

Proficiency for Manufacturing Discrete

Getting Started

7.0
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GETTING STARTED WITH PROFICY FOR MANUFACTURING DISCRETE

Welcome to Proficy for Manufacturing Discrete (PfMD)!

Before you begin installing PfMD, please take some time to review this Getting Started Guide. We also highly recommend that you read the Important Product Information help file on the installation DVD, where you can read the latest release notes and the most current information about PfMD.

PROFICY WORKFLOW SYSTEM REQUIREMENTS

This section describes the hardware and software requirements you require to install Proficy Workflow 2.5.

Workflow Hardware Requirements

This section describes the minimum hardware required to run Proficy Workflow and all products that work with it.

Hardware Recommendations

This section describes the recommended hardware requirements. These specifications are needed for Proficy Workflow to perform well and are dependent upon many factors.

Since Proficy Workflow is a very flexible product with very broad capabilities, there are a variety of ways that this product is used. The table below provides some general guidelines for hardware recommendations based on some sizing specifications.

Project Specification	Small System	Medium System*	Large System*
Equipment Model Objects	0 – 500	500 – 2,500	2,500 +
Equipment Model Properties	0 – 5,000	5,000 – 500,000	500,000 +
Material Definitions	0 – 1,000	1,000 – 10,000	10,000 +
Material Lots	0 – 1,000	1,000 – 5,000	5,000 +
Production Model Objects	0 – 500	500 – 1,000	1,000 +
Production Variables	0 – 5,000	5,000 – 10,000	10,000 +
Number of Workflows	0 – 100	100 – 1,000	1,000 +
Running Workflows	0 – 50	50 – 500	500 +
Concurrently Executing Workflows**	0 – 5	5 – 25	25 +
Configured Events	0 – 50	50 – 500	500 +
Events Triggering per Hour	0 – 15	15 – 100	100 +
Work Requests in System	0 – 100	100 – 1,000	1,000 +
Active Work Requests	0 – 25	25 – 500	500 +
Active Clients	1 – 25	25 – 100	100 +
Recommended Server RAM	8 GB	16 GB	32 GB
Recommended Server CPUs	2 CPUs @ 3GHz	4 CPUs @ 3GHz	8 CPUs @ 3GHz

*Many systems do not use all of the capabilities of Proficy Workflow, so some projects may match some specifications in the small system column with other specifications in the medium or large system column. Choose the column that more closely matches the targeted system.

**Any running workflow that is waiting for user input in a task form can be considered paused and is considered to be a running workflow but not an executing workflow.

Additional Factors for Hardware Recommendations

Special Application Factors

Server recommendations may need to be increased when the application uses intensive processing or significant disk access. Examples of these scenarios include reading and parsing data files from disk, custom logging or writing to output data files, advanced mathematics in code activities, custom service providers, communicating with third party products, and so on.

SQL Server on the Proficy Workflow Server

The hardware recommendations above are for servers where the SQL Server is not on the Proficy Workflow server system. If you choose to run SQL Server on the Proficy Workflow server, then you must add RAM and CPUs to the recommended amounts.

Running on a Virtualized Machine

The hardware recommendations above are for a server that is not running in a virtualized environment. For servers that are running in a virtualized environment such as a VMWare or Hyper-V image, the recommended amounts must be exclusively allocated to the server image and have as much available physical resources on the virtualization server. For example, if a server needs 8GB of RAM, then that much RAM must be allocated to the image, and the virtualization server must have 8GB of physical RAM available for that image. If the image runs out of physical RAM on the virtualization server, performance degrades significantly.

Running Other Applications

All the hardware recommendations are assuming that the machine is dedicated to running the Proficy Workflow server. If you are planning to run other applications on the machine, you will need to increase the CPU and RAM requirements appropriately to handle running these applications. This includes other GE Intelligent Platforms applications, such as Proficy Historian, Proficy Portal, Proficy CIMPLICITY, or Proficy iFIX.

