services department.

- **OPC Server:** A machine on which the OPC-compliant server software is installed. The software requirements of this server are determined by the third-party distributor of the software.

  To reduce your number of configuration tasks, (i.e., to avoid configuring a COM connection), we recommend that this be the *same* machine as the Meridium APM Process Data Integration Server, (i.e., the machine on which the Meridium APM Process Data Integration Service is installed). If, however, your company prefers to restrict the installation of additional applications on the OPC Server, the Meridium APM Process Data Integration Server may be a *separate* machine from the OPC Server. Note that if you choose this deployment method:

  - The OPC Server must be accessible from your Meridium APM Process Data Integration server.

  - The Meridium APM Process Data Integration Server must connect to the OPC Server using a COM connection. This documentation does not provide details for configuring this connection.

- **Process Historian:** A computer that contains the process historian software. The software requirements of this machine are determined by the third-party distributor of the software.

Only the following OPC Servers and process historians are supported for the PDI feature. Other OPC Servers and process historians have not been tested and are not supported by Meridium, Inc.:

- OSIsoft® PI Server version 3.4.375.80 with PI OPC DA/HDA Server version 1.2.6.0.

- OSIsoft® PI Server version 3.4.390.16 with PI OPC DA/HDA Server version 1.2.7.0.

> **Note:** When using either PI Server version, if you plan to import tags from the OSIsoft® PI Server directly (versus using OPC Xi), which you can do only if the *OSI PI Interfaces* license is active, in addition to meeting the standard hardware and software requirements, the Meridium APM Application Server must also contain PI SDK Version 1.3.6. The PI SDK 64-bit native distribution is required for compatibility with the 64-bit version of the Meridium APM Application Server operating system.

- Matrikon Simulation tool, which simulates the MatrikonOPC Historical Data Access Suite.

- IP21 (Aspen ONE V8.0) Version 12.0.0.20.

- IP21 (Aspen ONE V8.0) Version 12.0.0.20 with MatrikonOPC IP21 Server Version 2.2.1.3763.

- Honeywell Uniformance® Process History Database (PHD) Version 310.1.0.

> **Note:** Tag browsing must be enabled on the machine on which the Honeywell Uniformance® Process History Database (PHD) OPC Server software is installed. To enable tag browsing, change the **BrowseMode** registry setting to *1*, and then restart the machine. For more information, refer to the Honeywell Uniformance® PHD OPC Server User Guide.

The following image shows how these additional machines should be incorporated into the basic Meridium APM system architecture if you plan to house the OPC Server software and the Meridium APM Process Data Integration Services on the same machine.
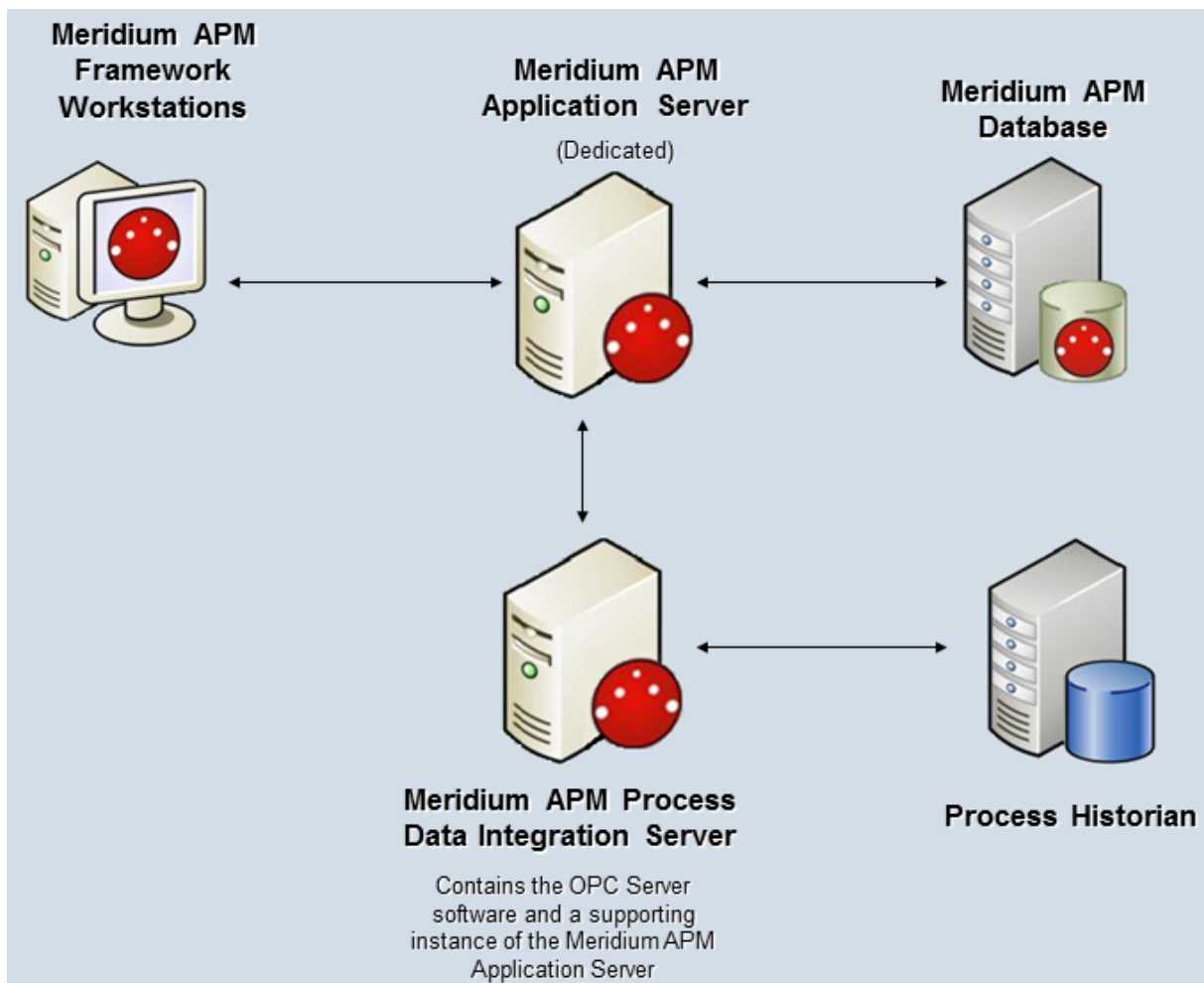
Regardless of the deployment option that you choose, after you have installed and configured the components in the basic Meridium APM system architecture, you will need to perform some configuration steps that are specific to PDI.

Process Data Integration Data Model

Like all Meridium APM modules, the Meridium APM Process Data Integration feature consists of entity families, relationship families, and business rules. When attempting to understand and make use of the Process Data Integration functionality, it can be helpful to visualize the Process Data Integration data model.

Because you should already be familiar with the concept of records and viewing records in the Meridium APM Record Manager, as you attempt to get your bearings in the Process Data Integration feature, it may be useful to remember that the Process Data Integration feature simply lets you create, view, and manage records.

The following image illustrates how families used by the Process Data Integration feature are related to one another.
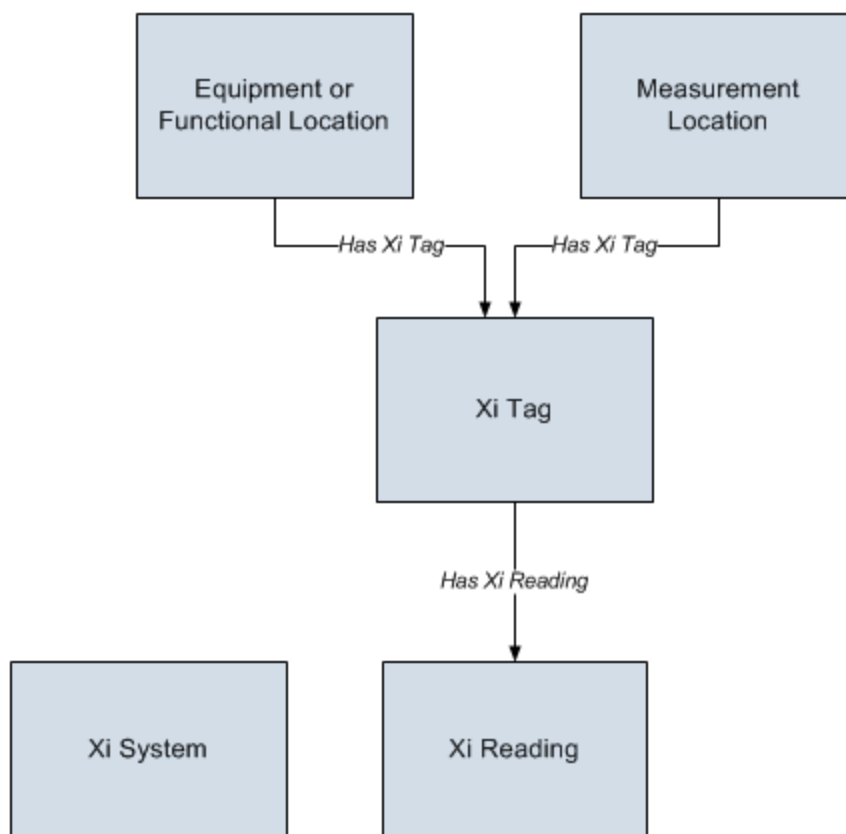
In order to use Process Data Integration, your database must contain records that represent the equipment and locations whose process data you want to track. Each of these records will need to be linked to one or more Xi Tag records, which identify specific locations on the equipment or specific physical locations where process data is collected.

> **Note:** Throughout this documentation, the specific locations where process data is collected are referred to as *tags*.

First-Time Deployment Workflow

Deploying and configuring Process Data Integration for the first time includes completing multiple steps, which are outlined in the table in this topic. The steps in this section of the documentation provide all the information that you need to deploy Process Data Integration on top of the Meridium APM system architecture.

Whether a step is required or optional is indicated in the **Required/Optional** cell. Steps are marked as *Required* if you must perform the steps to take advantage of Process Data Integration functionality.

The person responsible for completing each task may vary within your organization. We recommend, however, that the steps be performed in relatively the same order in which they are listed in the table.

Step	Task	Required/Optional	Notes
1	Ensure that your OPC Server and process historian are configured according to the PDI system requirements.	Required	None
2	Install the following components on the Meridium APM Process Data Integration Server: • Meridium APM Process Data Integration Service • Supporting instance of the Meridium APM Application Server	Required	None
3	Modify the file Meridium.PDI.Service.exe.config on the Meridium APM Process Data Integration Server.	Required	The PDI service should be run with a User ID of a Security User that has its time zone set to the local time zone of the PDI server machine.

Step	Task	Required/Optional	Notes
4	Review the Process Data Integration data model to determine which relationship definitions you will need to modify to include your custom equipment and location families.	Optional	This step is necessary only if you store equipment and location information in families other than the baseline Equipment and Functional Location families.
5	Assign Security Users to one or more of the Process Data Integration Security Groups.	Required	None

Upgrade or Update PDI to V3.6.1.6.0

The following tables list the steps that are required to update or upgrade Process Data Integration to V3.6.1.6.0. These steps assume that you have completed the steps for upgrading the basic Meridium APM system architecture.

Update from any version V3.6.1.0.0 through V3.6.1.5.0

This module will be updated to V3.6.1.6.0 automatically when you update the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.6.0.0.0 through V3.6.0.12.8

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
1	Upgrade the Meridium APM Process Data Integration Server, which includes the following components: • Meridium APM Process Data Integration Service • Supporting instance of the Meridium APM Application Server	Meridium APM Process Data Integration Server	Required	None

Step	Task	Machine/Location	Optional/Required	Notes
2	Modify the file Meridium.PDI.Service.exe.config. ⓘ Note: The PDI service should be run with a User ID of a Security User that has its time zone set to the local time zone of the PDI server machine.	Meridium APM Process Data Integration Server	Required	During the server upgrade process, a backup of your previously used configuration file was created. You can use this pre-upgrade file as a reference to modify the new baseline configuration file. You should *not* overwrite the baseline configuration file, as changes may have been made that are required for the service to work correctly. After you modify the baseline configuration file, you can delete the pre-upgrade configuration file. The following file settings are new in this version of Meridium APM: • NumServerRetries • InitiateDelay

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
3	Populate the Access Priv-ilege field in existing XI Tag records as needed.	APM Frame-work	Optional	For more inform-ation see the V3.5.0 Release Notes.

Upgrade from any version V3.5.1.0.0 through V3.5.1.12.1

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
1	Upgrade the Meridium APM Process Data Integ-ration Server, which includes the following components: • Meridium APM Pro-cess Data Integ-ration Service • Supporting instance of the Meridium APM Application Server	Meridium APM Pro-cess Data Integration Server	Required	None

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
2	Modify the file Meridi-um.PDI.Ser-vice.exe.config. ⓘ Note: The PDI ser-vice should be run with a User ID of a Security User that has its time zone set to the local time zone of the PDI server machine.	Meridium APM Pro-cess Data Integration Server	Required	During the server upgrade process, a backup of your previously used configuration file was created. You can use this pre-upgrade file as a reference to modify the new baseline con-figuration file. You should *not* overwrite the baseline con-figuration file, as changes may have been made that are required for the service to work correctly. After you modify the baseline con-figuration file, you can delete the pre-upgrade con-figuration file. The following file settings are new in this version of Meridium APM: • NumServer-Retries • InitiateDelay

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
3	Populate the Access Priv-ilege field in existing XI Tag records as needed.	APM Frame-work	Optional	For more inform-ation see the V3.5.0 Release Notes.

Upgrade from any version V3.5.0 SP1 LP through V3.5.0.1.10.0

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
1	Upgrade the Meridium APM Process Data Integ-ration Server, which includes the following components: • Meridium APM Pro-cess Data Integ-ration Service • Supporting instance of the Meridium APM Application Server	Meridium APM Pro-cess Data Integration Server	Required	None

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
2	Modify the file Meridi-um.PDI.Ser-vice.exe.config. ⓘ Note: The PDI ser-vice should be run with a User ID of a Security User that has its time zone set to the local time zone of the PDI server machine.	Meridium APM Pro-cess Data Integration Server	Required	During the server upgrade process, a backup of your previously used configuration file was created. You can use this pre-upgrade file as a reference to modify the new baseline con-figuration file. You should *not* overwrite the baseline con-figuration file, as changes may have been made that are required for the service to work correctly. After you modify the baseline con-figuration file, you can delete the pre-upgrade con-figuration file. The following file settings are new in this version of Meridium APM: • NumServer-Retries • InitiateDelay

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
3	Populate the Access Priv-ilege field in existing XI Tag records as needed.	APM Frame-work	Optional	For more inform-ation see the V3.5.0 Release Notes.

Upgrade from any version V3.5.0 through V3.5.0.0.7.1

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
1	Upgrade the Meridium APM Process Data Integ-ration Server, which includes the following components: • Meridium APM Pro-cess Data Integ-ration Service • Supporting instance of the Meridium APM Application Server	Meridium APM Pro-cess Data Integration Server	Required	None

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
2	Modify the file Meridi-um.PDI.Ser-vice.exe.config. ⚹ Note: The PDI ser-vice should be run with a User ID of a Security User that has its time zone set to the local time zone of the PDI server machine.	Meridium APM Pro-cess Data Integration Server	Required	During the server upgrade process, a backup of your previously used configuration file was created. You can use this pre-upgrade file as a reference to modify the new baseline con-figuration file. You should *not* overwrite the baseline con-figuration file, as changes may have been made that are required for the service to work correctly. After you modify the baseline con-figuration file, you can delete the pre-upgrade con-figuration file. The following file settings are new in this version of Meridium APM: • NumServer-Retries • InitiateDelay

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
3	Populate the Access Priv-ilege field in existing XI Tag records as needed.	APM Frame-work	Optional	For more inform-ation see the V3.5.0 Release Notes.

Upgrade from any version V3.4.5 through V3.4.5.0.1.4

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
1	Upgrade the Meridium APM Process Data Integ-ration Server, which includes the following components: • Meridium APM Pro-cess Data Integ-ration Service • Supporting instance of the Meridium APM Application Server	Meridium APM Pro-cess Data Integration Server	Required	None

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
2	Modify the file Meridi-um.PDI.Ser-vice.exe.config. ℹ️ Note: The PDI ser-vice should be run with a User ID of a Security User that has its time zone set to the local time zone of the PDI server machine.	Meridium APM Pro-cess Data Integration Server	Required	During the server upgrade process, a backup of your previously used configuration file was created. You can use this pre-upgrade file as a reference to modify the new baseline con-figuration file. You should *not* overwrite the baseline con-figuration file, as changes may have been made that are required for the service to work correctly. After you modify the baseline con-figuration file, you can delete the pre-upgrade con-figuration file. The following file settings are new in this version of Meridium APM: • NumServer-Retries • InitiateDelay

St-ep	Task	Machine/Loc-ation	Option-al/Required	Notes
3	Populate the Access Priv-ilege field in existing XI Tag records as needed.	APM Frame-work	Optional	For more inform-ation see the V3.5.0 Release Notes.

Installing the Meridium APM Process Data Integration Server Components

The following instructions provide details on installing the following components on the Meridium APM Process Data Integration Server using the Meridium APM Server and Add-ons installer:

- Meridium APM Process Data Integration Service
- Supporting instance of the Meridium APM Application Server

The Meridium APM Server and Add-ons installer allows you to install various components in addition to these components.

> 🛈 Note: IIS will be reset automatically by the installer before the installation process begins.

To install the Meridium APM Process Data Integration Service and a supporting instance of the Meridium APM Application Server:

1. On the machine that will serve as the Meridium APM Process Data Integration Server, insert the Meridium APM Framework and Server Setup DVD, and navigate to the folder **\\Setup\Meridium APM Server and Add-ons**.

2. Double-click the file **Setup.exe**.

   The InstallShield Wizard displays the **Welcome** screen.
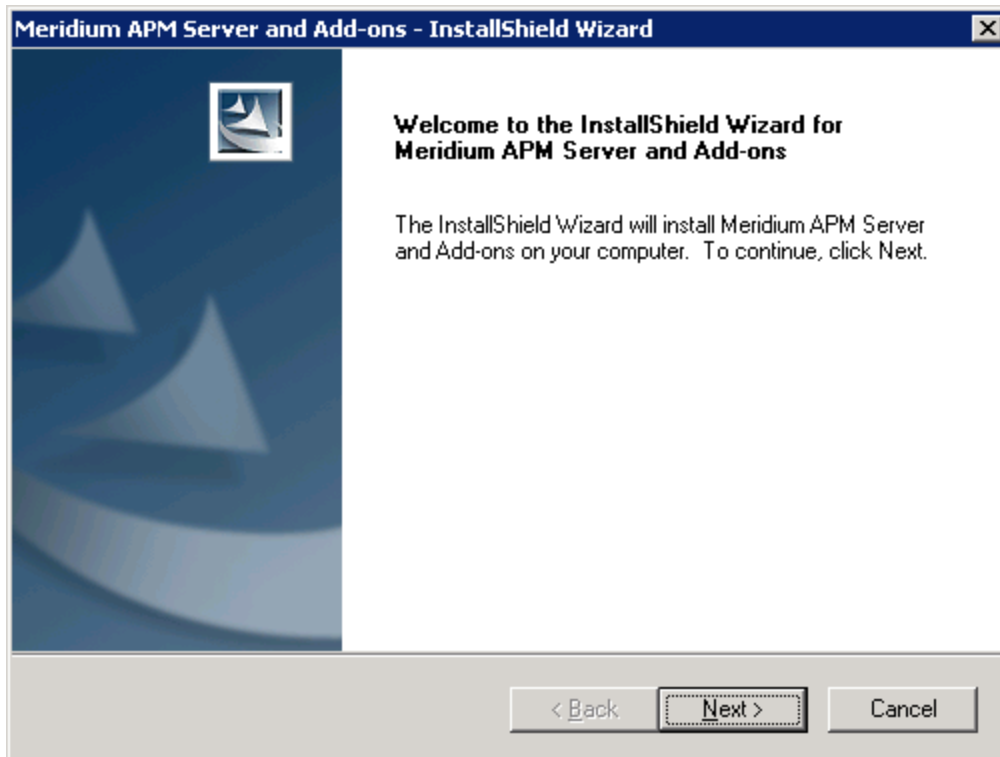
3. Click the **Next** button.