Using Windows® Server 2008 R2 or Windows® Server 2012 as the Operating System

Newer Microsoft operating systems have greater hardware requirements than older ones. Windows® Server 2008 R2 and newer use significantly more memory and more CPU. For equivalent performance, add an additional 2 GB of memory and an additional processor.

Additional Recommendations for the SQL Server Machine

For optimum performance, the databases, transaction logs, tempdb, non-clustered indexes, and back-ups should be installed on separate hard drives where possible. The following RAID specifications are also recommended:

- SQL database: RAID 0+1, RAID 1 or RAID 5
- SQL transaction logs: RAID 0+1 or RAID 1, and should be a separate physical device
- SQL tempdb: RAID 0+1 or RAID 1
- SQL indexes: RAID 0+1 or RAID 1
- Back-ups: RAID 0 (no fault tolerance, but faster writes) or RAID 5

Additionally, the following SQL Server configuration is recommended:

- Use Mixed Mode security
- Exclude the database files from anti-virus scanning
- Use multiple processors for every installation
- Enable the default backup job or create a maintenance plan

Other Performance Considerations

The guidelines described here are not the only aspects of a system to be considered to ensure optimum performance. Each individual system should be evaluated for other potential sources of performance issues. Examples of other sources of problems may include, but are not limited to, the following:

- Networking throughput between Proficy Workflow server and client
- Networking throughput between Proficy Workflow server and SQL Server
- Data throughput between the Proficy Workflow server and data sources such OPC servers, Proficy Historian, Proficy iFIX, Proficy CIMPLICITY, and ProficyPlant Applications
- The number of client instances active on a single client machine

Hardware Requirements for an Application Server in v2.5

This section describes the hardware required for your product installation.

Large System

- 4-socket 8 Core 32 GB RAM
- Windows Server x64 OS
- 200 GB free hard disk space
- Network interface software for network communications, and TCP/IP network protocol
- SVGA or better color graphics monitor and a 100% IBM-compatible 24-bit graphics card capable of 1024x768 resolution and at least 65535 colors
- XGA or better color graphics monitor and a 100% IBM-compatible 24-bit graphics card capable of 1024x768 resolution and at least 65535 colors
- Two-button mouse with scroll wheel or compatible pointing device (*such as a touch screen*)

Hardware Requirements for Single Servers in v2.5

This section describes the hardware required for your product installation.

Server Deployment

NOTE: *These requirements apply whether you are installing a multiple server configuration (that is, a core server and a Workflow server), or a failover cluster.*

- 3 GHz Core™ 2 Duo processor with 8 GB RAM (*minimum*)
- 50 GB free hard disk space (*minimum*)
- DVD-ROM drive
- Network interface software for network communications, and TCP/IP network protocol
- One parallel port or free direct-connect USB port
- XGA or better color graphics monitor and a 100% IBM-compatible 24-bit graphics card capable of 1024x768 resolution and at least 65535 colors
- Minimum monitor support
- Two-button mouse with scroll wheel or compatible pointing device (*such as a touch screen*)

Hardware Requirements for Workflow Extension Servers in v2.5

This section describes the hardware required for your product installation.

Workflow Extension Servers

- 3 GHz Core™ 2 Duo processor with 8 GB RAM (*minimum*)
- 50 GB free hard disk space (*minimum*)
- Network interface software for network communications, and TCP/IP network protocol
- One parallel port or free direct-connect USB port
- XGA or better color graphics monitor and a 100% IBM-compatible 24-bit graphics card capable of 1024x768 resolution and at least 65535 colors
- Minimum monitor support
- Two-button mouse with scroll wheel or compatible pointing device (*such as a touch screen*)

Hardware Requirements for User Servers in v2.5

This section describes the hardware required for your product installation.