    The **License Agreement** screen appears.
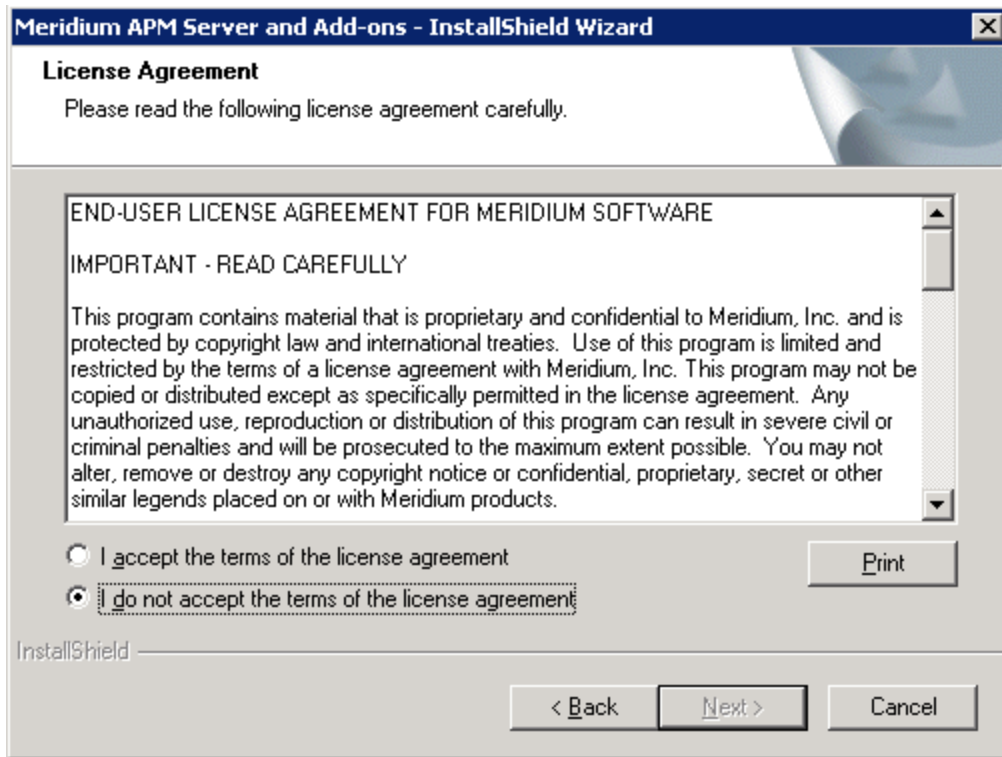
4. Read the License Agreement. If you agree, select the **I accept the terms of the license agreement** option, and click the **Next** button. The installer will not allow you to continue unless you accept the license agreement.

    The **Select Installation Location** screen appears.
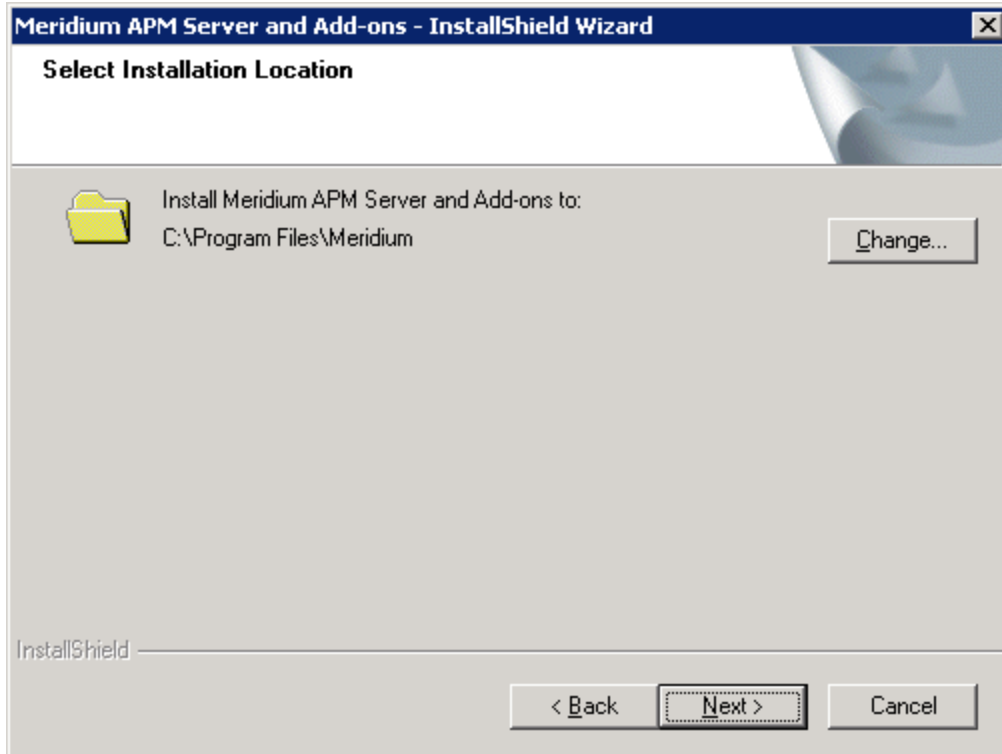
5. Click the **Next** button to accept the default location.

The **Select the features you want to install** screen appears.
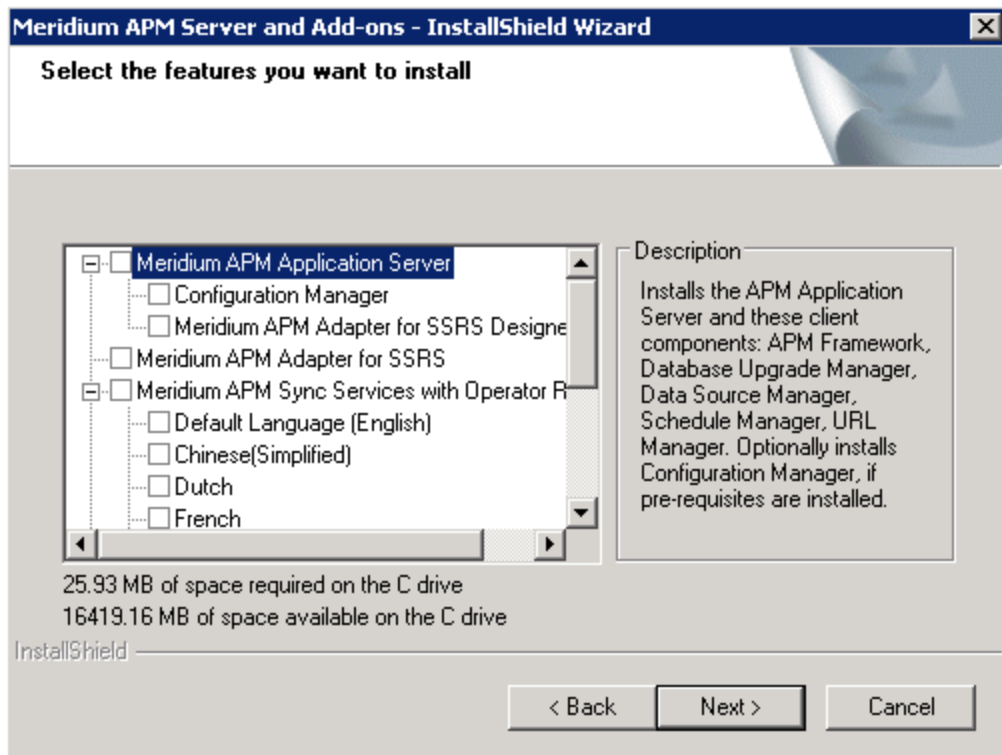
6. Select the following check boxes:

   - **Meridium APM Application Server** (select the language check boxes that correspond with the languages that you want to install)
   - **Configuration Manager**
   - **Meridium APM Process Data Integration Service**

7. Click the **Next** button.

   Meridium APM performs a check to make sure that your system meets the requirements of the components that you have selected. If it does not, a screen will appear, explaining which prerequisites are missing. If this occurs, you will need to click the **Back** button and remove these component from your selection or exit the installer. If your system meets the requirements for the components that you selected, the **Select the ZIP File Location** screen.
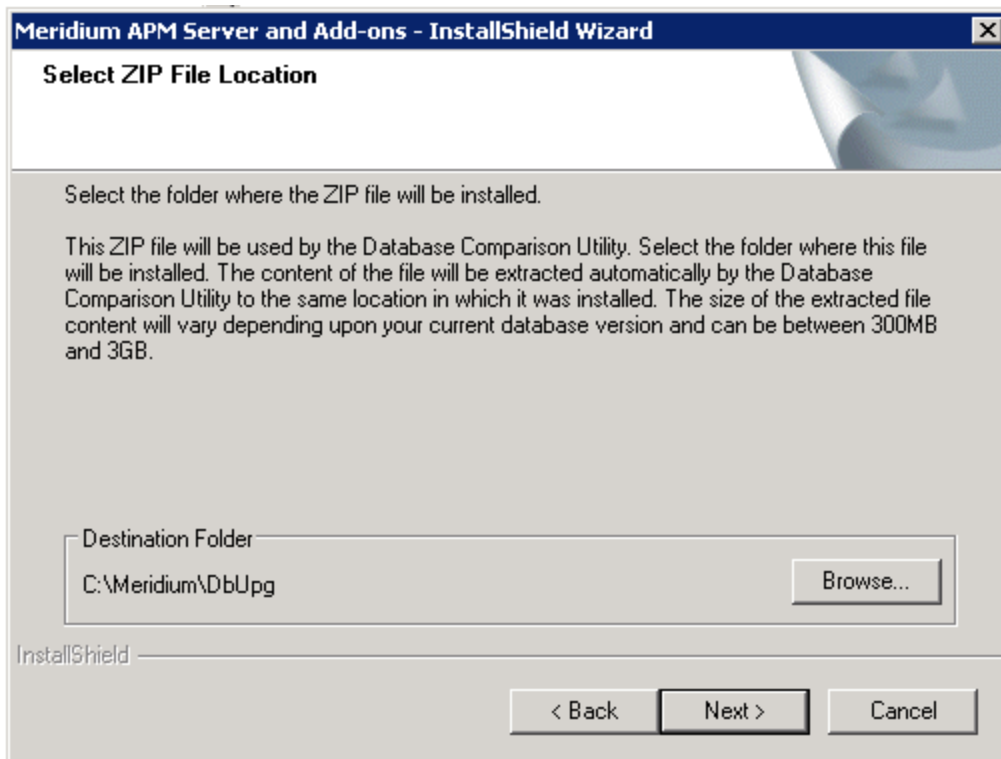
   The **Select ZIP File Location** screen lets you specify the location where you want the ZIP file of database content to be installed. This ZIP file is used by the Database Comparison Utility. By default, the ZIP file will be installed in the folder **C:\Meridium\DbUpg**. You can, however, select a different location.

8. Read the information on this screen, and note the estimated size of the extracted files from this ZIP file. You should use this information to determine where you want install the ZIP file.

9. If you want the ZIP file to be installed in the default location, accept the default setting.

   -or-

   If you want the ZIP file to be installed in a different location, click the **Browse** button, and navigate to the location where you want to ZIP file to be installed. The selected file path will appear in the **Destination Folder** section in place of the default file path.

10. Click the **Next** button.
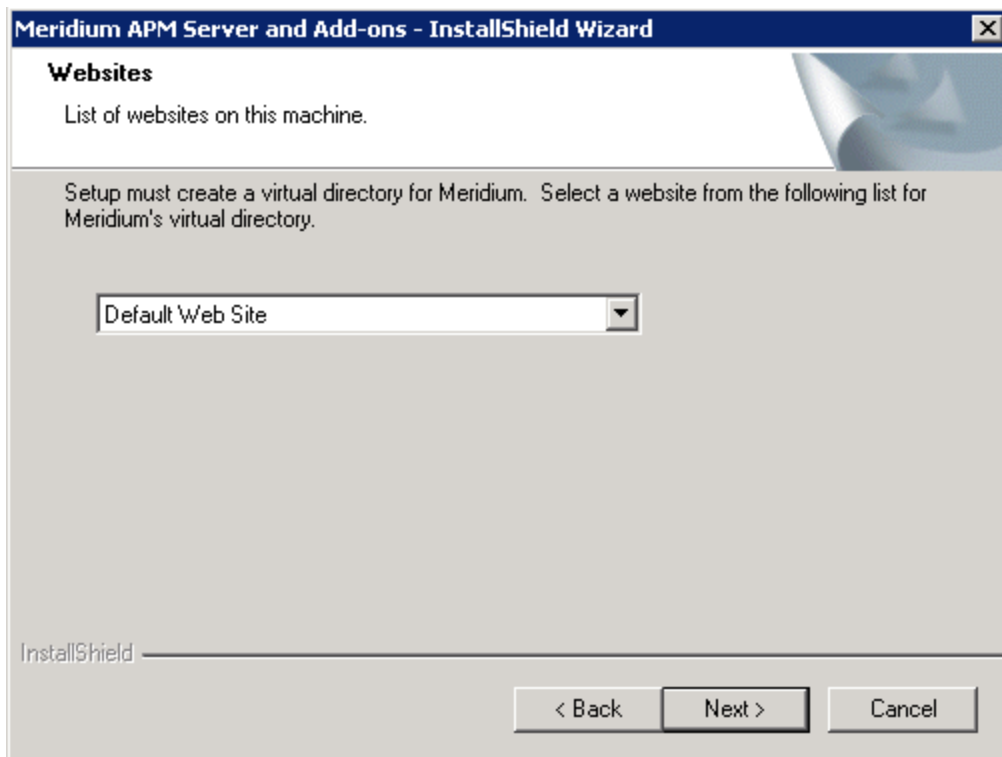
    The **Websites** screen appears.

The **Websites** screen lets you specify where the installer will create a virtual directory for Meridium APM. This website is configured in the IIS Manager on the APM Application Server machine. The websites list contains all the websites that are configured on the APM Application Server machine. The default website is *Default Web Site*. Throughout this documentation, we assume that you have chosen to install Meridium APM under the *Default Web Site*.

11. In the list of websites, select the website where you want the installer to create a virtual directory.

12. Click the **Next** button.

    The **Complete the Installation** screen appears.

The **Complete the Installation** screen contains a message, indicating that if you want to modify any of the settings that you specified in the preceding screens in the installer, you can use the **Back** button to do so, or if you do not want to complete the installation, you can click **Cancel**.

These instructions assume that you are ready to complete the installation process.

13. Click the **Install** button.

The **Setup Status** screen appears, which displays a progress bar that shows the progress of the Meridium APM Server and Add-ons installation process. After the progress bar reaches the end, a message appears, indicating that your server is being configured. After your server is configured, the **Installation is Complete** screen appears.

This screen contains a message, indicating that Meridium APM Server and Add-ons have been installed successfully. You can also select to optionally launch the APM System Administration tool when the installer window closes. By default, this option is set to *Yes*.

14. If you want the APM System Administration tool to be launched as soon as you click the **Finish** button, accept the default selection.

-or-

If you do not want the APM System Administration tool to be launched at this time, clear the **Launch APM System Administration now** check box.

15. Click the **Finish** button.

    The **Meridium APM Server and Add-ons** installer closes. Additionally, if the **Launch APM System Administration now** check box was selected, the **APM System Administration** window appears.

Upgrading the Meridium APM Process Data Integration Server From V3.4.5 to V3.6.0.0.0

The following instructions provide details on upgrading the Process Data Integration Server. These instructions assume that:

- Your system meets the hardware and software requirements for the Process Data Integration Server.

- You understand that the previous version of the software will be uninstalled automatically before the server is upgraded.

> Note: IIS will be reset automatically by the installer before the old version of Meridium APM is uninstalled and before the installation process begins.

To upgrade the Meridium APM Process Data Integration Service:

1. On the machine that will serve as the Meridium APM Process Data Integration Server, insert the Meridium APM Framework and Server Setup DVD, and navigate to the folder **\\Setup\Meridium APM Server and Add-ons**.

2. Double-click the file **Setup.exe**.

   A message appears, asking if you want to allow the installer to make changes to your machine.

3. Click the **Yes** button.

   The **Meridium APM Server and Add-ons** installer appears, displaying the **Preparing Setup** screen. The **Preparing Setup** screen contains a progress bar that indicates when the installer is ready to upgrade the components on your machine.

When the progress bar reaches the end, the Welcome screen appears.

4. Click the **Next** button.

A message appears, indicating that an older version of Meridium APM has been detected on the machine. This message also indicates that the older version will be uninstalled automatically before the newer version is installed and asks if you want to continue.

5. Click the **Yes** button.

The **License Agreement** screen appears.
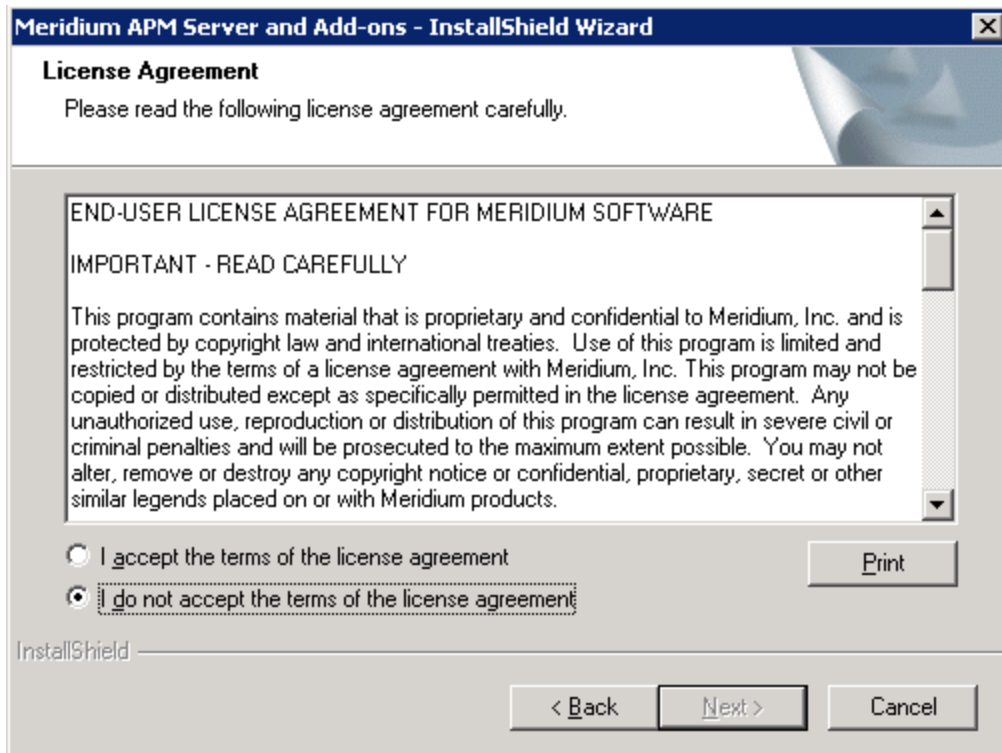
6. Read the entire license agreement, and then select one of the following options:

The **Next** button becomes enabled.

- **I accept the terms of the license agreement**, if you agree to the terms of the license agreement and want to continue. These instructions assume that you want to continue.

- **I do not accept the terms of the license agreement.** This option is selected by default. If you do not agree to the terms of the license agreement and do not want to continue, click the **Cancel** button to exit the installer.

ⓘ **Hint:** If you want to print the license agreement, click the **Print** button.

7. Click the **Next** button.

The **Select Installation Location** screen appears, prompting you to select the location where the new version of the Process Data Integration Server will be

installed after the older version is uninstalled. By default, the software will be saved to the following folder: **C:\Program Files\Meridium.**
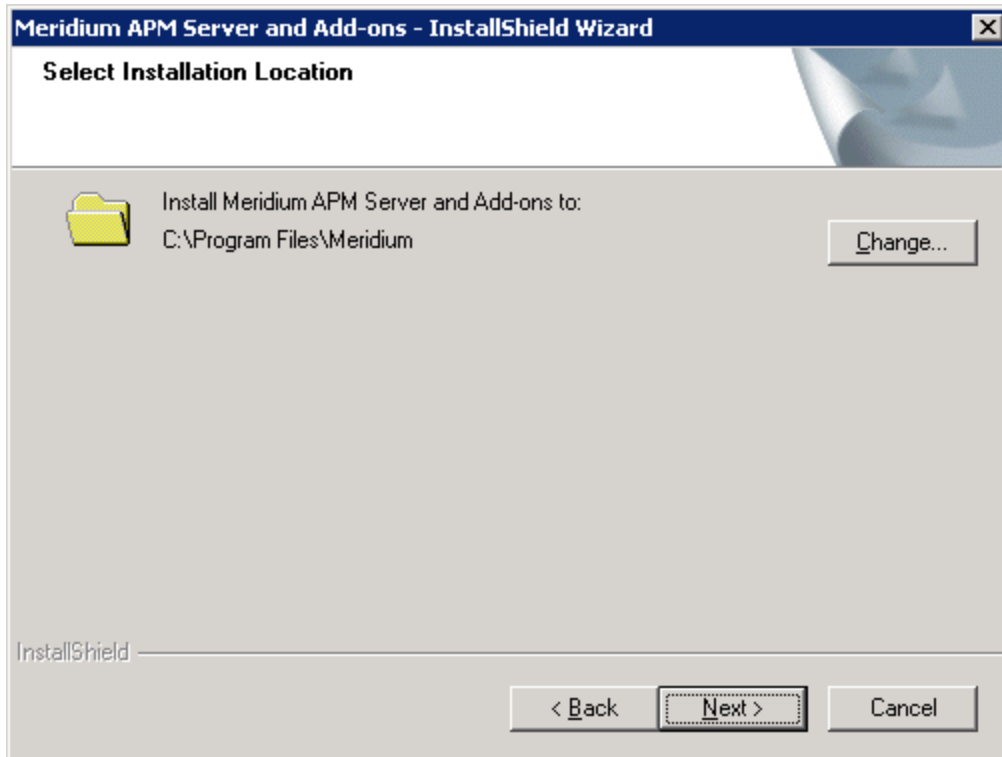
8. If you are satisfied with the default location where the software will be installed, click the **Next** button.