- 3 GHz Core™ 2 Duo processor with 4 to 8 GB RAM (*dependent on how much activity the server is expected to manage*)
- 50 GB free hard disk space (*minimum*)
- DVD-ROM drive
- Network interface software for network communications, and TCP/IP network protocol
- One parallel port or free direct-connect USB port
- XGA or better color graphics monitor and a 100% IBM-compatible 24-bit graphics card capable of 1024x768 resolution and at least 65535 colors
- Minimum monitor support
- Two-button mouse with scroll wheel or compatible pointing device (*such as a touch screen*)

Hardware Requirements for Clients in v2.5

This section describes the hardware required for your product installation.

Workflow Clients

- 3 GHz Core™ 2 Duo processor with 2 GB RAM (*minimum*)
- 20 GB free hard disk space (*minimum*)
- DVD-ROM drive
- Network interface software for network communications, and TCP/IP network protocol
- SVGA or better color graphics monitor and a 100% IBM-compatible 24-bit graphics card capable of 1024x768 resolution and at least 65535 colors
- Two-button mouse with scroll wheel or compatible pointing device (*such as a touch screen*)

Hardware Requirements for a Reporting Database in v2.5

This section describes the hardware required for your product installation.

- 3 GHz Core™ 2 Duo processor with 2 GB RAM (*minimum*)
- 50 GB free hard disk space (*minimum*)
- DVD-ROM drive
- Network interface software for network communications, and TCP/IP network protocol
- One free direct-connect USB port
- XGA or better color graphics monitor and a 100% IBM-compatible 24-bit graphics card capable of 1024x768 resolution and at least 65535 colors
- Two-button mouse with scroll wheel or compatible pointing device (*such as a touch screen*)

Server Clustering and Failover Hardware Requirements in v2.5

This section describes the hardware required for your product installation.

The hardware requirements set by Microsoft for clustered server configurations must be met for systems deploying Proficy Workflow with cluster support.

- Failover clustering is supported on Proficy Workflow 1.5 SP4 and greater.
- SQL Server must be installed in a central location on the domain.

IMPORTANT:

- *All computers in a failover cluster must be on a domain.*
- *Failover clustering is not supported on Proficy legacy servers.*
- *Proficy Workflow server clustering provides support against hardware failures only.*

Custom services managed by clustering must maintain their state in shared persistent memory (typically a database), and the state must always be in a consistent state because failover can occur at any time.

Workflow Software Requirements

This section describes the minimum software requirements for your installation, including the recommended operating system and database.

The clocks on all Proficy Workflow servers and clients must be synchronized. This protects against certain kinds of threats and provides accurate logging and timestamps.

***NOTE:** In order to communicate with remote clients, the Proficy application server must be installed on a domain. If you install it off the domain, it can only be used for development purposes, not for production purposes.*

Application Server Software Requirements in v2.5

This section describes the software requirements for your installation.

Installation

When using a client in remote desktop session, the selected object in the navigator is now updating with the current display and you can change the available displays list.

The following list describes the software required to install and use Proficy Workflow and the application server.

***NOTE:** In addition to the following material, see *Architecture Considerations in the Proficy Workflow Getting Started Guide* for information on options related to operation mode when installing on a 64-bit computer.*

Operating System Options

The following operating systems are supported:

- Microsoft® Windows® 7 Professional (32- or 64-bit)
- Microsoft® Windows® 8 (64-bit)
- Microsoft® Windows® Server 2008 SP2 (32-bit only)
- Windows® Microsoft® Server 2008 R2 (64-bit)

***NOTE:** Terminal server environments are supported only on Windows Server 2008 R2 (64-bit).*

- Microsoft® Windows® Server 2012 Standard (64-bit)
- Microsoft® Windows® Server 2012 R2 (64-bit)

SQL Server Options

The Proficy Workflow installation automatically selects the default SQL Server instance. If SQL Server 2012 and SQL Server 2008 are both installed, SQL Server 2008 may be the default instance. In this scenario, if you want to use SQL Server 2012 instead, you must select this instance as the default as part of manually configuring your SQL Server settings. For more information, see the topic corresponding to the type of installation you will be performing.

The Proficy project is installed into this SQL Server database. SQL Server can be installed on a different computer that is also on the domain or workgroup; however, you must ensure that network configurations allow appropriate machine communication.

SQL Server must be configured with both Windows and SQL Server authentication.

The following SQL Server systems are supported:

IMPORTANT: PfMD 7.0 requires SQL Server 2012.

- Microsoft® SQL Server 2008 Standard or Enterprise Edition (32- or 64-bit)
- Microsoft® SQL Server 2008 R2

NOTE: Changes to the SQL Server database recovery model have occurred. For more information, please visit the GE Intelligent Platforms Knowledge Base website at <http://support.ge-ip.com/support/index?page=kbchannel>, and then search for the related article, KB16204.

- Microsoft® SQL Server 2008 Express

NOTE: If you are using SQL Server Express with the Proficy application server, you cannot use the Proficy Reporting Database.

- Microsoft® SQL Server 2012 Enterprise (32- or 64-bit)
- Microsoft® SQL Server 2012 Business Intelligence (32- or 64-bit)
- Microsoft® SQL Server 2012 Standard (32- or 64-bit)
- Microsoft® SQL Server 2012 Express (32- or 64-bit)

NOTE: In order for Proficy Workflow to connect to any edition of Microsoft® SQL Server 2012, you must configure SQL Server to enable the sysadmin role for the applicable login account. For more information, see Enable Connection between Proficy Workflow and SQL Server 2012 in the Proficy Workflow Getting Started Guide.

Other Requirements

- Microsoft® .NET Framework 4.5 (Full Framework)

NOTE: Custom display or form assemblies that target earlier versions of .NET will continue to function as before. However, saving changes made to such custom assemblies requires that they be upgraded, which is accomplished in different ways, based on the version of .NET:

- For an assembly that pre-dates .NET 4.0, you must upgrade the assembly when you open it. Failure to do so results in an error and the inability to save the edited assembly.
- For an assembly that targets .NET 4.0, the assembly is upgraded automatically when opened, and changes to such assemblies can be saved as before.

Service providers that target versions of the .NET framework before version 4.5 must be recompiled targeting .NET 4.5.

- Microsoft® AD LDS (Active Directory Lightweight Directory Service) or ADAM (Active Directory Application Mode) with SP1 (available from <http://www.microsoft.com/downloads/details.aspx?familyid=9688f8b9-1034-4ef6-a3e5-2a2a57b5c8e4&displaylang=en>)

NOTES:

- If you are using Windows 7, Windows Server 2008, or Windows Server 2012, using AD LDS is recommended, which can be added as Windows components/features in the Programs applet of the Control Panel.

- *For demonstration, evaluation, or pilot systems, you can use Simulated Directory mode rather than using ADAM or AD LDS. In this mode, the system functions the same way. However, you must use ADAM or AD LDS to run large systems that have hundreds of clients connecting simultaneously.*
- Microsoft® Excel 2007 or 2010. To use Excel 2007, you must manually install the Primary Interop Assemblies (for Import/Export operations). These assemblies are included in the Excel 2010 installation.
 - <http://msdn.microsoft.com/en-us/library/kh3965hw.aspx>
 - <http://www.microsoft.com/downloads/details.aspx?familyid=59DAEBAA-BED4-4282-A28C-B864D8BFA513&displaylang=en>
 - <http://technet.microsoft.com/en-us/library/cc179091.aspx>
- Microsoft® Internet Explorer 7 or greater
- For web-based forms, Microsoft® Internet Explorer 10 or greater is required

NOTES: *Internet Explorer 10 is supported only on the following operating systems:*

- *Windows® 7 SP1*
- *Windows® 8*
- *Windows® Server 2008 R2 with SP1*
- *Windows® Server 2012*
- Microsoft® Internet Information Services (IIS) 7.0 or greater
The following services, with one exception, must be enabled:
 - Common HTTP Features: Static Content; Default Document; HTTP Errors; HTTP Redirection
- **NOTE:** *For security purposes, consider disabling Directory Browsing.*
- Application Development: ASP.NET; .NET Extensibility; ASP; ISAPI Extensions; ISAPI Filters
- Security: Basic Authentication; Windows Authentication; URL Authorization; Request Filtering
- Management Tools: IIS Management Console
- Windows Communication Foundation HTTP Activation