    -or-

    If you want to change the location where the software will be installed, click the **Change** button, and navigate to the location where you want to install the software. The folder path that you select will be displayed in place of the default folder path. When you are satisfied with the installation location, click the **Next** button.

    The **Select the features you want to install** screen appears, and the **Meridium APM Application Server** node is highlighted automatically in the tree.
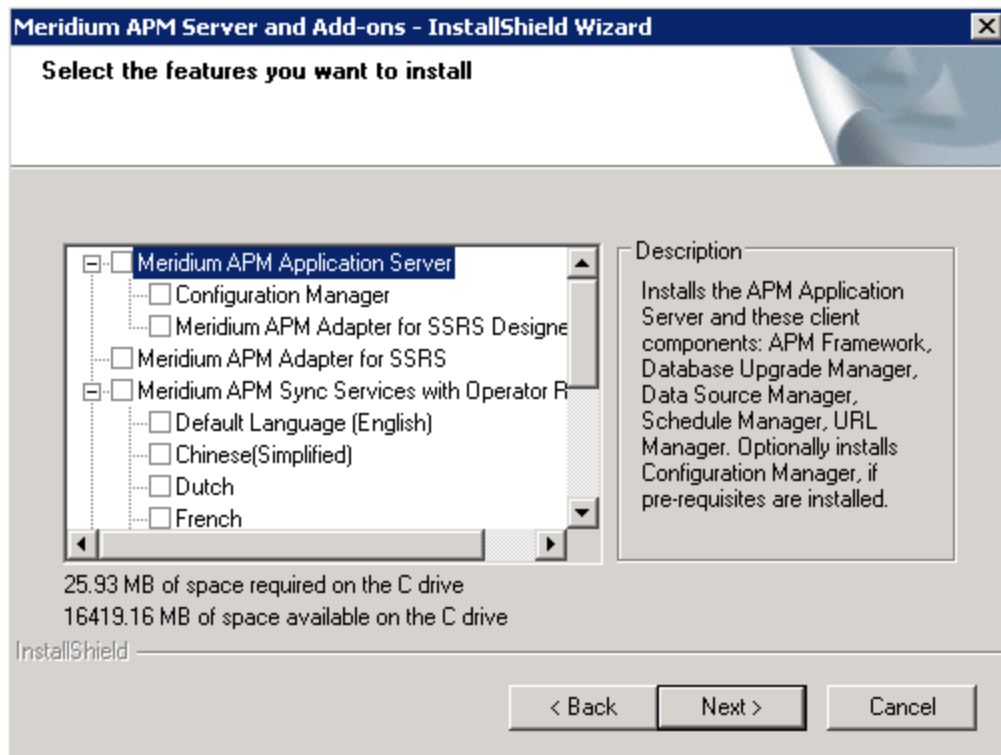
9. Select the following check boxes:

   - **Meridium APM Application Server**
   - **Configuration Manager**
   - **Meridium APM Process Data Integration Service**

10. Click the **Next** button.

    Meridium APM performs a check to make sure that your system meets the requirements of the components that you have selected.

    - If one or more prerequisites are missing on the machine, the **Meridium Installer** screen will appear and display a message that indicates which prerequisites still need to be installed on the machine before you can install the feature that is dependent on that prerequisite. This message also indicates what you can do to continue.

    If you see this screen, you should read the message in detail, and either click the **Back** button to clear the selection whose prerequisites are missing, and then continue through the installation without installing that component, or close the installer, install the missing prerequisite, and then run the installer again later.

    - If all the prerequisites for the selected components are installed on the machine, or you have selected compontnes that do not require any prerequisites, the **Select the ZIP File Location** screen appears.
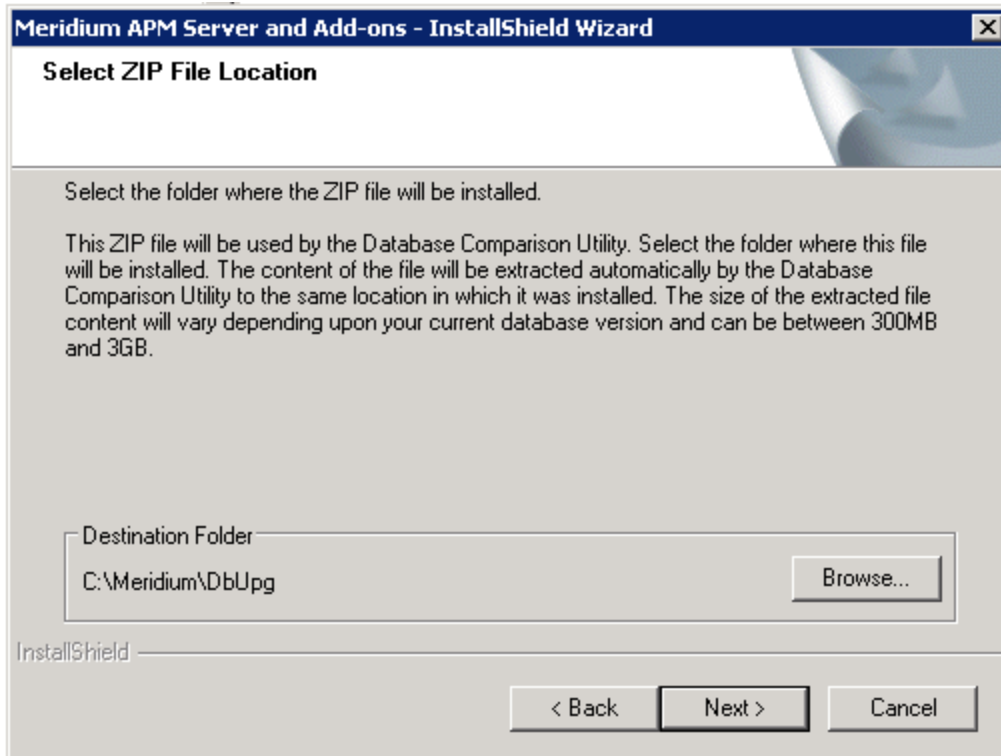
The **Select ZIP File Location** screen lets you specify the location where you want the ZIP file of database content to be installed. This ZIP file is used by the Database Comparison Utility. By default, the ZIP file will be installed in the folder **C:\Meridium\DbUpg**. You can, however, select a different location.

11. Read the information on this screen, and note the estimated size of the extracted files from this ZIP file. You should use this information to determine where you want install the ZIP file.

12. If you want the ZIP file to be installed in the default location, accept the default setting.

    -or-

    If you want the ZIP file to be installed in a different location, click the **Browse** button, and navigate to the location where you want to ZIP file to be installed. The selected file path will appear in the **Destination Folder** section in place of the default file path.

13. Click the **Next** button.
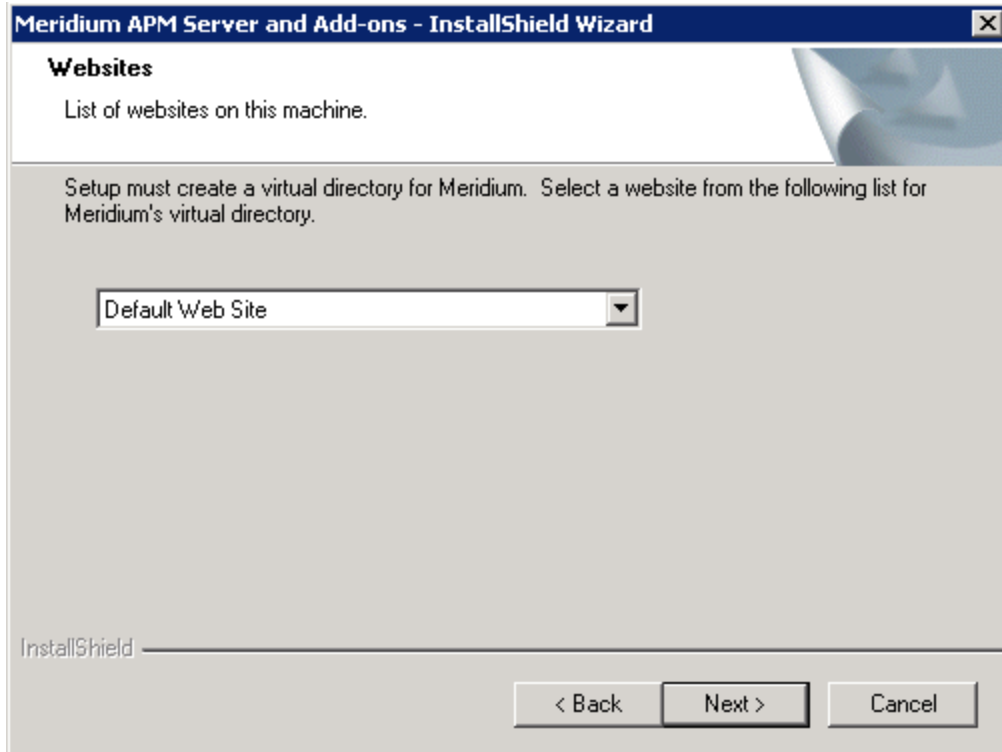
    The **Websites** screen appears.

The **Websites** screen lets you specify where the installer will create a virtual directory for Meridium APM. This website is configured in the IIS Manager on the APM Application Server machine. The websites list contains all the websites that are configured on the APM Application Server machine. The default website is *Default Web Site*. Throughout this documentation, we assume that you have chosen to install Meridium APM under the *Default Web Site*.

14. In the list of websites, select the website where you want the installer to create a virtual directory.

15. Click the **Next** button.

    The **Complete the Installation** screen appears.

    The **Complete the Installation** screen contains a message, indicating that if you want to modify any of the settings that you specified in the preceding screens in the installer, you can use the **Back** button to do so, or if you do not want to complete the installation, you can click **Cancel**.

    These instructions assume that you are ready to complete the installation process.

16. Click the **Install** button.

    The **Setup Status** screen appears, which displays a progress bar that shows the progress of the Meridium APM Server and Add-ons installation process. After the progress bar reaches the end, a message appears, indicating that your server is being configured. After your server is configured, the **Installation is Complete** screen appears.

This screen contains a message, indicating that Meridium APM Server and Add-ons have been installed successfully. You can also select to optionally launch the APM System Administration tool when the installer window closes. By default, this option is set to *Yes*.

17. Accept the default selection.

18. Click the **Finish** button.

    The **Meridium APM Server and Add-ons** installer closes, and the **APM System Administration** window appears. At this point, you should refer back to the check-list.

Upgrading the Meridium APM Process Data Integration Server From V3.5.0 or Later to V3.6.0.0.0

To upgrade the Meridium APM Process Data Integration Service:

1. On the machine that will serve as the Meridium APM Process Data Integration Server, insert the Meridium APM Framework and Server Setup DVD, and navigate to the folder **\\Setup\Meridium APM Server and Add-ons**.

2. Double-click the file **Setup.exe**.

   A message appears, asking if you want to allow the installer to make changes to your machine.

3. Click the **Yes** button.

   The **Meridium APM Server and Add-ons** installer appears, displaying the **Preparing Setup** screen. The **Preparing Setup** screen contains a progress bar that indicates when the installer is ready to upgrade the components on your machine.

   When the progress bar reaches the end,a message appears, asking if you want to upgrade your server.

4. Click the **Yes** button.

   The **Setup Status** screen appears, displaying a progress bar that indicates the status of the upgrade process.
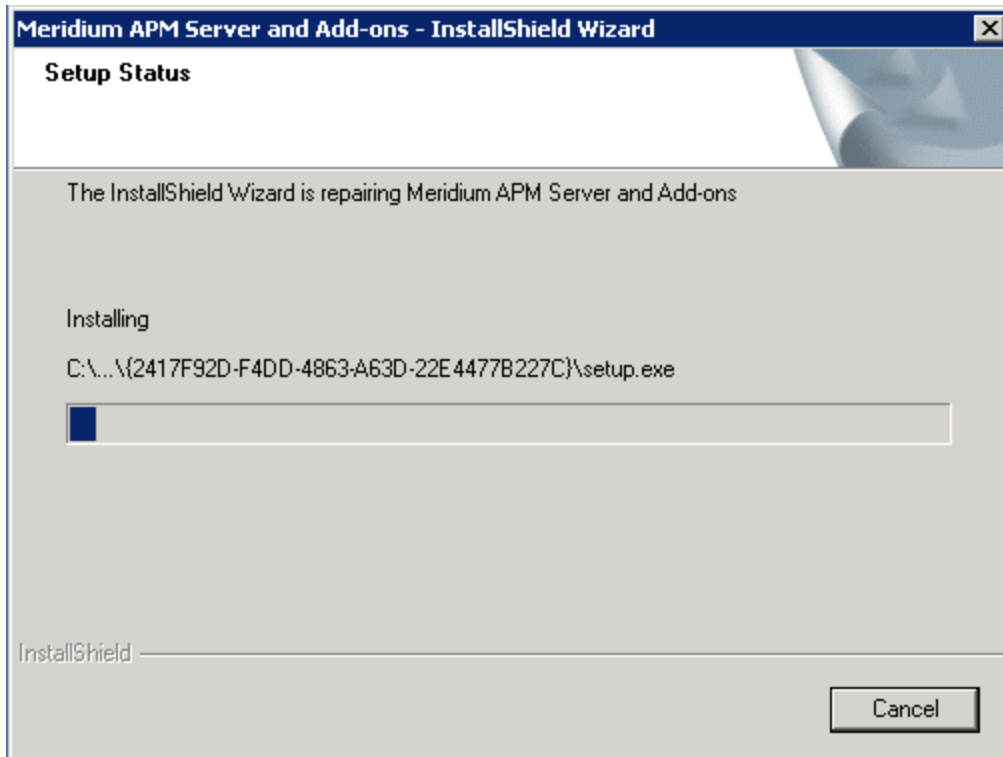
After the progress bar reaches the end, a message appears, indicating that your server is being configured. After your server is configured, the **Maintenance Complete** screen appears. This screen contains a message, indicating that the server has been upgraded successfully. You can also select to optionally launch the Meridium APM System Administration tool when the installer window closes. By default, this option is set to *Yes*.

5. Accept the default selection.

6. Click the **Finish** button.

   The installer closes, and the **APM System Administration** window appears. At this point, you should refer back to the checklist:

   - V3.5.1
   - V3.5.0 SP1 LP
   - V3.5.0

Modifying the File Meridium.PDI.Service.exe.config

When you [install the Meridium APM Process Data Integration Service](#), the file Meridium.PDI.Service.exe.config is created in the folder <root>\PDIService, where <root> is the drive and root folder that you selected at installation (e.g., C:\Program Files\Meridium).

Several settings in this file must be modified before users can begin using Process Data Integration. Some modifications can be made using the APM System Administration tool, and other modifications must be made by opening the file in a Text editor (e.g., Notepad).

The following instructions provide details on making all required modifications at one time, using both the APM System Administration tool and a text editor.

These instructions assume that you have:

- Created the Security User whose credentials you will specify in the configuration file.

  -and-

- Accessed the APM System Administration tool on the Meridium APM Process Data Integration Server machine.

To modify the file Meridium.PDI.Service.exe.config:

1. In the **APM System Administration** window, in the **Configuration** section, click the **PDI Service** link.

   Some contents of the Meridium.PDI.Service.exe.config file appear to the right of the **Configuration** section.

```
File Location:  C:\Program Files\Meridium\Services\Meridium.PDI.Service.exe.config

Enter the values for the following:
OPCDA:
OSI.DA.1

OPCHDA:
OSI.HDA.1

OPCDAHOST:

OPCHDAHOST:

Client Settings Provider Service Uri:

Database Nofications (On/Off):
On

Turn On Monitor Tags (True/False):
False

Receive Timeout (ms):
60000

Monitor Interval (ms):
60000

Number of Attempts:
10

Initiation Time Delay (ms):
60000

Watching Time Interval (ms):
60000
```

2. In the **OPCDA** and **OPCHDA** text boxes, delete the text **OSI.DA.1** and **OSI.HDA.1**, and type the appropriate value to identify your OPC Server.

> ⓘ **Note:** If you are using the OSIsoft® PI Server software, the **OPCDA** and **OPCHDA** text boxes already contain the needed values, and you can skip this step.

The following table contains the values that identify the OPC Servers for the process historians that have been tested by Meridium, Inc. We recommend, however, that you contact the third-party distributor of your process historian software to confirm the values that you should use for your system configuration.

Process Historian	OPCDA	OPCHDA
OSIsoft® PI Server	OSI.DA.1	OSI.HDA.1
Matrikon Simulation tool	Matrikon.OPC.Simulation.1	Matrikon.OPC.Simulation.1
IP21	Aspen.Infoplus21_DA.1	N/A
MatrikonOPC HDA Server for IP21*	Matrikon.OPC.IP21.1	Matrikon.OPC.IP21.1
Honeywell Uni-formance® Process History Database (PHD)	OPC.PHDServerDA.1	OPC.PHDServerHDA.1

*In the Meridium APM testing environment, IP21 and MatrikonOPC IP21 are installed on separate machines.

3. In the OPCDAHOST and OPCHDAHOST text boxes, if your Meridium APM Process Data Integration Service and OPC software are installed on *different* machines, type the name or IP address of your OPC Server. Otherwise, leave these text boxes empty.

4. At the bottom of the **APM System Administration** window, click the **Save** button.

    Your changes are saved to the file Meridium.PDI.Service.exe.config.

5. Click the **Open File** link.

6. Locate and copy the following text:

    <connection name="TEST" applicationServer="" datasource="DVT_ALL_350" userId="MIADMIN" password="!PaSsWoRd" xiServers="Xi System1"/>

7. Directly below the text that you copied (after the **-->**), paste the copied text. The result should look like this:

```
<!--EXAMPLE:
<connection name="TEST" applicationServer="" datasource="DVT_ALL_350"
    userId="MIADMIN" password="!PaSsWoRd" xiServers="Xi System1"/>-->

<connection name="TEST" applicationServer="" datasource="DVT_ALL_350"
    userId="MIADMIN" password="!PaSsWoRd" xiServers="Xi System1"/>
```

8. In the text that you pasted:

   a. Replace **TEST** with any name that will help you identify the Meridium APM Application Server. This value is useful if you have multiple dedicated Meridium APM Application Servers and you want to identify each one with a unique label.

   b. Within the **applicationServer** attribute, between the quotations, type the name of the Meridium APM Application Server.

   c. Replace **DVT_ALL_350** with the name of the data source to which you want to connect.

   d. Replace **MIADMIN** with the User ID of the Security User that is a member of the MI Process Data Integration Service Security Group.

   > 🛈 **Note:** The PDI service should be run with a User ID of a Security User that has its time zone set to the local time zone of the PDI server machine.

   e. Replace **PaSsWoRd** with the password for the specified Security User. Do not remove the exclamation mark at the beginning of the password. It is used to encrypt the password.

   f. Replace **Xi System 1** with the value that exists (or will exist) in the XiSystem ID field in an Xi System record in the Meridium APM database. If Meridium APM Framework users will create multiple Xi System records to identify multiple OPC Servers, you can specify multiple values and separate them with a semicolon.

   > **Note:** If you remove the values within the **xiServers** attribute (i.e., xiServers=""), when the Meridium.PDI.Service service runs, it will process *all* Xi System records in the Meridium APM database.

9. For each unique Meridium APM Application Server and data source combination that exists in your architecture, repeat steps 6 through 8.

10. Save the file.

   Your settings will be applied when you start or restart the Process Data Integration Service.

Process Data Integration Security Groups

Meridium APM provides the following baseline Security Groups for use with Process Data Integration:

- MI Process Data Integration Administrator
- MI Process Data Integration Service
- MI Process Data Integration User

The following table lists the family-level privileges that exist for these Security Groups.

Entity Families			
Family	MI Process Data Integration Administrator	MI Process Data Integration Service	MI Process Data Integration User
Equipment	None	None	None
Functional Location	None	None	None
Measurement Location	None	None	None
Xi Reading	View, Update, Insert, Delete	View, Update, Insert, Delete	View
Xi System	View, Update, Insert, Delete	View	View
Xi Tag	View, Update, Insert, Delete	View	View
Relationship Families			
Family	MI Process Data Integration Administrator	MI Process Data Integration Service	MI Process Data Integration User
Has Xi Reading	View, Update, Insert, Delete	View, Update, Insert, Delete	View
Has Xi Tag	View, Update, Insert, Delete	View	View

Process Data Integration Workflow

The workflow for using Process Data Integration is outlined in the following steps:

1. Create Xi System records to represent the OPC-compliant system from which you want to retrieve data.

2. Create Xi Tag records to represent the tags whose data you want to retrieve.

3. Access the **Process Data Viewer** window to view data that was collected from the OPC-compliant system.

Options for Creating Xi System Records

To create Xi system records, you can:

- [Create them from scratch](#).
- [Import data from a Microsoft Excel file](#).

Creating Xi System Records From Scratch

To create an Xi System record from scratch:

1. In the Meridium APM Framework, on the toolbar, click the **New** button.

   The **Select Family** dialog box appears.

2. Click the ▾ button, and select **Xi System**.

3. Click **OK**.

   The new Xi System record appears in the Record Manager.

4. [Enter values in the fields as desired](#).

5. When you are finished entering values, on the **Common Tasks** menu, click the **Save** link.

   The Xi System record is saved.

Importing Data from a Microsoft Excel File

If desired, you can use the Meridium APM Devices functionality to create Xi System records from data that exists in a Microsoft Excel file. The following instructions explain how to do so.

> ⓘ **Note:** The Meridium APM Server and Add-ons installation DVD contains a Microsoft Excel file that you can use as a starting point for storing the data that you want to retrieve to create Xi System records. The file does not contain any data by default. You can enter data into the file using the process of your choice (e.g., manually). The following instructions assume only that you are using a Microsoft Excel file that is configured appropriately and do not require it to have been created from the Microsoft Excel file provided by Meridium, Inc.

To create Xi System records using the Meridium APM Devices functionality:

1. Using a URL, access the **Select a Device and Properties** dialog box.

   The **Select a Device and Properties** dialog box appears.

2. Add the device.

   On the **Receive** tab, using the **Browse** button, select the Xi System Device Query query in the folder **\\Public\Meridium\Modules\Process Data Integration\Queries**.

   The following image shows an example of device properties that have been configured for this purpose:

3. Click the **Save** button to save the device and its properties.

4. Click the **Close** button.

   The **Select a Device and Properties** dialog box returns to focus.

5. Click the **Manage Mappings** link.

   The Manage Device Mappings window appears.

6. Click the **New Mapping** link.

   The **Additional Information** dialog box appears.

7. In the **Data Transfer Direction** section, select the **Receive from Device** option.

8. In the **Device Query** list, select the query path that appears. The query path in the list is the same query path that appears in the **Receive from Device Query** text box on the **Manage Device** window.

9. In the **Data Source** list, select the path to the Microsoft Excel file.

10. Click **OK**.

    The **Mapping** window appears.

11. Configure the settings on the **Mapping** tab.

    Note that:

- In the **Mapping Type** list, you must select **Data.**
- In the **Database Table** text box, you must type the name of the Microsoft Excel worksheet that contains the data you want to receive.

12. Define field mappings on the **Fields** tab. You must select the XI System ID field as a key field.

13. Click the **Save** button.

14. Click the **Close** button.

    The **Manage Device Mappings** window returns to focus.

15. Click the **Close** button.

    The **Select a Device and Properties** dialog box returns to focus.

16. Click **OK.**

    The **Devices** page appears.

17. On the **Device Tasks** menu, click the **Receive Data** link.

    A message appears, indicating that the data was received.

18. Click **OK.**

    The data that was received appears in the grid on the **Devices** page.

19. Save the received data to the Meridium APM database.

    A message appears, indicating that the data was saved, and the Xi System records are created.

A Note About Deleting Xi System Records

If an Xi System record is linked to any Xi Tag records, before you can delete the Xi System record, you must delete manually all the Xi Tag records to which it is linked.

You can delete the Xi Tag records from the Record Manageror by using a Delete query.

Accessing the Xi System Record That is Associated With an Xi Tag Record

You can associate an Xi System record with an Xi Tag record using the Xi System ID field in the Xi Tag record. For example, to associate Xi Tag record *Tag A* with Xi System record *System A*, in the Xi Tag record *Tag A*, in the Xi System ID field, you would need to select the value *System A.* Doing so, however, does not cause the Xi Tag record to be linked to the Xi System record. To view the Xi System record that is associated with an Xi Tag record, therefore, you can use the following instructions to execute the Associated Page that Meridium APM delivers for this purpose.

To access the Xi System record that is associated with an Xi Tag record:

1. In the APM Framework application, open the Xi Tag record whose associated Xi System record you want to view.

2. On the **Associated Pages** menu, click the **View Xi System** link.

   The associated Xi System record appears in the Record Manager.

Accessing the Related Xi Tags Page

When you are viewing an Xi System record in Record Manager, you can access the **Related Xi Tags** page to view the Xi Tag records that are associated with the Xi System record.

To access the Related Xi Tags page:

- On the **Associated Pages** menu, click the **Related Xi Tags** link.

  The **Related Xi Tags page** appears.
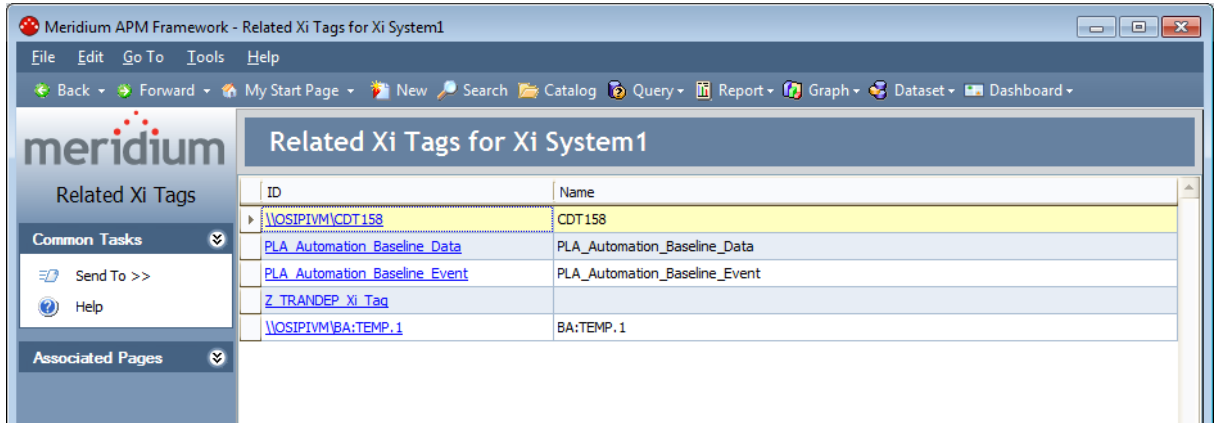
Aspects of the Related Xi Tags Page

The **Related Xi Tags for <Xi System Record ID>** page, where **<Xi System Record ID>** is the Record ID of the Xi System record for which you accessed the page, displays the results of the Related Xi Tags query. These results are displayed in a grid in the **Related Xi Tags for <Xi System Record ID>** workspace, where **<Xi System Record ID>** is the Record ID of the Xi System record for which you accessed the page. Throughout the documentation, we refer to the **Related Xi Tags for <Xi System Record ID>** page and the **Related Xi Tags for <Xi System Record ID>** workspace as the *Related Xi Tags* page and *Related Xi Tags* workspace, respectively.
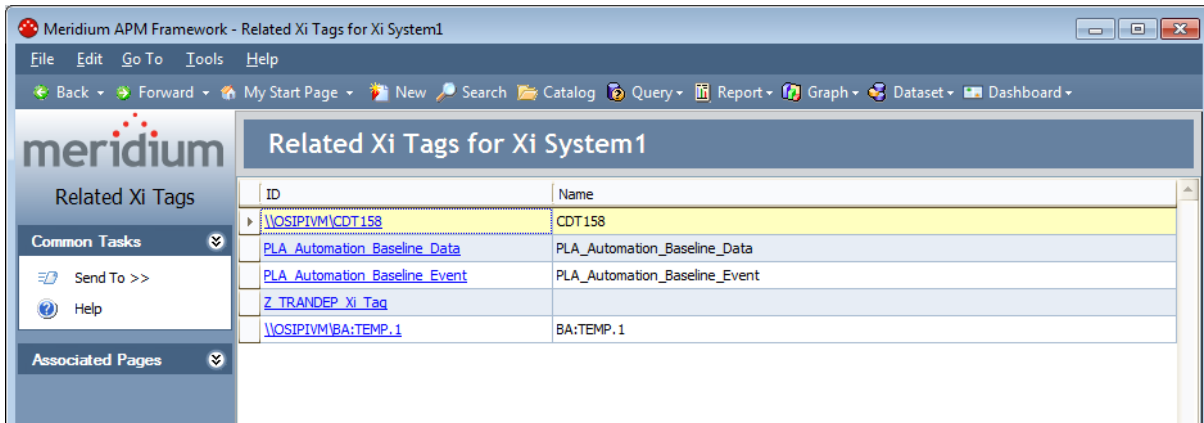
The **Related Xi Tags** workspace displays a grid that contains one row for each Xi Tag record that is associated with the Xi System record for which you accessed the page. The grid contains the following columns:

- **ID:** Displays the hyperlinked Record ID of the Xi Tag record.
- **Name:** Displays the value in the Name field in the Xi Tag record.

The **Related Xi Tags** page contains the following task menus:

- Common Tasks
- Associated Pages

Common Tasks Menu
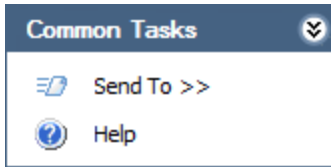
The **Common Tasks** menu on the **Related Xi Tags** page contains the following links:

- **Send To:** Displays a submenu with options that let you provide a link to the current page on your desktop (create shortcut), in an email message, or on a Home Page.

- **Help:** Displays the context-sensitive Help topic for the **Related Xi Tags** page.

Options for Creating Xi Tag Records

To create Xi Tag records, you can:

- [Create them from scratch](#).
- [Import data from a Microsoft Excel file](#).
- [Import tags directly from the PI Server](#).

Creating Xi Tag Records From Scratch

To create an Xi Tag record from scratch:

1. On the Meridium APM Framework toolbar, click the **New** button.

   The **Select Family** dialog box appears.

2. Click the ▾ button, and select **Xi Tag**.

3. Click **OK**.

   The new Xi Tag record appears in the Record Manager.

4. [Enter values in the fields as desired](#).

5. When you are finished entering values, on the **Common Tasks** menu, click the **Save** link.

   The Xi Tag record is saved.

•

Importing Data from a Microsoft Excel File

If desired, you can use the Meridium APM Devices functionality to create Xi Tag records from data that exists in a Microsoft Excel file. The following instructions explain how to do so.

Before you can create Xi Tag records using the Meridium APM Devices functionality, the Meridium APM database must already contain Xi System records that represent the systems that are associated with each Xi Tag record that will be created.

> 🛈 **Note:** The Meridium APM Server and Add-ons installation DVD contains a Microsoft Excel file that you can use as a starting point for storing the data that you want to retrieve to create Xi System records. The file does not contain any data by default. You can enter data into the file using the process of your choice (e.g., manually). The following instructions assume only that you are using a Microsoft Excel file that is configured appropriately and do not require it to have been created from the Microsoft Excel file provided by Meridium, Inc.

To create Xi Tag records using the Meridium APM Devices functionality:

1. Using a URL, access the **Select a Device and Properties** dialog box.

   The **Select a Device and Properties** dialog box appears.

2. Add the device.

   On the **Receive** tab, using the **Browse** button, select the Xi Tag Device Query query in the folder **\\Public\Meridium\Modules\Process Data Integration\Queries**.

   The following image shows an example of device properties that have been configured for this purpose.

3. Click the **Save** button to save the device and its properties.

4. Click the **Close** button.

   The **Select a Device and Properties** dialog box returns to focus.

5. Click the **Manage Mappings** link.

   The Manage Device Mappings window appears.

6. Click the **New Mapping** link.

   The **Additional Information** dialog box appears.

7. In the **Data Transfer Direction** section, select the **Receive from Device** option.

8. In the **Device Query** list, select the query path that appears. The query path in the list is the same query path that appears in the **Receive from Device Query** text box on the **Manage Device** window.

9. In the **Data Source** list, select the path to the Microsoft Excel file.

10. Click **OK**.

    The **Mapping** window appears.

11. Configure the settings on the **Mapping** tab.

    Note that:

    • In the **Mapping Type** list, you must select *Data*.

- In the **Database Table** text box, you must type the name of the Microsoft Excel worksheet that contains the data you want to receive.

12. Define field mappings on the **Fields** tab. You must select the XI Tag ID field as a key field.

13. Click the **Save** button.

14. Click the **Close** button.

   The **Manage Device Mappings** window returns to focus.

15. Click the **Close** button.

   The **Select a Device and Properties** dialog box returns to focus.

16. Click **OK**.

   The **Devices** page appears.

17. On the **Device Tasks** menu, click the **Receive Data** link.

   A message appears, indicating that the data was received.

18. Click **OK**.

   The data that was received appears in the grid on the **Devices** page.

19. Save the received data to the Meridium APM database.

   A message appears, indicating that the data was saved, and the Xi Tag records are created.

About Importing Tags from the OPC Server

Using baseline features and functionality, you can import tags from the OPC Server while viewing the Xi System record that identifies the system from which you want to import the tags. To do so, you will use the baseline *Import Xi Tags* Associated Page, which is defined for the Xi System family.

If desired, an administrative user can extend the baseline import functionality by defining an identical Associated Page for the Equipment and Functional Location family so that you can import tags from the OPC Server while viewing a record belonging to that family. As long as that family is related to the Xi Tag family through the Has Xi Tag relationship, when you execute the Associated Page, the **Select Xi System** window will appear, where you can select the system from which you want to import tags. After selecting the system, you can proceed with the import procedure. After the import procedure is complete, the imported Xi Tag records will be linked automatically to the Equipment or Functional Location record from which you started the procedure.

This documentation, however, provides specific instructions only for importing tags using the baseline Associated Page that is defined for the Xi System family.

When a tag is imported from the OPC Server, a corresponding Xi Tag record is created automatically in the Meridium APM database. From the Xi Tag record, you can access the process data for that tag.

> ⓘ **Note:** Only tags identified on the OPC Sever as read-only are supported in Meridium APM. Tags designated as write-only can be imported (i.e., Xi Tag records will be created successfully), but you will not be able to collect readings or view data for them. The read-only or write-only status of a tag is records in the Access Privilege field of the Xi Tag record.

Performing the Import Procedure

To create an Xi Tag record by importing data from the OPC Server:

1. Open in Record Manager the Xi System recordthat contains connection information to the desired OPC Server.

2. On the **Associated Pages** menu, click the **Import Xi Tags** link.

   If the Xi System record contains the value *OSI PI* in the Type field, the **PI System Browser** window appears.

   -or-

   If the Xi System record does not contain the value *OSI PI* in the Type field, the **Xi System Browser** window appears.

3. Use the [PI System Browser window](#) or the [Xi System Browser window](#) to import the desired tags.

   > **Note:** If you attempt to import write-only tags, an error message will be displayed to indicate that they are not supported. Only read-only tags are supported.

   The corresponding Xi Tag records are created.

Aspects of the PI System Browser Window

The **PI System Browser** window appears when you <u>click the **Import Xi Tags** link on the Associated Pages menu</u> while viewing an Xi System record that contains the value *OSI PI* in the Type field.
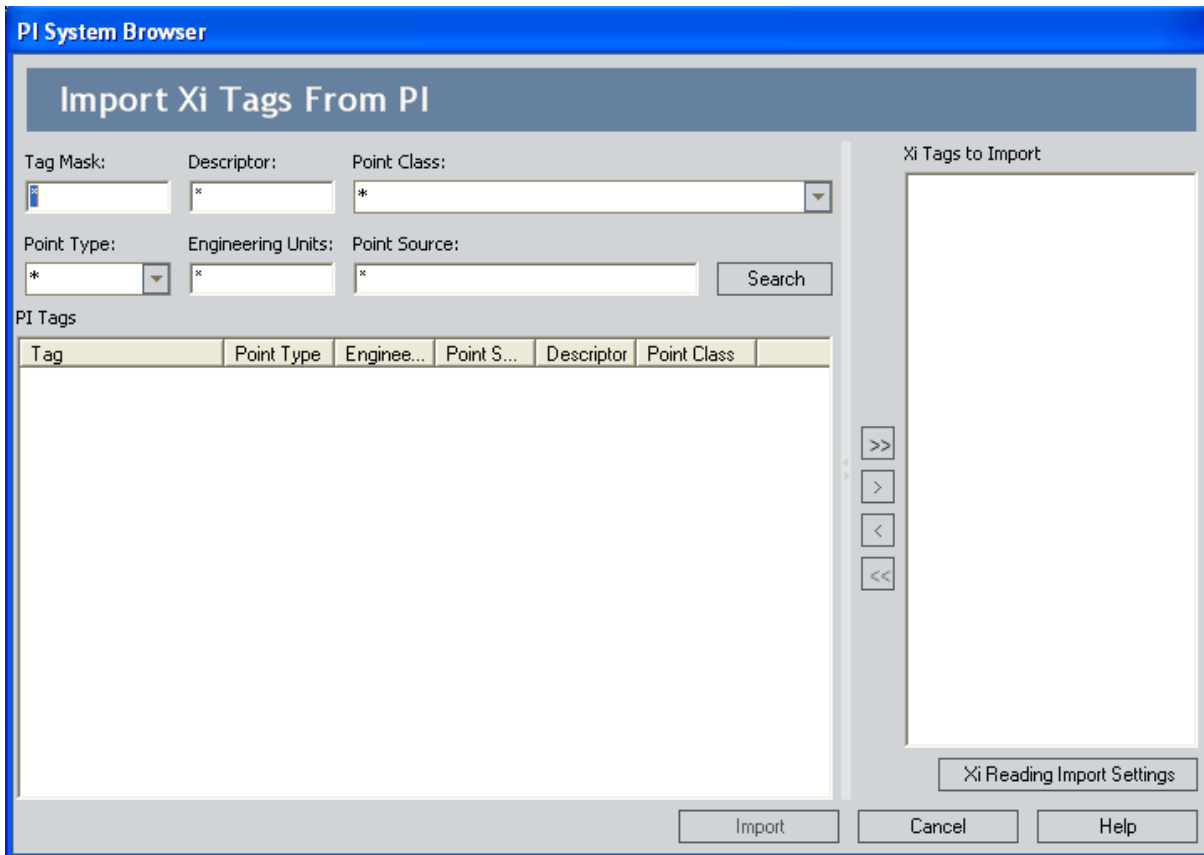
The **PI System Browser** window contains the following items:

- **Search criteria section:** Displays multiple text boxes and lists, where you can type or select values. The values that you type or select will be used to limit the results in the **PI Tags** area to tags containing that text within the corresponding fields. For example, if you type **123** in the **Tag Mask** text box, when you click the **Search** button, the Meridium APM system will search the PI Server for tags whose Tag Mask field contains the value *123*, preceded or appended with any combination of characters. Only the tags that contain *123* in the Tag Mask field and meet the remaining search criteria will be returned in the **Pi Tags** area.

- **Search button:** Performs the search using the criteria that you defined.

- **PI Tags area:** Displays a grid that shows tags that exist on the PI Server that meet the search criteria. If a tag has already been imported in the Meridium APM database, its label will be colored gray, indicating that you cannot reimport it.

> **Note:** Only tags with reading value types that are supported by the Meridium APM system will appear in the tree, regardless of whether they exist on the PI Server. The Meridium APM system currently supports Numeric and Character types of reading values.

- **Xi Tags to Import area:** Displays a list of tags that will be imported from the PI Server. For each tag in the list, a corresponding Xi Tag record will be created in the Meridium APM database. You can add a tag to this list by selecting the desired tag in the **PI Tags** area and then clicking the right arrow button. You can also remove a tag from the list by selecting it and then clicking the left arrow button. If desired, you can move multiple tags at once from the **PI Tags** area to the **Xi Tags to Import** area using the double right or left arrow buttons.

- **Xi Reading Import Settings button:** Displays the **Xi Reading Import Settings** dialog box, where you can specify how many reading values you want to store for each tag that is imported.

- **Import button:** Imports the tags that are displayed in the **Xi Tags to Import** area.

- **Cancel:** Closes the **PI System Browser** window, discarding any selections that you have made.

- **Help button:** Displays the context-sensitive Help topic for the **PI System Browser** window.

Aspects of the Xi System Browser Window

The **Xi System Browser** window appears when you [click the **Import Xi Tags** link on the Associated Pages menu](#) while viewing an Xi System record that does not contain the value *OSI PI* in the Type field.