NOTE: *This component must be turned on to complete the installation process. However, due to the sequence that this component is enabled related to IIS components, HTTP Activation may not work correctly. This situation occurs because the web server has not correctly connected to the application server. We recommend that you run the following command before installing the application server.*

1. *In administrator mode, open a Command Prompt window.*
2. *Navigate to C:\Windows\Microsoft.NET\Framework\v4.0.30319>.*
3. *At the command prompt, type aspnet_regiis.exe -iru.*

For example: C:\Windows\Microsoft.Net\Framework(64)\v4.0./30319>aspnet_regiis.exe -iru

Other Supported Software

NOTE: Proficy Portal and all features associated with this product are no longer supported with Proficy Workflow.

- VMWare Server or VMWare ESX Server

NOTE: VMWare servers are supported to use any of the supported operating systems.

IMPORTANT: Advanced features of ESX Server (that is, VMotion, VMWare VMFS, and Clustering support) are not supported.

- Hyper-V virtualization system for x86-64 systems
- Remote Desktop Session Host (Terminal Services)
- Proficy Historian 3.5 or greater

Optional Requirements

- Microsoft® Silverlight™ Runtime 5.0 and the Silverlight SDK 5.0

NOTE: Silverlight is required to access and develop forms and displays in the Silverlight Designer, and to view Silverlight forms and displays in the Global Viewer.

IMPORTANT: Support for Silverlight and Silverlight forms will be discontinued with the next major release of the software.

Web Server Software Requirements in v2.5

This section describes the software requirements for your installation.

NOTE: You must install the Proficy application server before installing the web server.

Operating System Options

The following operating systems are supported:

- Microsoft® Windows® Server 2008 (64-bit only)
- Microsoft® Windows® Server 2008 R2
- Microsoft® Windows® Server 2012 Standard (64-bit)
- Microsoft® Windows® Server 2012 R2 (64-bit)

Other Requirements

If the following products are not installed on your system, they will be automatically installed. If you are using a version of these products that is not supported, the installation process will stop. You must uninstall the incorrect version, and then start the installation process again.

- Java™ SE Development Kit 7, version JDK 1.7, upgrade 71
- Node.js® version 0.10.33-0.10.36 (64-bit)

NOTE: Previous installations of this product may have left undesired information in the PATH environment variables and may not have removed all installed files. This information must be removed before installing the web server.

Browser Requirements

- Microsoft® Internet Explorer 11 or greater
- Mozilla® Firefox® 28 or greater

***NOTE:** In order to avoid certificate errors when using this browser, we recommend that you purchase your own certificates or follow the browser's instructions on trusting certificates.*

- Google Chrome 29 or greater

Extension Server Software Requirements in v2.5

This section describes the software requirements for your installation.

Workflow and user extension servers have the same software requirements as the main application server installation.

Operating System Options

The following operating systems are supported:

- Microsoft® Windows® 7 Professional (32- or 64-bit)
- Microsoft® Windows® 8 (64-bit)
- Microsoft® Windows® Server 2008 SP2 (32-bit only)
- Windows® Microsoft® Server 2008 R2 (64-bit)

***NOTE:** Terminal server environments are supported only on Windows Server 2008 R2 (64-bit).*

- Microsoft® Windows® Server 2012 Standard (64-bit)
- Microsoft® Windows® 2012 R2 (64-bit)

SQL Server Options

The Proficy Workflow installation automatically selects the default SQL Server instance. If SQL Server 2012 and SQL Server 2008 are both installed, SQL Server 2008 may be the default instance. In this scenario, if you want to use SQL Server 2012 instead, you must select this instance as the default as part of manually configuring your SQL Server settings. For more information, see the topic corresponding to the type of installation you will be performing.

The Proficy project is installed into this SQL Server database. SQL Server can be installed on a different computer that is also on the domain or workgroup; however, you must ensure that network configurations allow appropriate machine communication.

SQL Server must be configured with both Windows and SQL Server authentication.

The following SQL Server systems are supported:

***IMPORTANT:** PfMD 7.0 requires SQL Server 2012.*

NOTES:

- *The Proficy project is installed into this SQL Server database. SQL Server can be installed on a different computer that is also on the domain or workgroup; however, you must ensure that network configurations allow appropriate machine communication.*
- Microsoft® SQL Server 2008 Standard or Enterprise Edition (32- or 64-bit)
- Microsoft® SQL Server 2008 R2

NOTE: Changes to the SQL Server database recovery model have occurred. For more information, please visit the GE Intelligent Platforms Knowledge Base website at <http://support.ge-ip.com/support/index?page=kbchannel>, and then search for the related article, KB16204.

- Microsoft® SQL Server 2008 Express

NOTE: If you are using SQL Server Express with the Proficy application server, you cannot use the Proficy Reporting Database.

- Microsoft® SQL Server 2012 Enterprise (32- or 64-bit)
- Microsoft® SQL Server 2012 Business Intelligence (32- or 64-bit)
- Microsoft® SQL Server 2012 Standard (32- or 64-bit)
- Microsoft® SQL Server 2012 Express (32- or 64-bit)

NOTE: In order for Proficy Workflow to connect to any edition of Microsoft® SQL Server 2012, you must configure SQL Server to enable the sysadmin role for the applicable login account. For more information, see Enable Connection between Proficy Workflow and SQL Server 2012 in the Proficy Workflow Getting Started Guide.

Other Requirements

- Microsoft® .NET Framework 4.5 (Full Framework)

NOTE: Custom displays and applications that reference earlier versions of .NET will continue to function as before. However, saving changes made to such custom assemblies requires that they be upgraded, which is accomplished in different ways, based on the version of .NET.

- For an assembly that pre-dates .NET 4.0, you must upgrade the assembly when you open it. Failure to do so results in an error and the inability to save the edited assembly.
- For an assembly that targets .NET 4.0, the assembly is upgraded automatically when opened, and changes to such assemblies can be saved as before.

Service providers that target versions of the .NET framework before version 4.5 must be recompiled targeting .NET 4.5.

- Microsoft® AD LDS (Active Directory Lightweight Directory Service) or ADAM (Active Directory Application Mode) with SP1 (available from <http://www.microsoft.com/downloads/details.aspx?familyid=9688f8b9-1034-4ef6-a3e5-2a2a57b5c8e4&displaylang=en>)

NOTES:

- If you are using Windows 7, Windows Server 2008, or Windows Server 2012, using AD LDS is recommended, which can be added as Windows components/features in the Programs applet of the Control Panel.
- For demonstration, evaluation, or pilot systems, you can use Simulated Directory mode rather than using ADAM or AD LDS. In this mode, the system functions the same way. However, you must use ADAM or AD LDS to run large systems that have hundreds of clients connecting simultaneously.

- Microsoft® Excel 2007 or 2010. To use Excel 2007, you must manually install the Primary Interop Assemblies (for Import/Export operations). These assemblies are included in the Excel 2010 installation.
 - <http://msdn.microsoft.com/en-us/library/kh3965hw.aspx>
 - <http://www.microsoft.com/downloads/details.aspx?familyid=59DAEBAA-BED4-4282-A28C-B864D8BFA513&displaylang=en>
 - <http://technet.microsoft.com/en-us/library/cc179091.aspx>
- Microsoft® Internet Explorer 7 or greater

Optional Requirements

- Microsoft® Silverlight™ Runtime 5.0 and the Silverlight SDK 5.0

***NOTE:** Silverlight is required to access and develop forms and displays in the Silverlight Designer, and to view Silverlight forms and displays in the Global Viewer.*

***IMPORTANT:** Support for Silverlight and Silverlight forms will be discontinued with the next major release of the software.*

Client-only Software Requirements in v2.5

This section describes the software requirements for your installation.