The **Xi System Browser** window contains the following items:
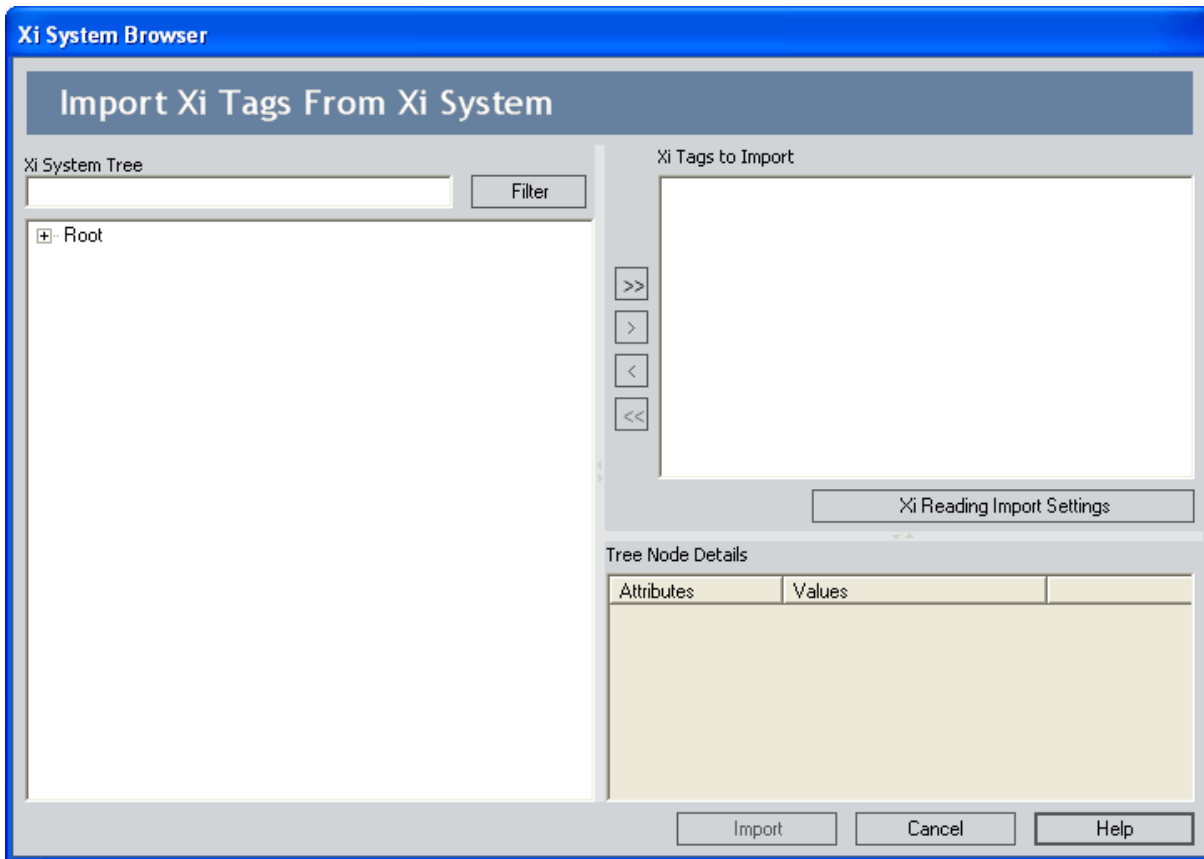
- **Xi System Tree text box:** Accepts any alphanumeric value, including special characters. The value that you type will be used to filter the results in the tree to tags containing that text within the Name, ObjectID, or DataTypeID fields.

- **Filter button:** Applies the filter using the value that you typed in the **Xi System Tree** text box.

- **Tree:** Shows the tags that exist on the OPC Server. If a tag has already been imported in the Meridium APM database, its label will be colored gray, indicating that you cannot reimport it.

  Note: Only tags with reading value types that are supported by the Meridium APM system will appear in the tree, regardless of whether they exist on the OPC Server. The Meridium APM system currently supports Numeric and Character types of reading values.

- **Xi Tags to Import area:** Displays a list of tags that will be imported from the OPC Server. For each tag in the list, a corresponding Xi Tag record will be created in the Meridium APM database. You can add a tag to this list by selecting the desired tag in the tree and then clicking the right arrow button. You can also remove a tag from the list by selecting it and then clicking the left arrow button. If desired, you can move multiple tags at once from the tree to the **Xi Tags to Import** area using the double right or left arrow buttons.

- **Xi Reading Import Settings button:** Displays the **Xi Reading Import Settings** dialog box, where you can specify how many reading values you want to store for each tag that is imported.

- **Tree Node Details area:** Displays details of the item that is selected in the tree.

- **Import button:** After displaying a confirmation message, imports the tags that are displayed in the tree.

- **Cancel:** Closes the **Xi System Browser** window, discarding any selections that you have made.

- **Help button:** Displays the context-sensitive Help topic for the **Xi System Browser** window.

About Storing Reading Values in the Meridium APM Database

By default, reading values for tags are not stored in the Meridium APM database. Instead, they are displayed in real time as the values are collected on the process historian. If desired, however, when you import tags from the OPC Server using the Xi System Browser window or the PI System Browser window, you can specify how many reading values you want to store in the Meridium APM database for each tag that is imported. These reading values will be stored in Xi Reading records that are linked to the Xi Tag records.

Note that in some cases, your Meridium APM database might contain more Xi Reading records than you specified that you wanted to store.

> 🛈 **Note:** You can store a maximum of 600 readings for each tag.

Specifying How Many Reading Values You Want to Store

If you are using the [Xi System Browser window](#) or the [PI System Browser window](#) to [import tags from the PI Server](#), before you complete the import process, you can use the following instructions to specify how many reading values you want to store in the Meridium APM database for each tag that is imported.

To specify how many reading values you want to store:

1. On the **PI System Browser** or **Xi System Browser** window, click the **Xi Reading Import Settings** button.

   The **Xi Readings Import Settings** dialog box appears.
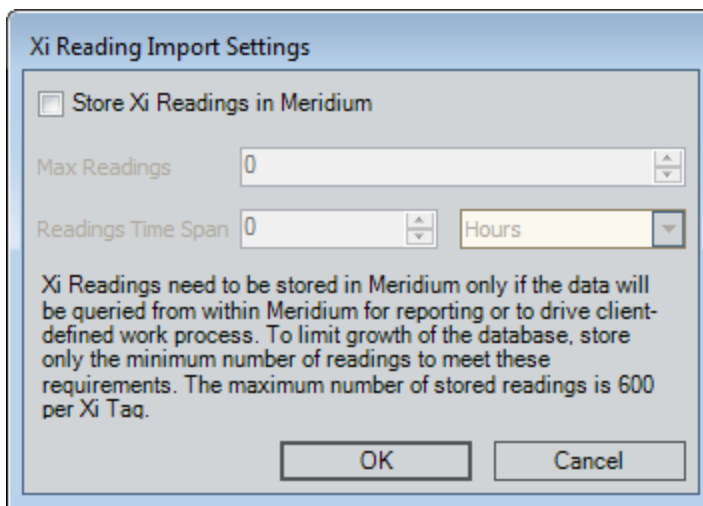
2. Select the **Store Xi Readings in Meridium** check box.

   The **Max Readings** and **Reading Time Span** text boxes become enabled.

3. In the **Max Readings** text box, type the maximum number of readings that you want to store for each tag that will be [imported](#) from the **PI System Browser** or **Xi System Browser** window. The value in the **Max Readings** text box will be stored in the Max Readings field in each [Xi Tag record](#) that is created during the import procedure.

   > **Note:** You can store a maximum of 600 readings for each tag. If you type a value greater than 600 in the **Max Readings** text box, it will be changed automatically to *600*.

4. In the **Readings Time Span** text box, type the duration for which you want to store readings for each tag that will be imported from the **PI System Browser** or **Xi System Browser** window. For example, if you want the Meridium APM database to store readings that were captured in the last three hours, you would type *3*.

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> **Note:** If the Max Readings and Readings Time Span text boxes both contain a value, an Xi Reading record will be created only if the reading value falls within both limits. In addition, regardless of the time span that you specify, a maximum of 600 readings will be stored at any given time.

5. In the list to the right of the **Readings Time Span** text box on the right, select the unit of measure that corresponds with the value in the **Readings Time Span** text box. For example, if you want the Meridium APM database to store readings that were captured in the last three hours, you would select *Hours*. The value represented by the values in the **Readings Time Span** text box and this list will be converted to milliseconds and stored in the Readings Time Span field in each Xi Tag record that is created during the import procedure.

6. Click **OK**.

   The **PI System Browser** or **Xi System Browser** window returns to focus, and you can continue performing the import procedure.

Why Do I Have More Xi Reading Records Than Expected?

In some cases, per Xi Tag record, your database might contain more Xi Reading records that the number that you specified in the **Max Readings** text box on the **Xi Readings Import Settings** dialog box. Because readings are processed by the Process Data Integration Service in batches of 1,000, the service will transfer ALL new readings that it finds in each batch of 1,000, even if the number of readings it finds is higher than the number in the **Max Readings** text box.

In other words, the number of readings that are found during the *initial* processing is the number of Xi Reading records that will be created. After the initial batch of readings is transferred, the service will continue processing 1,000 readings at a time and transferring new readings that exist in that batch.

As new readings are transferred, Xi Reading records representing older readings will be deleted *automatically*. Eventually, as the number of new readings in the processed batch matches the number in the **Max Readings** text box, your database will contain *only* that number of Xi Reading records for that tag.

This concept is best understood through an example. Suppose you specified that you want to store two reading values. In other words, the **Max Readings** text box on the **Xi Readings Import Settings** dialog box contains the value 2, as shown in the following image.
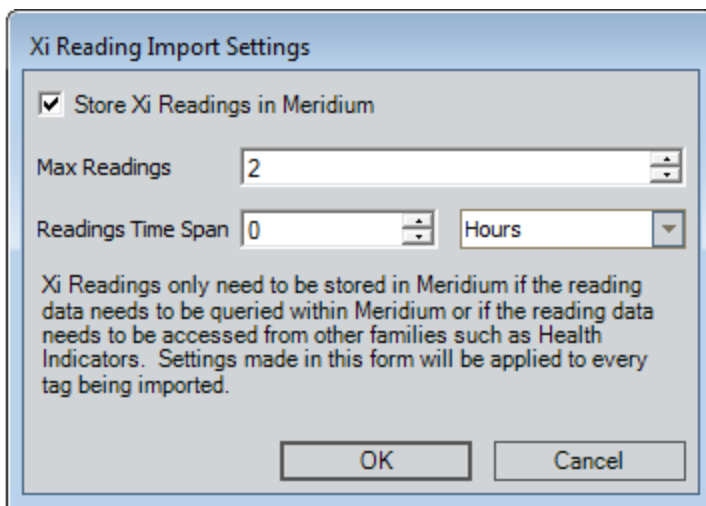
Suppose that when the Process Data Integration Service runs to collect the initial set of reading values, however, it finds *four* readings. In this case, all four readings will be transferred to the Meridium APM database, meaning that you will end up with four Xi Reading records. The following image illustrates this scenario.

In the image, the blue boxes on the left represent the readings that are collected from the queue by the Process Data Integration Service. The red boxes on the right represent the Xi Reading records that get created automatically in the Meridium APM database.
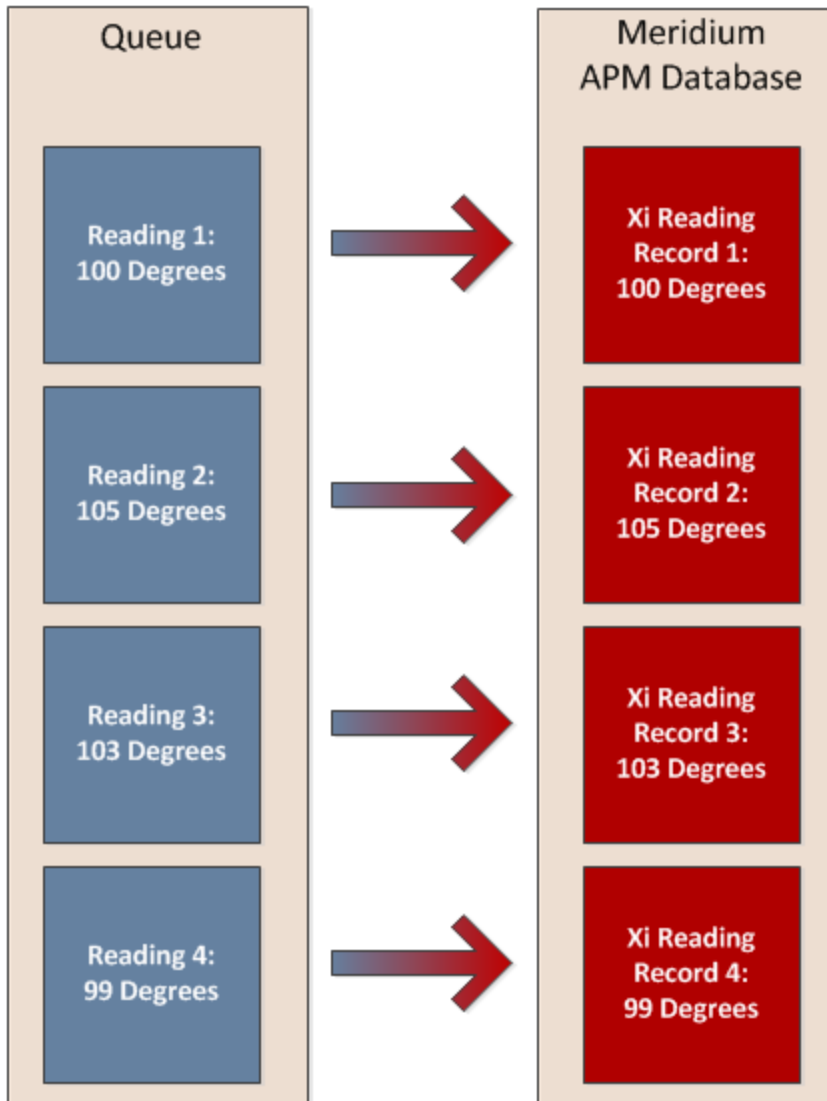
Now, suppose that the Process Data Integration Service runs again and finds an additional two readings. In this case, the two new readings are transferred to your Meridium APM database. Also, because you configured the system to store only two readings, all four Xi Reading records representing the previous four readings are deleted automatically. This scenario is illustrated in the following image.

In this image, the gray boxes on the left represent the previous four readings. The blue boxes represent the new readings. In addition, the Xi Reading records that are deleted automatically are colored gray and contain an X over them to indicate this automatic deletion. The red boxes represent the new Xi Reading records that are created automatically.
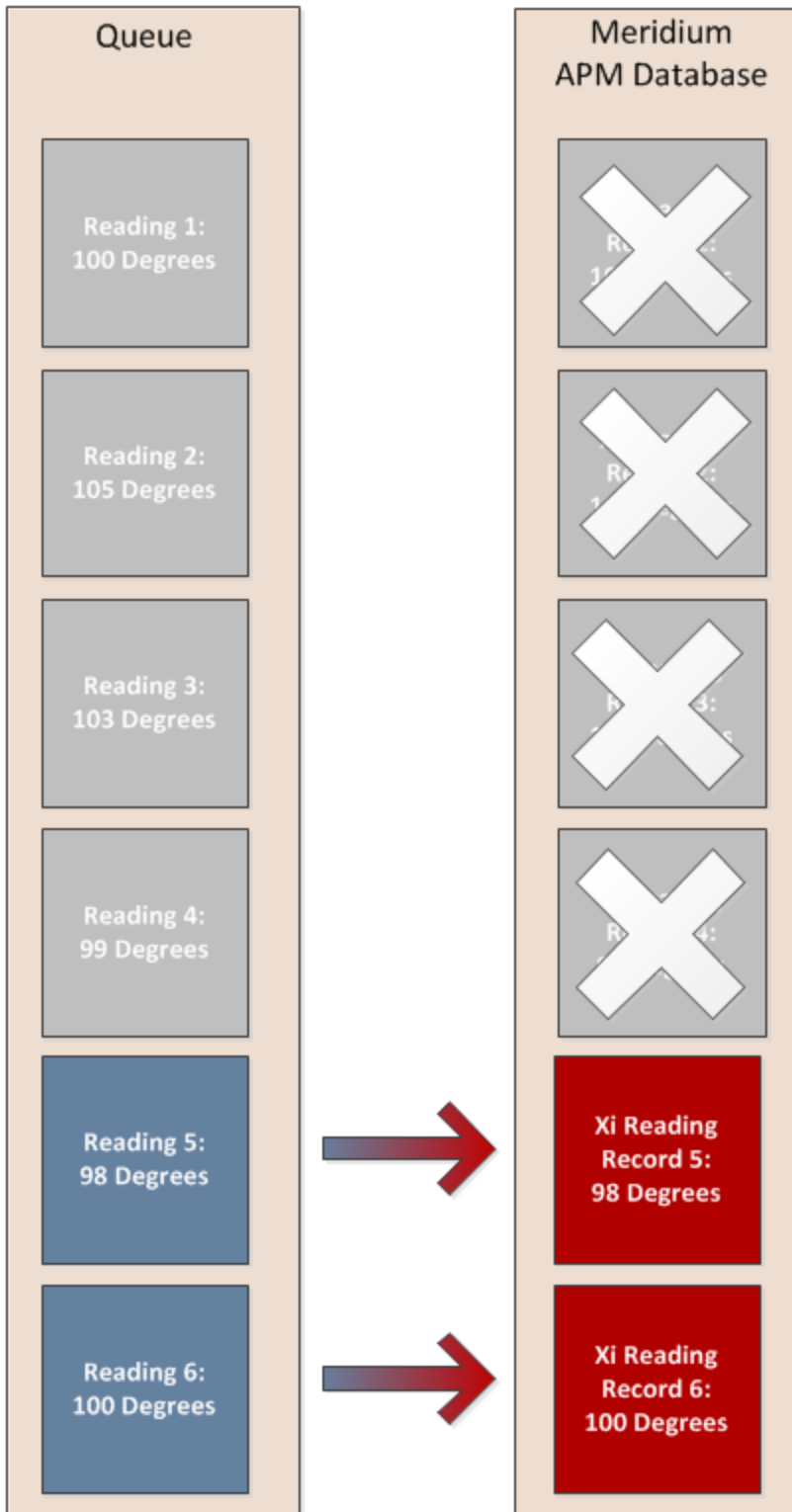
Finally, suppose that the Process Data Integration Service runs once more and finds one more new reading in the queue. In this case, that new reading will be transferred to the Meridium APM database as an Xi Reading record, and one Xi Reading record will be deleted automatically so that the Meridium APM database always contains only the two most recent readings. This scenario is illustrated in the following image.

In the image, the blue box on the left represents the new reading. The red boxes on the right represent the Xi Reading records that exist in the Meridium APM database to store the two most recent readings.

Queue

Reading 1:
100 Degrees

Reading 2:
105 Degrees

Reading 3:
103 Degrees

Reading 4:
99 Degrees

Reading 5:
98 Degrees

Reading 6:
100 Degrees

Reading 7:
101 Degrees

**Meridium
APM Database**

Xi Reading
Record 1:
100 Degrees

Xi Reading
Record 2:
105 Degrees

Xi Reading
Record 3:
103 Degrees

Xi Reading
Record 4:
99 Degrees

Xi Reading
Record 6:
100 Degrees

Xi Reading
Record 7:
101 Degrees
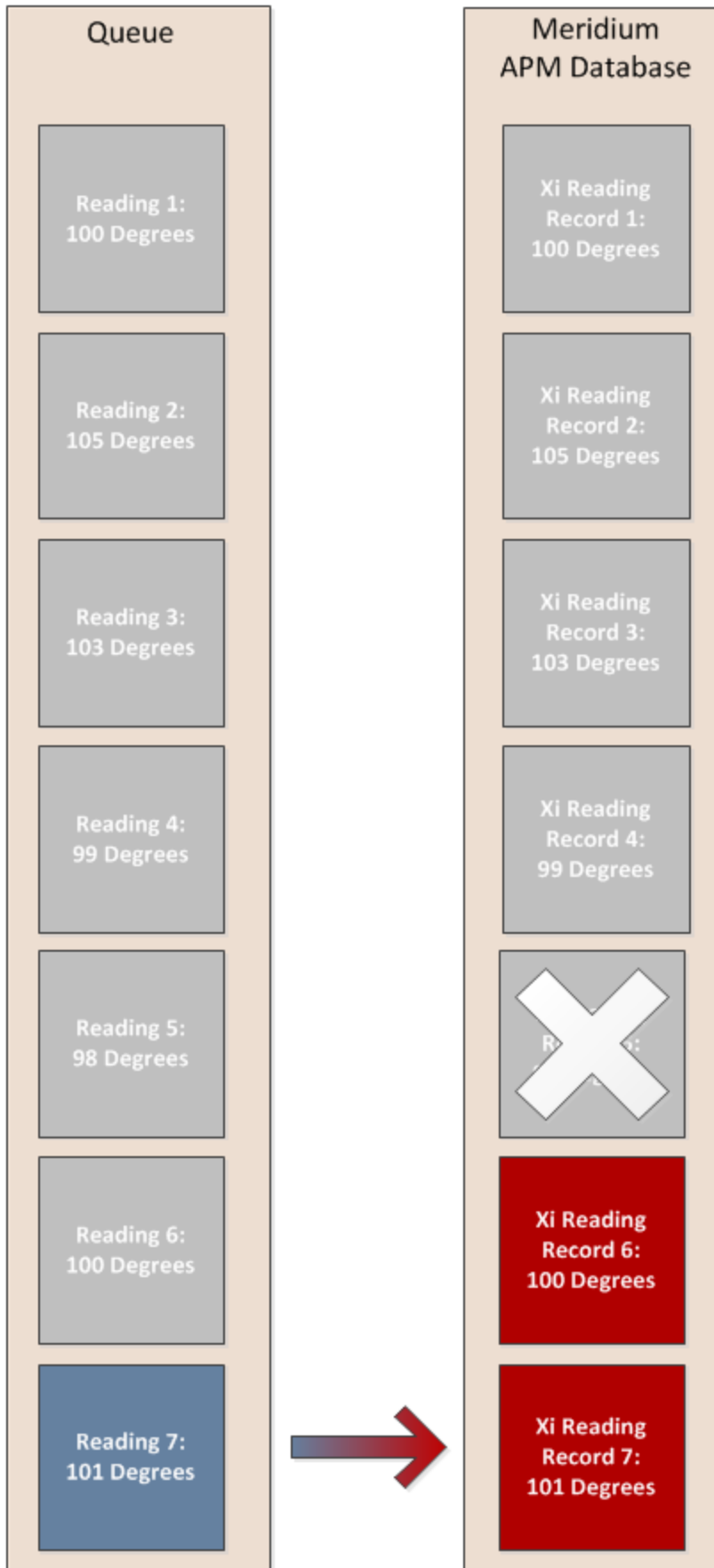
About Viewing Process Data

Using baseline features and functionality, you can [access process data](#) while viewing the Xi Tag record that identifies the tag whose data you want to view. To do so, you will use the baseline *Process Data* Associated Page, which is defined for the Xi Tag family.

If desired, an administrative user can extend the baseline functionality by defining an identical Associated Page for the Health Indicator family so that you can access process data while viewing a Health Indicator record. When you execute the Associated Page, the **Process Data Viewer** window will appear, where you can view process data for the tag that is identified by the Xi Tag record to which the Health Indicator record is linked.

This documentation, however, provides specific instructions only for accessing process data using the baseline Associated Page that is defined for the Xi Tag family.

Accessing the Process Data Viewer Window

To access the Process Data Viewer window:

1. Open the Xi Tag record representing the tag whose process data you want to view.

   -or-

   Open the Equipment or Functional Location record whose process data you want to view.

2. On the **Associated Pages** menu, click the **Process Data** link.

   > **Note:** The Process Data Associated Page is configured by default for the Xi Tag family only. An administrative user must configure it manually for the Equipment and Functional Location families. If you are viewing an Equipment or Functional Location record and you do not see the **Process Data** link, contact an administrative user who is responsible for creating Associated Pages.

   The **Process Data Viewer** window appears.

Aspects of the Process Data Viewer Window

The **Process Data Viewer** window appears when you click the **Process Data** link on the **Associated Pages** menu when viewing an Equipment, Functional Location, or Xi Tag record.

If you access the **Process Data Viewer** window from an Xi Tag record, the window displays data only for that tag. If, however, you access the **Process Data Viewer** window from an Equipment or Functional Location record, the window displays data for all tags whose Xi Tag record is linked to that Equipment or Functional Location record.

After the **Process Data Viewer** window appears, if desired, you can view data for additional tags on the **Historical Data** and **Snapshot Data** tab.

In the following image, the **Process Data Viewer** window displays data for only one tag.
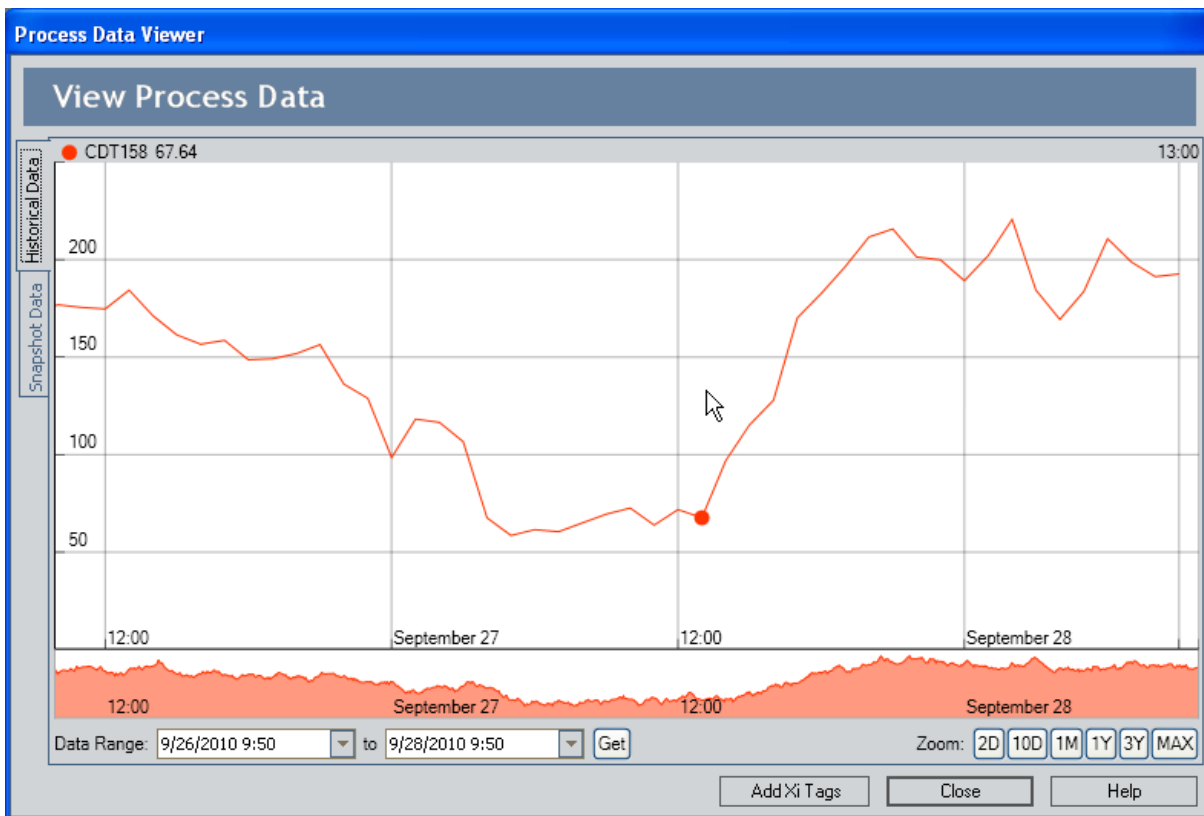
The **Process Data Viewer** window contains the following items:

- **Historical Data tab:** Contains the following items:
    - **Graph:** Displays readings for the tags that are currently displayed.
    - **Data Range criteria:** Defines the specific date range for which data will be displayed on the graph.

- **Zoom buttons:** Allow you to select a predetermined amount of data that will be displayed on the graph.
- **Snapshot Data tab:** Contains the following items:
    - **Grid:** Displays the most recent reading value for each tag that appears on the graph on the **Historical Data** tab.
    - **Refresh button:** Refreshes the grid to display the most recent reading value for each tag that appears in the grid.
- **Add Xi Tags button:** Displays the **Select Xi Tag** window, where you can select the Xi Tag records that are associated with the tags whose process data you want to view.
- **Close button:** Closes the **Process Data Viewer** window.
- **Help button:** Displays the context-sensitive Help topic for the **Process Data Viewer** window.

About the Graph

The graph on the **Historical Data** tab of the **Process Data Viewer** window displays readings for the tags that are currently displayed.

A tag will appear on the graph only if the following conditions have been met:

- The Data Access field in the corresponding Xi Tag record contains one of the following values: *Both Historical and Snapshot Data* or *Historical Data Only*.

- The Enabled field in the corresponding Xi System record (determined from the value in the Xi System ID field in the Xi Tag record) contains the value *True*.

- The OPC Server for the corresponding Xi Tag record provides access to historical data.
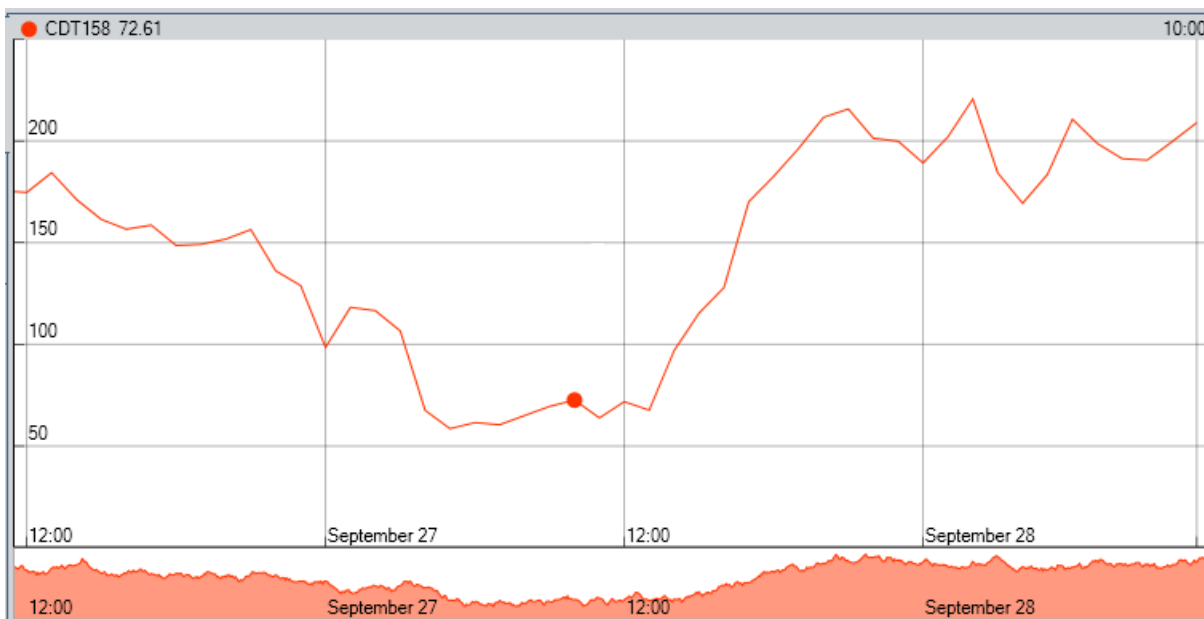
The y-axis displays numbers representing reading values. The x-axis displays dates and times, using a 24-hour clock. At any given time, the graph displays a single datapoint, which represents the reading value for the current tag on a specific date and time. The exact reading value appears above the graph, on the left (e.g., *CDT158 72.61*, shown in the preceding image). The time at which the reading was taken also appears above the graph, on the far right (e.g., *10:00*, as shown in the preceding image). The time is displayed using a 24-hour clock.

When you point to various place on the line plotted in the graph, the datapoint moves, displaying reading values for the associated date and time.

Below the graph, you will see another secondary graph with identical dates and times. This secondary graph allows you to shrink or expand the main graph to display only the portion that you want to see. When you point to this secondary graph, your pointer appears as ◀•▶. You can use the pointer to move the left or right border of the secondary graph as desired, as shown in the following image:

When you move the borders in the secondary graph, the amount of data that appears on the main graph changes accordingly. In the following image, you can see that the left border of the secondary graph is positioned at *12:00 AM* on *September 28*. The left border of the main graph, therefore, is positioned at *12:00 AM* on *September 28*.
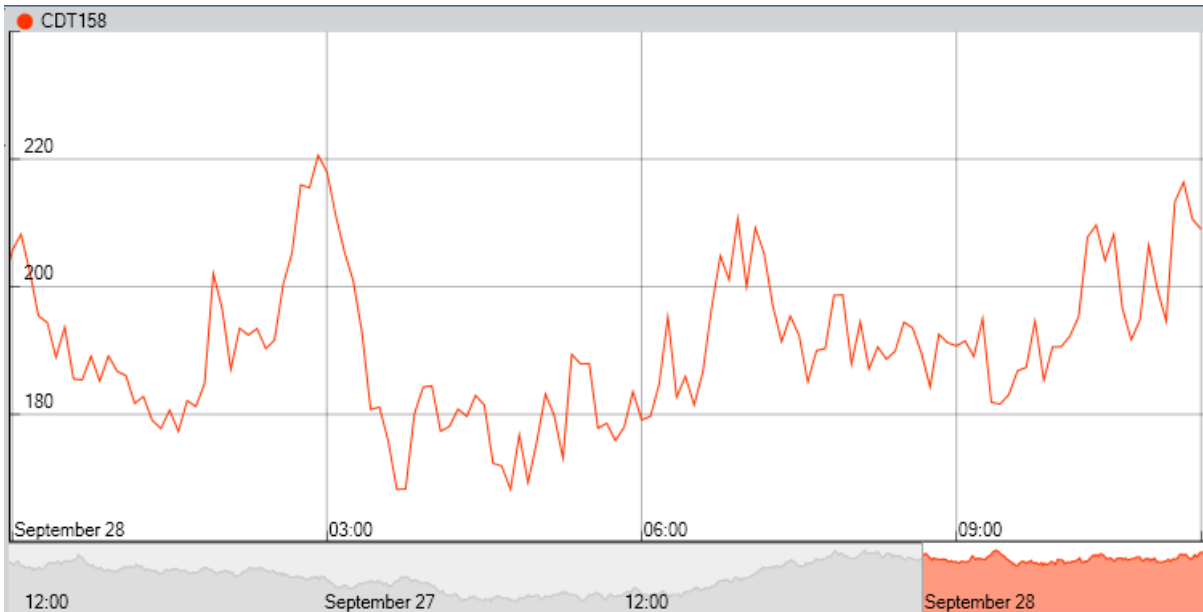
When the borders of the secondary graph have been moved so that only a portion of the main graph is displayed, you can point anywhere within the left and right borders and drag the area to see other parts of the graph. This concept is illustrated in the following image.
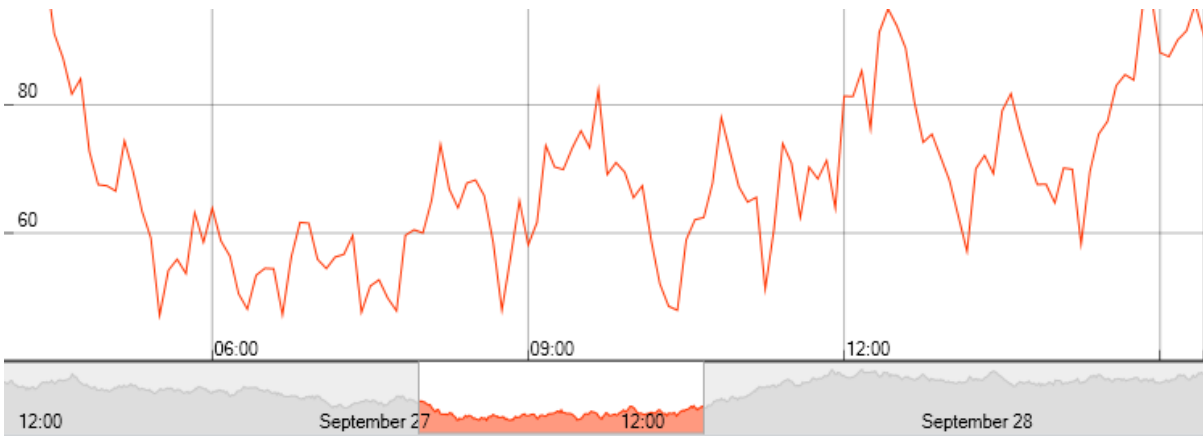
You can right-click the main graph to see the following options:

- **Show In Full Resolution:** Displays the graph in high resolution.
- **Add Xi Tag for Comparison:** Displays the **Select Xi Tag** window, where you can select additional Xi Tag records whose process data you want to view on the graph.
- **Show Limits For Primary:** Displays shaded areas on the graph based upon the values on the **Limit Values** tab of the Xi Tag datasheet for the primary Xi Tag record (the tag whose values are controlling the secondary graph below the main graph).

About the Zoom Buttons

On the **Historical Data** tab of the **Process Data Viewer** window, the **Zoom** buttons are displayed below the graph. The **Zoom** buttons are outlined in black in the following image.
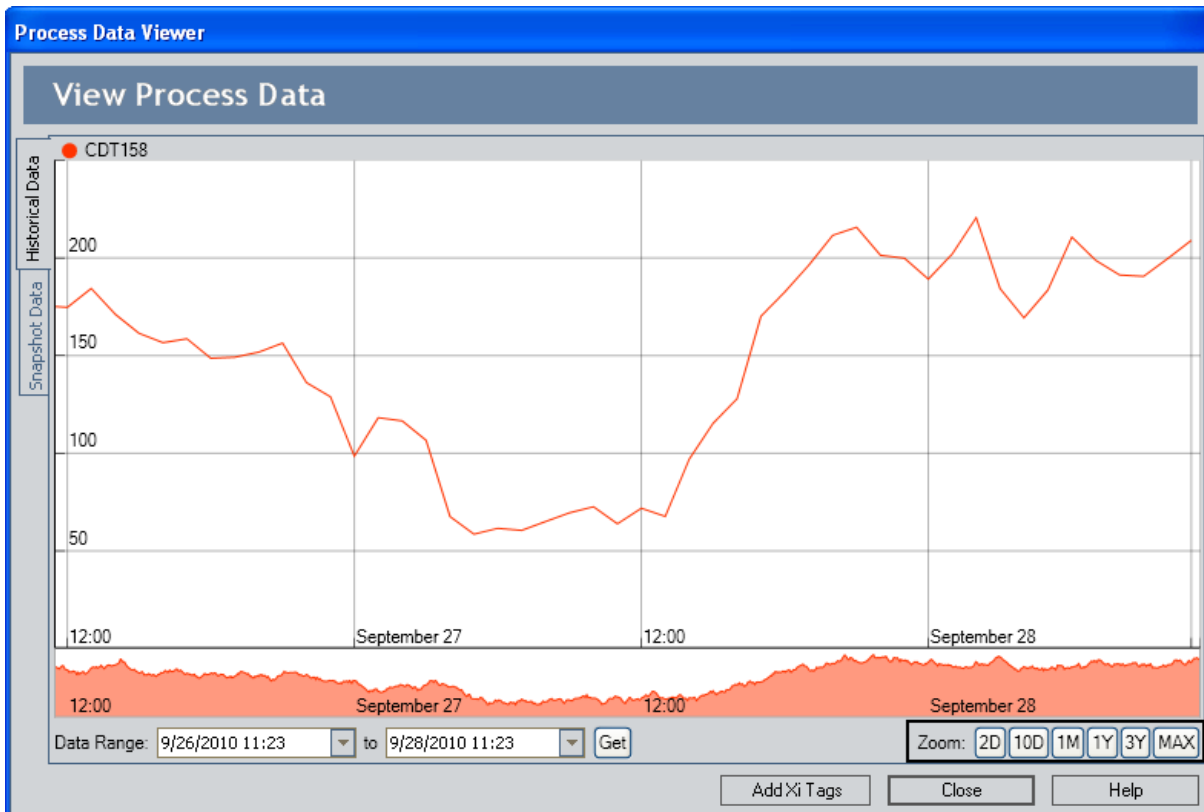
The following **Zoom** buttons are available:

- **2D:** Displays the readings for the previous two days.
- **10D:** Displays the readings for the previous ten days.
- **1M:** Displays the readings for the previous one month.
- **1Y:** Displays the readings for the previous one year.
- **3Y:** Displays the readings for the previous three years.
- **MAX:** Expands the boundaries of the graph to the most amount of data that has been downloaded.

When you first access the **Process Data Viewer** window, readings for the previous *two days* will be downloaded and displayed on the graph automatically. You can download more readings by clicking the desired **Zoom** button.

After readings are downloaded and displayed on the graph, the **Zoom** buttons will download additional readings only if you click a button to see *more* readings than are currently displayed. If you click a button to see *fewer* readings than are currently displayed,

the graph will change to show only those readings, but they will not be downloaded again.

If you use the **Zoom** buttons to control the amount of data that is displayed on the graph, the date range will be updated automatically to reflect the selected zoom option.

> 🛈 **Note:** You can download a maximum of 10,000 readings from the external system. If you click a **Zoom** button that causes the Meridium APM system to try to download more than 10,000 readings, a message will appear, indicating that you have exceeded the maximum number of readings that are allowed. After you click **OK**, 10,000 readings will be downloaded automatically, and you will need to change the zoom setting by clicking a button that downloads fewer readings.

About the Date Range Criteria

On the **Historical Data** tab of the **Process Data Viewer** window, the date range criteria is displayed below the graph. The date range criteria is outlined in black in the following image.
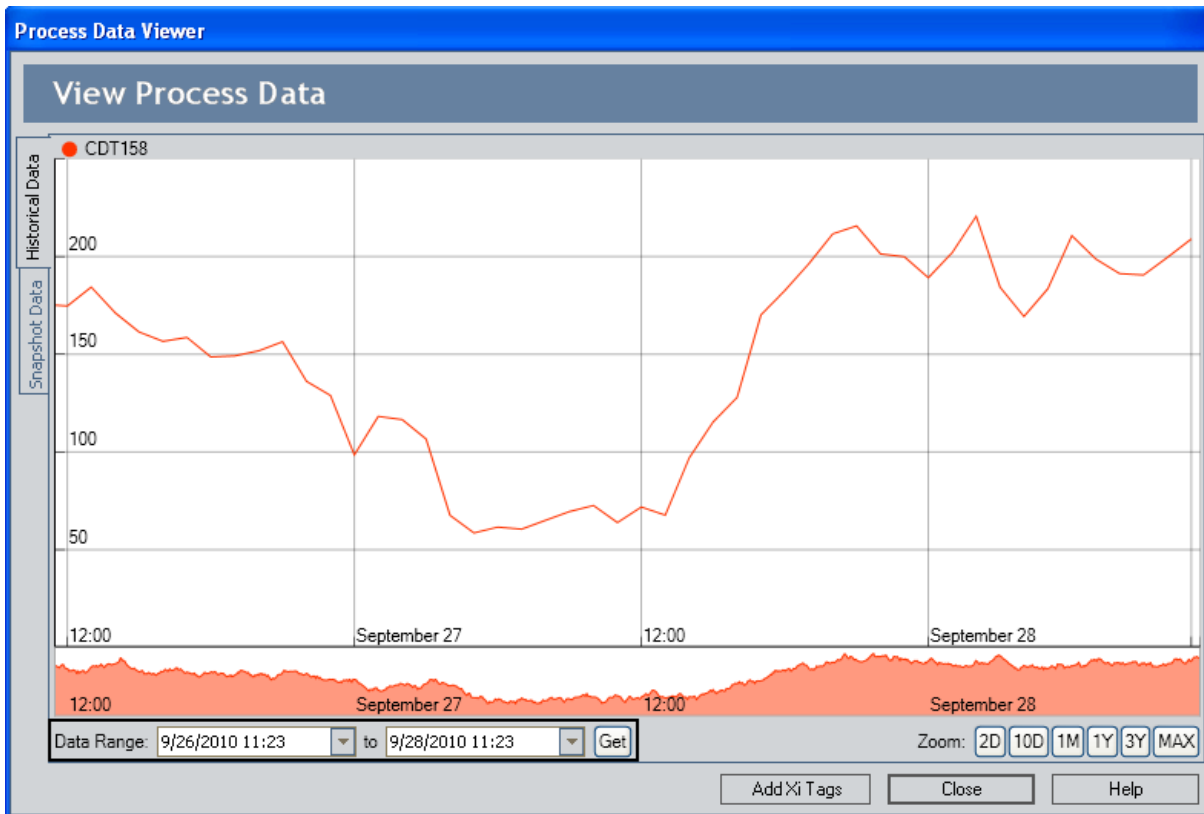
You can change the date and time in either date list and click the **Get** button to download from the external system to the Meridium APM system readings captured during that date range.

For example, using the dates in the following image, if you click the **Get** button, the Meridium APM system will download readings that were captured in the external system for tag CDT158 from 9/1/2010 11:23 until 9/2/2010 11:23:

After the readings are downloaded, the graph will be updated to display these readings, as shown in the following image.
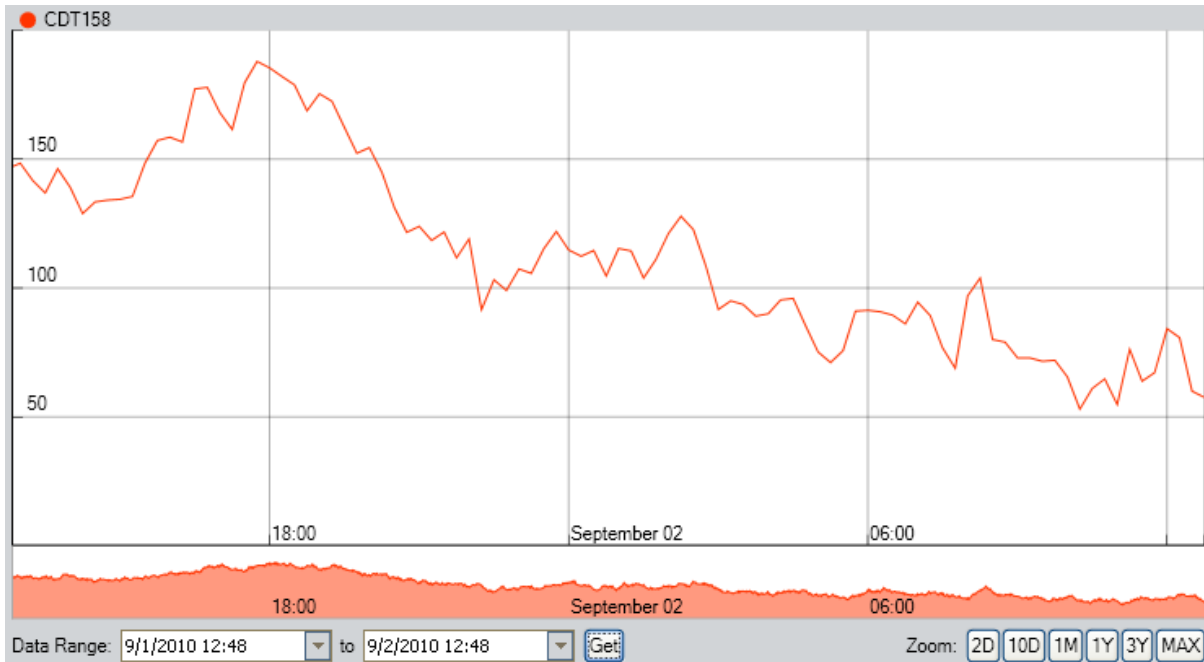
Note that if you use the **Zoom** buttons to control the amount of data that is displayed on the graph, the date range will be updated automatically to reflect the selected zoom option.

> ℹ **Note:** You can download a maximum of 10,000 readings from the external system. If you specify a date range that causes the Meridium APM system to try to download more than 10,000 readings, a message will appear, indicating that you have exceeded the maximum number of readings that are allowed. After you click **OK**, you will need to change the date range to downloads fewer readings.

About Viewing Multiple Tags on the Graph

If you add multiple tags to the graph on the **Process Data Viewer** window, several additional items will be displayed, as described in the following list:

- To the right of the graph, the following items will be displayed:
  - A list of all tags that appear on the graph. Each tag will be designated a different color. In the list, you can select the tag that will be used to generate the secondary graph. This tag is considered the *primary tag*.
  - A legend, showing all tags that appear on the graph, except for the tag that is selected in the top list and is used to generate the secondary graph. Each tag will be designated a different color. You can click any item in the legend to hide that tag from the graph.
- Above the graph, additional tag names and reading values will be displayed. Each tag name will be colored according to the color of that tag in the legend.
- On the graph, additional lines (one per tag) will be displayed. Each line will be colored according to the color of that tag in the legend.

For example, consider the following image.
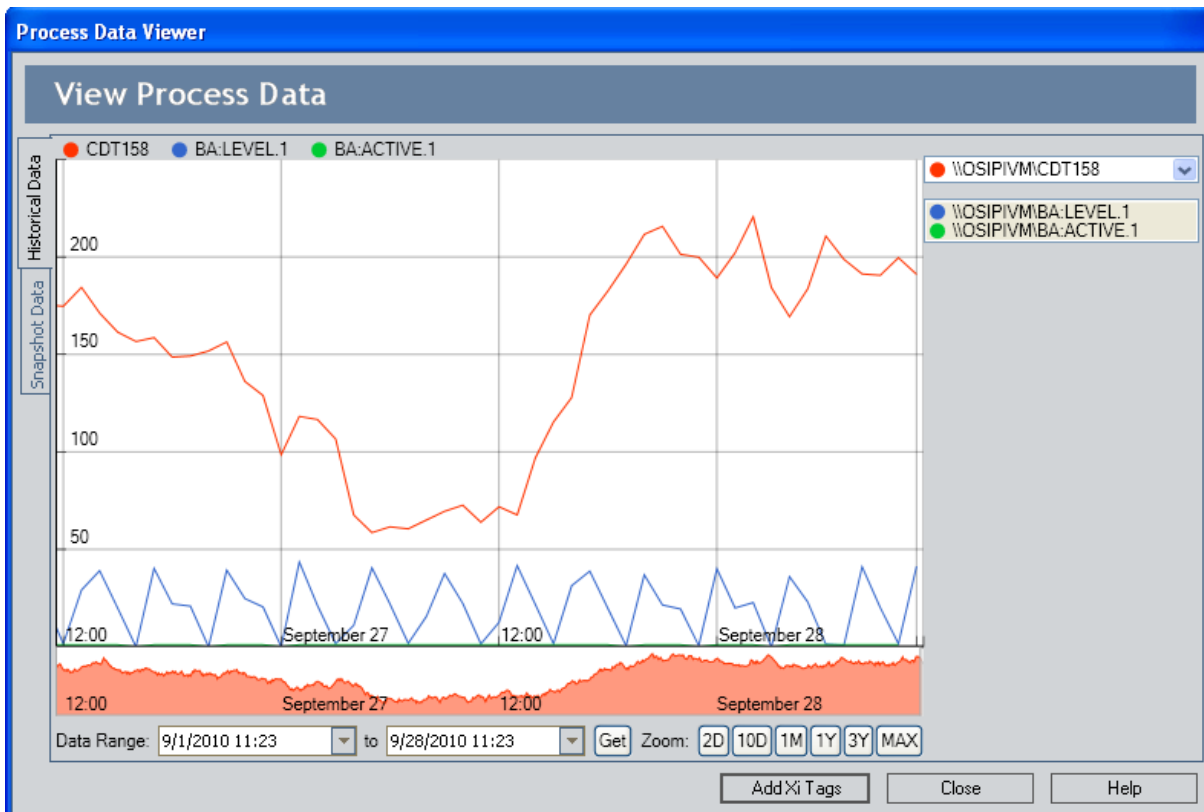
In this image, you can see that:

- The following tags are displayed on the graph: CDT158 (red), BA:LEVEL 1 (blue), BA:Active 1 (green)
- Since \\OSIPIVM\CDT158 appears in the list above the legend, the secondary graph displays data for CDT158.
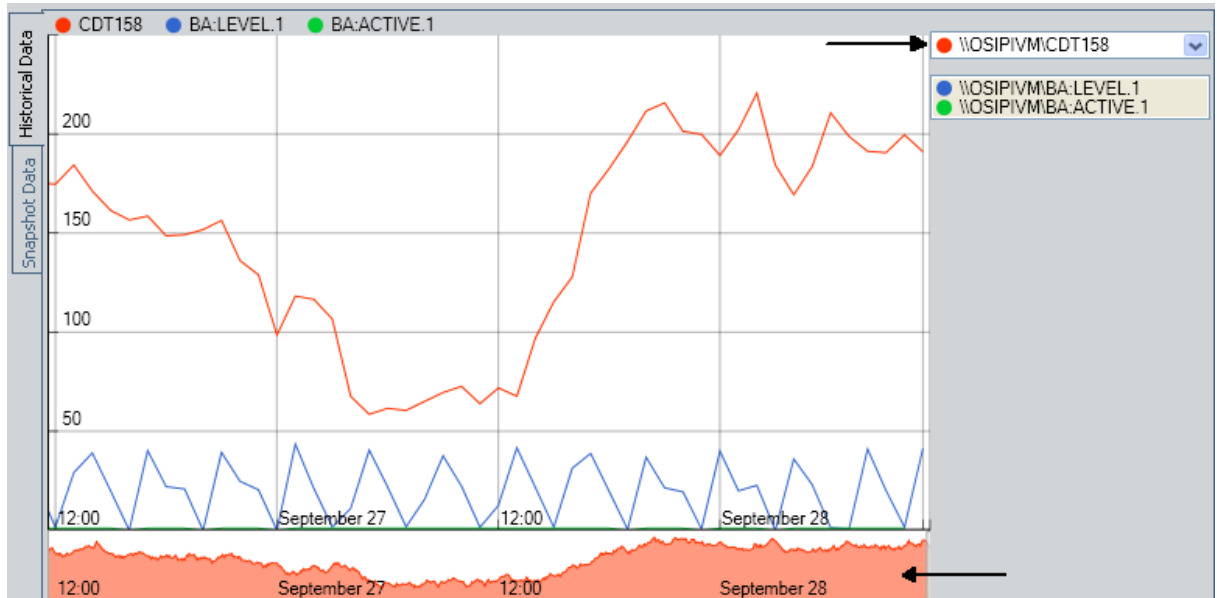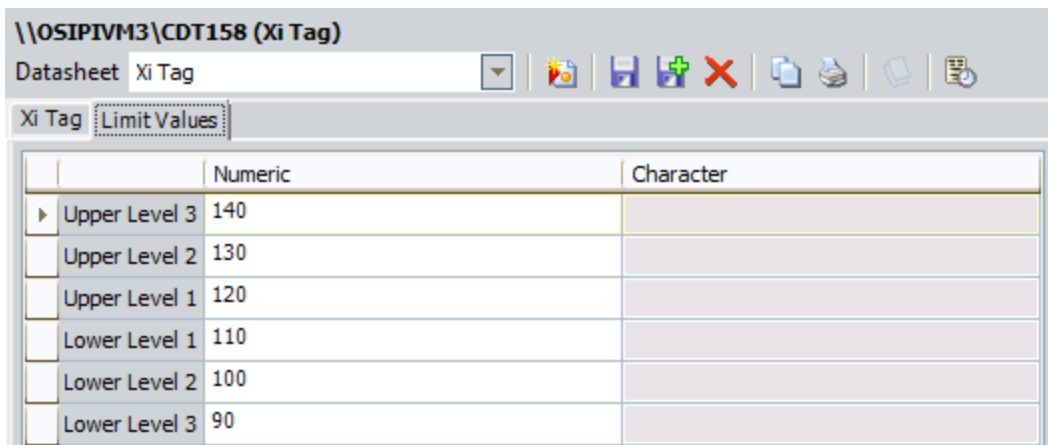
About Displaying Limits for the Primary Tag

If an Xi Tag record contains values in the fields on the **Limit Values** tab of the Xi Tag data-sheet, when you view data for that tag on the graph, you can choose to display shaded regions representing those limits. Each reading value that is plotted on the graph will fall into one of those shaded regions, which allows you to categorize the reading value as meeting one of the following statuses:

- Normal
- Warning
- Alert

> ⓘ **Note:** If the graph is displaying multiple tags, you can view shaded regions representing limit values for the *primary* tag only (the tag whose values are controlling the secondary graph).

For example, consider an Xi Tag record that contains the following values on the **Limit Values** tab.

\\OSIPIVM3\CDT158 (Xi Tag)		
Datasheet Xi Tag		
Xi Tag Limit Values		
	Numeric	Character
Upper Level 3	140	
Upper Level 2	130	
Upper Level 1	120	
Lower Level 1	110	
Lower Level 2	100	
Lower Level 3	90	

Using these values, you can determine that a reading value for this tag can meet one of the following statuses:

- **Normal:** The reading value is greater than or equal to *110* and less than or equal to *120* (e.g., the reading value is *115*).
- **Warning:** The reading value is:
  - Greater than *120* and less than or equal to *130*. (e.g., the reading value is *125*).

    -or-
  - Greater than or equal *100* and less than *110* (e.g., the reading value is *105*).
- **Alert:** The reading value is greater than *130* or less than *100* (e.g., the reading value is *140* or *90*).

> **ℹ Note:** The values in the Upper Level 3 and Lower Level 3 fields are not used when determining reading value statuses. In other words, any value that is greater than the value in the Upper Level 2 field meets Alert status, and any value that is lower than the value in the Lower Level 2 field meets Alert status.

If you were to access the **Process Data Viewer** window and show the limit value shaded regions, the graph might look something like this:
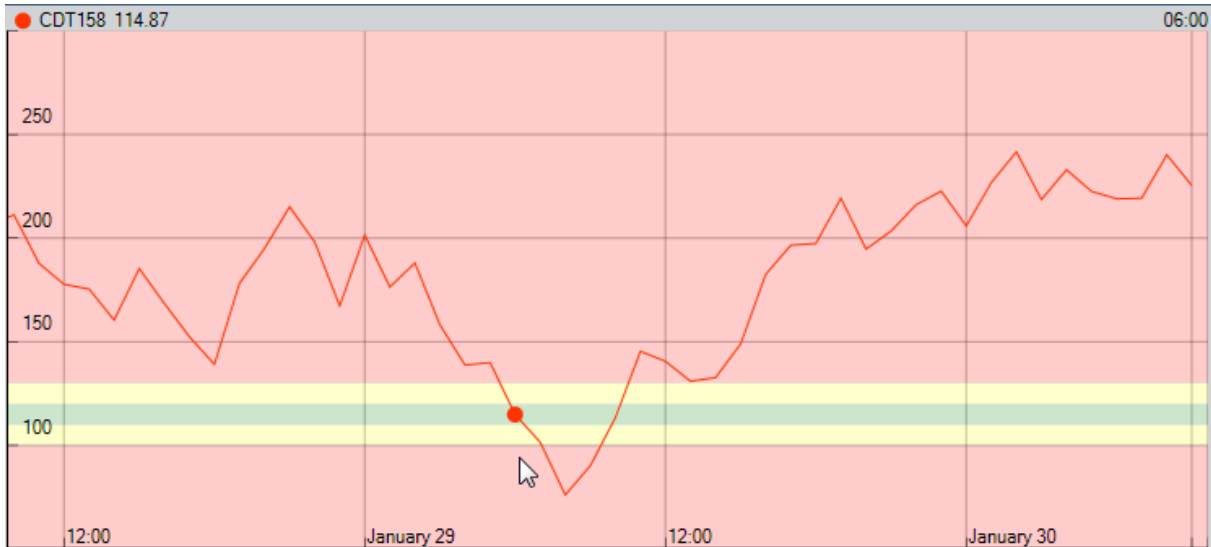
In this example, the reading value is *114.87*, which falls within the green shaded region, which represents a Normal reading status.

If you point slightly to the of this datapoint, you can see that the reading value drops to *101.48*, which falls within the yellow shaded region, which represents a Warning reading status.
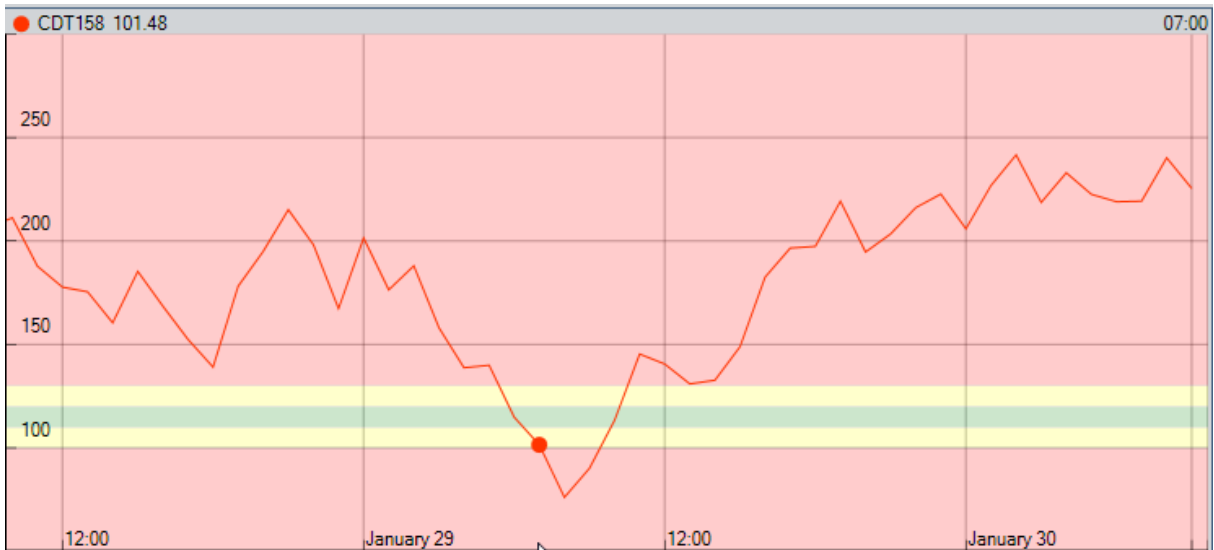
Finally, if you point further to the right, you can see that the reading value increases to *140.54*, which falls within the red shaded regions, which represents an Alert reading status.
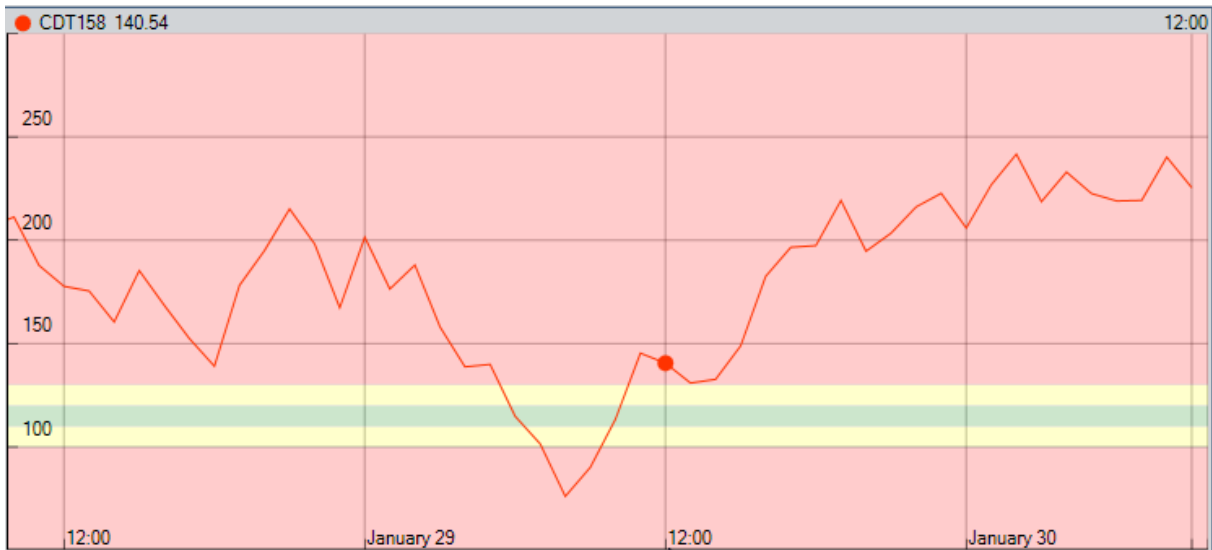
About the Grid

The grid on the **Snapshot Data** tab of the **Process Data Viewer** window displays the most recent readings for the tags that are currently displayed on the [graph](#).

A tag will appear in the grid only if the following conditions have been met:

- The Data Access field in the corresponding Xi Tag record contains one of the following values: *Both Historical and Snapshot Data* or *Snapshot Data Only*.

  Note: If the OPC Server for the corresponding Xi Tag record does not provide access to historical data, the Data Access field must contain the value *Snapshot Data Only*.

- The Enabled field in the corresponding Xi System record (determined from the value in the Xi System ID field in the Xi Tag record) contains the value *True*.

Xi Tag ID	Value	Quality	Units	Timestamp
DA:/\\OSIPIVM\CDEP158/	42	Good	C	4/13/2012 13:15:40
DA:/\\OSIPIVM\CDM158/	3	Good		4/13/2012 13:18:40
DA:/\\OSIPIVM\CDT158/	185.1132	Good		4/13/2012 13:18:40

Each row in the grid represents one tag. For each tag, the following columns of information are displayed:

- **Xi Tag ID:** The value in the ID field in the corresponding [Xi Tag record](#).
- **Value:** The most recent reading value that appears on the graph.
- **Quality:** Indicates whether the quality of data is good or bad. If the quality is bad, the data will be ignored and no reading value will appear in the **Value** column.
- **Units:** The value in the Units field in the corresponding [Xi Tag record](#).
- **Timestamp:** The date and time that the reading value was recorded, using a 24-hour clock.

If the **Process Data Viewer** window has been open for a while, you can click the **Refresh** button below the grid to [update the grid with the most recent readings](#).

Refreshing the Grid

To refresh the reading values in the grid:

- On the **Snapshot Data** tab of the [Process Data Viewer window](), click the **Refresh** button.

  If a newer reading value has been recorded for any tag in the grid since the last reading value was taken, the grid is updated to reflect the new value and date.

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Adding Tags to the Process Data Viewer Window

To add tags to the Process Data Viewer window:

1. Access the **Process Data Viewer** window.

2. Click the **Add Xi Tags** button.

   -or-

   Right-click the graph, and then click **Add Xi Tag for Comparison**.

   The **Select Xi Tag** window appears.

   The grid on the **Select Xi Tag** window displays the results of the Active Xi Tags query, which is stored in the Catalog folder \\Public\Meridium\Modules\Process Data Integration\Queries. Each row in the grid represents one Xi Tag record. The grid displays all Xi Tag records that contain the value *Numeric* in the Type field and are not already displayed on the graph on the **Process Data Viewer** window.

3. In the grid, select the rows containing the Xi Tag records that you want to add to the graph.

4. Click the **Add Xi Tags** button.

   The Xi Tag records are added to the graph on the **Process Data Viewer** window.

Xi System Associated Pages

The following Associated Pages are configured by default for the Xi System family to facilitate workflows in Process Data Integration:

- **Import Xi Tags:** Displays the **Xi System Browser** or **PI System Browser** window, where you can browse for the tags that you want to import to create Xi Tag records. If the Entity Key that is passed in belongs to an Xi System record whose Type field:
  - Does *not* contain the value *OSI PI*, the **Xi System Browser** window appears when you click the link on the **Associated Pages** menu.
  - *Does* contain the value *OSI PI*, the **PI System Browser** window appears.
- **Related Xi Tags:** Displays the **Related Xi Tags** page, where you can view a list of the Xi Tag records that are associated with a given Xi System record.

> **Note:** To see the underlying URL for this Associated Page, you can use the URL Manager application.

Xi Tag Associated Pages

The following Associated Pages are configured by default for the Xi Tag family to facilitate workflows in Process Data Integration.

> ⓘ **Note:** To see the underlying URL for each Associated Page, you can use the URL Manager application.

Caption	Description
Process Data	Displays the **Process Data Viewer** window, where you can view historical process data for the tag that is represented by the Xi Tag record whose Entity Key is passed in to the URL.
View Xi System	Displays the Xi System record whose Xi System ID field contains the same value that appears in the Xi System ID field in the current Xi Tag record. For example, if you are viewing an Xi Tag record with the value *System 1* in the Xi System ID field, executing this Associated Page will display the Xi System record with the same value, *System 1*, in the Xi System ID field.

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Catalog Folder Structure

The following table lists the queries that are stored in the following Catalog location \\Public\Meridium\Modules\Process Data Integration\Queries. The queries are listed in the table alphabetically by name. The query name and caption are the same unless otherwise noted.

Query	Behavior and Usage
Active Xi System	Returns a list of all Xi System records whose Enabled field contains the value *True* (i.e., the **Enabled** check box on the datasheet is selected). This query is run automatically when you execute an Associated Page that is defined for an Equipment or Functional Location family, where that Associated Page allows you to import tags for that equipment or location from the OPC Server. When the Associated Page is executed, the **Select Xi System** window will appear, displaying the results of the Active Xi System query, from which you can select the system from which you want to import tags. After selecting the system, you can proceed with the import procedure.
Active Xi Tags	Returns a list of all Xi Tag records that meet the following criteria: • Records that are associated with an enabled Xi System, (i.e., the **Enabled** check box on the Xi System datasheet is selected). • Records that contain the value *Numeric* in the Type field. • Records that are not already displayed on the graph on the **Process Data Viewer** window. This query is run automatically when you add tags to the **Process Data Viewer** window.
Related Xi Tags	Returns a list of all Xi Tag records that are associated with a given Xi System record. The results of this query are displayed on the **Related Xi Tags** page.
Xi System Device Query	Returns a list of all Xi System records in the database. You should use this query when you create Xi System records using the Meridium APM Devices functionality.
Xi Tag Device Query	Returns a list of all Xi Tag records in the database. You should use this query when you create Xi Tag records using the Meridium APM Devices functionality.

Xi System

The following table provides a list and description of various fields that exist in Xi System records and are available on the baseline Xi System datasheet. The information in the table reflects the baseline state and behavior of these fields. If your implementation has been customized, these fields may behave differently, and fields in addition to those listed here may be available. Note that this list is not comprehensive.

Field	Data Type	Description	Behavior and Usage
Enable	Logical	A value that indicates that the system is enabled.	You can view process data for an Xi Tag record only if the Enable field is set to *True* in the Xi System record with which it is associated.
PI Server Name	Character	The name of the PI Server.	This field is enabled only if the OSI PI Interfaces license is active.

Field	Data Type	Description	Behavior and Usage
Requested Update Rate	Number	Indicates how often you want to connect to the OPC Server to retrieve data. The Meridium APM Process Data Integration service will use this value to request an update rate from the OPC server. The *actual* frequency at which the Meridium APM Process Data Integration service receives data is determined by the OPC Server. If the OPC Server does not support the requested update rate, it will return the closest rate that it can support.	This field is populated by default with the value *60,000.* This means that the Meridium APM Process Data Integration service will attempt to connect to the OPC system every 60,000 milliseconds (one minute) to retrieve data. You can modify the default value, but keep in mind that a lower number will increase the amount of network traffic and that retrieving data more frequently than every minute is not necessary. If this field is empty, the Meridium APM Process Data Integration service will still attempt to connect to the OPC system every minute to retrieve data.

Field	Data Type	Description	Behavior and Usage
		This value is stored in milliseconds.	
Server Login	Character	The user name that can be used to log in to the PI Server.	You can define this value manually.
Server Password	Character	The password that is associated with the user name that is stored in the Server Login field.	On the datasheet, this field is read-only and contains a ⋯ button, which you can click to access the **Enter Password** dialog box. On the **Enter Password** dialog box, you can type the password, which will be encrypted when you close the dialog box.
Server URL	Character	The URL to the Meridium APM Process Data Integration Server.	You must type the URL manually using the following format: **http://<server name or IP address>:58080/Meridium/PDI/serverDiscovery** where **<server name or IP address>** is the name or IP address of the Meridium APM Process Data Integration Server. This field is required.
Type	Character	The type of connection you want to use when importing tags from the PI Server.	If this field is empty, OPC Xi will be used to connect to the PI Server. Alternatively, if this field contains the value *OSI PI*, a direct connection to the PI Server will be used. This field is enabled only if the OSI PI Interfaces license is active.

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Field	Data Type	Description	Behavior and Usage
XiSystem ID	Char-acter	A unique name for the Xi Sys-tem record. The ID must be unique with respect to the ID in other Xi Sys-tem records.	This field is required. It is disabled if the value in the Xi System ID field in any Xi Tag records matches the value in this field. For example, if the value in this field is *System A*, the field will be disabled if the value in the Xi System ID field in any Xi Tag records is also *System A*.

Xi Tag

The following table provides a list and description of the fields that exist in Xi System records and are available on the baseline Xi System datasheet. The information in the table reflects the baseline state and behavior of these fields. If your implementation has been customized, these fields may behave differently, and fields in addition to those listed here may be available.

Field	Field Type	Description	Behavior and Usage
Access Privilege	Character	Contains a value that indicates whether the tag is read-only or write-only.	This field is disabled and populated automatically based upon how the tag is configured in the Xi system. The import process supports only read-only tags. If you attempt to import readings for a write-only tag, an error message will be displayed when you import the tag.

Field	Field Type	Description	Behavior and Usage
Character Lower Level 1	Character	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can [view shaded regions representing the limit values](#) that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Character*.

Field	Field Type	Description	Behavior and Usage
Character Lower Level 2	Character	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can view shaded regions representing the limit values that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Character*.
Character Lower Level 3	Character	The value in this field is not currently used.	This field is enabled only if the value in the Type field in the Xi Tag record is *Character*.

Field	Field Type	Description	Behavior and Usage
Character Upper Level 1	Character	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can [view shaded regions representing the limit values](#) that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Character*.

Field	Field Type	Description	Behavior and Usage
Character Upper Level 2	Character	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can view shaded regions representing the limit values that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Character*.
Character Upper Level 3	Character	The value in this field is not currently used.	This field is enabled only if the value in the Type field in the Xi Tag record is *Character*.

Field	Field Type	Description	Behavior and Usage
Data Access	Character	Indicates the type of data that you want to view for this tag on the [Process Data Viewer window]().	On the datasheet, this field contains a list with the following values: • **Both Historical and Snapshot Data:** Displays the tag on the **Historical Data** and **Snapshot Data** tabs of the [Process Data Viewer window](). • **Historical Data Only:** Displays the tag on only the **Historical Data** tab of the [Process Data Viewer window](). • **Snapshot Data Only:** Displays the tag only on only the **Snapshot Data** tab of the [Process Data Viewer window](). The default value for new Xi Tag records is *Both Historical and Snapshot Data*. ⓘ **Note:** If the

Field	Field Type	Description	Behavior and Usage
			OPC Server for the corresponding Xi Tag record does not provide access to historical data, the Data Access field must contain the value *Snapshot Data Only*. This field is required.
Description	Text	A description of the tag.	If the Xi Tag record is created by importing tags from the OPC Server, the Description field is populated automatically with various information from the OPC Server.
ID	Character	A unique identifier for the tag.	If the Xi Tag record is created by importing tags from the OPC Server, the ID field is populated automatically from the OPC Server. If, however, you are creating Xi Tag records manually, you will need to make sure that the ID that you type matches *exactly* the ID of a tag that exists on the OPC Server.

Field	Field Type	Description	Behavior and Usage
Max Readings	Number	The number of reading values that you want to store in the Meridium APM database for this tag.	Each reading value is stored in an Xi Reading record, which is linked to the Xi Tag record representing the tag to which its reading value belongs. The number that you type indicates the number of Xi Reading records that will exist for this tag. In other words, the number you specify is the maximum number of Xi Reading records that will exist at any given time for this tag, and those records will always store the *n* most recent values, where *n* is the number in the Max Readings field. For example, if you type *10*, then ten Xi Reading records will be created to store the *last ten* reading values for this tag. When the eleventh reading value is recorded on the OPC Server, it will be used to create an XI Reading record automatically, and the Xi Reading record

Field	Field Type	Description	Behavior and Usage
			storing the *oldest* reading value at that time will be deleted automatically. This process would occur continuously as new reading values are recorded on the OPC Server. You can store a maximum of 600 readings for each tag. This means that: • If you are creating an Xi Tag record manually and you type a value greater than 600 in the **Max Readings** text box, a message will appear, indicating that you cannot store more than 600 readings, and you will need to lower the value manually. -or- • If you are specifying the number of readings via the **Xi Readings Import**

Field	Field Type	Description	Behavior and Usage
			Settings dialog box, if you type a value greater than 600 in the **Max Readings** text box, it will be changed automatically to *600*. By default, the Max Readings field is empty in new Xi Tag records.*
Name	Character	The name of the tag.	If the Xi Tag record is created by importing tags from the OPC Server, the Name field is populated automatically from the OPC Server.

Field	Field Type	Description	Behavior and Usage
Numeric Lower Level 1	Number	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can view shaded regions representing the limit values that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Numeric.*

Field	Field Type	Description	Behavior and Usage
Numeric Lower Level 2	Number	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can view shaded regions representing the limit values that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Numeric*.
Numeric Lower Level 3	Number	The value in this field is not currently used.	This field is enabled only if the value in the Type field in the Xi Tag record is *Numeric*.

Field	Field Type	Description	Behavior and Usage
Numeric Upper Level 1	Number	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can view shaded regions representing the limit values that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Numeric*.

Field	Field Type	Description	Behavior and Usage
Numeric Upper Level 2	Number	Used to determine the status of reading values for this tag. If desired, when viewing this tag on the graph on the **Process Data Viewer** window, you can view shaded regions representing the limit values that are being used to determine the reading value status. This value is also used to determine the status of Health Indicator records that are based on this Xi Tag record.	This field is enabled only if the value in the Type field in the Xi Tag record is *Numeric*.
Numeric Upper Level 3	Number	The value in this field is not currently used.	This field is enabled only if the value in the Type field in the Xi Tag record is *Numeric*.

Field	Field Type	Description	Behavior and Usage
Readings Time Span	Number	The amount of time (in milliseconds) for which you want to store reading values in the Meridium APM database for this tag.	Each reading value is stored in an Xi Reading record, which is linked to the Xi Tag record representing the tag to which its reading value belongs. This concept is best illustrated through an example. Suppose you want to store all reading values that have been captured for this tag in the last 60 minutes. In this case, you would type *3,600,000* in the **Readings Time Span** text box (3,600,000 milliseconds equals 60 minutes). Then, Xi Reading records would get created automatically to store new readings that were captured in the last 60 minutes. After 60 minutes worth of readings are stored in Xi Reading records, as a new reading value is recorded on the OPC Server, it would be used to create an Xi Reading record automatically, and the

Field	Field Type	Description	Behavior and Usage
			Xi Reading record storing the *oldest* reading value would be deleted automatically. This process would occur continuously as new reading values are recorded on the OPC Server. By default, the Readings Time Span field is empty in new Xi Tag records. If the Max Readings and Readings Time Span fields both contain a value, an Xi Reading record will be created only if the reading value falls within both limits.*

Field	Field Type	Description	Behavior and Usage
Requested Update Rate	Number	Indicates how often you want to connect to the OPC Server to retrieve data. The Meridium APM Process Data Integration service will use this value to request an update rate from the OPC server. The *actual* frequency at which the Meridium APM Process Data Integration service receives data is determined by the OPC Server. If the OPC Server does not support the requested update rate, it will return the closest rate that it can support. This value is stored in milliseconds.	This value is set by default to the value that was stored in the Update Rate field in the related Xi System record at the time that the tag was imported. You can modify this value if you want to implement a different Update Rate for a given tag.
Type	Number	The type of reading value that gets recorded for this tag.	On the datasheet, the field contains a list with the values *Numeric* and *Character*. If the Xi Tag record is created by importing tags from the OPC Server, the Type field is populated automatically from the OPC Server.

Field	Field Type	Description	Behavior and Usage
Units	Number	The unit of measure associated with the tag.	The Units field is populated differently depending upon how the Xi Tag record is created. • If you import a tag from the *PI* Server, the Units field is populated automatically with the engineering unit that is stored on the PI Server for that tag. -or- • If you import a tag from an OPC Server *other than* the PI Server or you create the Xi Tag record from scratch, the Units field will not be populated automatically. Instead, you can select a value in the list manually or type your own value in the datasheet cell. In the baseline database, the Units field

Field	Field Type	Description	Behavior and Usage
			displays the list of values from the System Code Table with the ID *UOME*. If the Units field contains a value, that value will be displayed in the following places on the **Process Data Viewer** window: • On the **Historical Data** tab, above the graph, to the right of the tag name. • In the grid on the **Snapshot Data** tab, in the **Units** column.
Xi System ID	Number	The value in the XiSystem ID field in the Xi System record that defines the system in which this tag exists.	If the Xi Tag record is created by importing tags from the OPC Server, the Xi System ID field is populated automatically. While you can type a value in this field manually, you can save an Xi Tag record only if the value in the Xi System ID field matches a value in the XiSystem ID field in an existing Xi System record.

* If neither the Max Readings nor the Readings Time Span field contains a value, *no* Xi Reading records will be created to store reading values.

Xi Reading

The following table provides a list and description of various fields that exist in Xi Reading records and are available on the baseline Xi Reading datasheet. The information in the table reflects the baseline state and behavior of these fields. If your implementation has been customized, these fields may behave differently, and fields in addition to those listed here may be available.

Field	Data Type	Description	Behavior and Usage
Time Stamp	Date	The date and time that the Xi Reading record was created.	N/A
Value CHR	Character	The character reading value that was recorded at the time that the Xi Reading record was created.	This field will contain a value only if the value in the associated Xi Tag record is *Character*.
Value	Number	The numeric reading value that was recorded at the time that the Xi Reading record was created.	This field will contain a value only if the value in the associated Xi Tag record is *Numeric*.
XiReading ID	Character	The value in the ID field in the Xi Tag record to which this Xi Reading record is linked.	N/A

Parameters for the Xi Tag Import URL

The URL for importing data from an external system into the Meridium APM system to create Xi Tag records , **meridium://PDI/Browser**, accepts the EntityKey parameter, which is described in the following table. The EntityKey parameter is required.

Parameter Name	Description	Accepted Value(s)	Notes
EntityKey	Identifies the Entity Key of the Xi System record that defines the system from which you want to import data to create Xi Tag records.	The Entity Key of the desired Xi System record.	The EntityKey parameter is required. If the Entity Key identifies an Xi System record whose Type field contains the value *OSI PI*, the **PI System Browser** window will appear. If the Entity Key identifies an Xi System record whose Type field does not contain the value *OSI PI*, the **Xi System Browser** window will appear.

Examples of Xi Tag Import URLs

- meridium://PDI/Browser?EntityKey=123456

  Displays the **Xi System Browser** window or the **PI System Browser** window, which lets you import data from the system that is defined in the Xi System record with the Entity Key 123456.

Parameters for the Process Data Viewer URL

The URL for accessing the **Process Data Viewer** window, **meridium://PDI/Viewer**, accepts the EntityKey parameter, which is described in the following table. The EntityKey parameter is required.

Parameter Name	Description	Accepted Value(s)	Notes
EntityKey	Identifies the Entity Key of the Xi Tag, Equipment or Functional Location records that are associated with the tags whose process data you want to view.	The Entity Key of the desired records.	The EntityKey parameter is required. If you want to specify more than one Xi Tag, Equipment, or Functional Location record, you can type multiple Entity Keys, separated with a comma.

Examples of Process Data Viewer URLs

- **meridium://PDI/Viewer?EntityKey=123456, 987654**

  Displays the **Process Data Viewer** window, which shows process data for the tags that are associated with the records with the Entity Keys 123456 and 987654.

Parameters for the Xi System Navigation URL

The URL for accessing an Xi System record from the associated Xi Tag, **meridi-um://PDI/Explorer**, accepts the XiSystemID parameter, which is described in the following table. The XiSystemID parameter is required.

Parameter Name	Description	Accepted Value(s)	Notes
XiSystemID	Identifies the value in the Xi System ID field in the Xi System record that you want to view.	The desired Xi System ID value.	The XiSys-temID para-meter is required.

Examples of Xi System Navigation URLs

- **meridium://PDI/Explorer?XiSystemID=SystemA**

  Displays the Xi System record with the value *SystemA* in the Xi System ID field.

Parameters for the Xi Tag Navigation URL

The URL for accessing the list of Xi Tag records for an associated Xi System, **meridium://PDI/XiTagBrowser** accepts the EntityKey parameter, which is described in the following table.

EntityKey	Description	Accepted Value(s)	Notes
EntityKey	Identifies the Xi System record whose associated Xi Tag records you want to view on the [Related Xi Tags page]().	The Entity Key of the desired Xi System record.	The EntityKey parameter is required.

Examples of the Xi Tag Navigation URLs

- meridium://PDI/XiTagBrowser?EntityKey=123456

  Displays the **Related Xi Tags** page, which shows a list of the Xi Tag records that are associated with the Xi System record with the Entity Key 123456.

Meridium APM Process Data Integration Server

A machine on which the Meridium APM Process Data Integration Services is installed. Information is sent between this machine and the:

- Process Historian
- Meridium APM Application Server

OPC Server

A machine on which the OPC-compliant server software is installed.

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Process Historian

A computer than contains the process historian software. Information is sent between this machine and the [Meridium APM Process Data Integration Server](#).

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