Requirements

A client-only machine contains only the Proficy Workflow client application and must connect to another machine that has the Proficy application server installed.

***NOTE:** If you have a client-only installation, it must be the same version as the server it is connected to.*

- The following operating systems are supported:
 - Microsoft® Windows® 7 Professional (32- or 64-bit)
 - Microsoft® Windows® 8 (64-bit)
 - Microsoft® Windows® Server 2008 R2 (64-bit)
 - Microsoft® Windows® Server 2008 SP2 (32-bit only)
 - Microsoft® Windows® Server 2012 Standard (64-bit)
 - Microsoft® Windows® Server 2012 R2 (64-bit)
- Microsoft® .NET Framework 4.5 (Full Framework)

***NOTE:** Custom display or form assemblies that target earlier versions of .NET will continue to function as before. However, saving changes to such custom assemblies requires that they be upgraded, which is accomplished in different ways, based on the version of .NET.*

- *For an assembly that pre-dates .NET 4.0, you must upgrade the assembly when you open it. Failure to do so results in an error and the inability to save the edited assembly.*
- *For an assembly that targets .NET 4.0, the assembly is upgraded automatically when opened, and changes to such assemblies can be saved as before.*

Service providers that target versions of the .NET framework before version 4.5 must be recompiled targeting .NET 4.5.

- Microsoft® Excel 2007 or 2010. To use Excel 2007, you must manually install the Primary Interop Assemblies (for Import/Export operations). These assemblies are included in the Excel 2010 installation.
 - <http://msdn.microsoft.com/en-us/library/kh3965hw.aspx>
 - <http://www.microsoft.com/downloads/details.aspx?familyid=59DAEBAA-BED4-4282-A28C-B864D8BFA513&displaylang=en>
 - <http://technet.microsoft.com/en-us/library/cc179091.aspx>
 - Microsoft® Internet Explorer 7 or greater
 - For web-based forms, Microsoft® Internet Explorer 10 or greater is required
- NOTES:** *Internet Explorer 10 is supported only on the following operating systems:*
- Windows® 7 SP1
 - Windows® 8
 - Windows® Server 2008 R2 with SP1
 - Windows® Server 2012

Other Requirements

- Microsoft® Silverlight Runtime 5.0 and the Silverlight SDK 5.0
- NOTE:** *Silverlight is required to access and develop forms and displays in the Silverlight Designer, and to view Silverlight forms and displays in the Global Viewer.*
- IMPORTANT:** *Support for Silverlight and Silverlight forms will be discontinued with the next major release of the software.*

Reporting Database Software Requirements in v2.5

This section describes the software requirements for your installation.

- The following operating systems are supported:
 - Microsoft® Windows® 7 Professional (32- or 64-bit)
 - Microsoft® Windows® 8 (64-bit)
 - Microsoft® Windows® Server 2008 R2 (64-bit)
 - Microsoft® Windows® Server 2008 SP2 (32-bit only)
 - Microsoft® Windows® Server 2012 Standard (64-bit)
 - Microsoft® Windows® Server 2012 R2 (64-bit)
- The following SQL Server systems are supported:
 - Microsoft® SQL Server 2012 Enterprise, Business Intelligence, or Standard (32- or 64-bit)
 - Microsoft® SQL Server 2008 Standard or Enterprise Edition (32- or 64-bit)

NOTES:

- *SQL Server Integration Services must be installed with SQL Server.*
- *If you are using SQL Server Express with the Proficy application server, you cannot use the Proficy Reporting Database.*

- Microsoft® Internet Explorer 7 or greater

Web Task List Software Requirements in v2.5

This section describes the software requirements for your installation.

The following list describes the software required to install the Web Task List.

- The following operating systems are supported:
 - Microsoft® Windows® 7 Professional (32- or 64-bit)
 - Microsoft® Windows® 8 (64-bit)
 - Microsoft® Windows® Server 2008 SP2 (32-bit only)
 - Microsoft® Windows® Server 2008 R2 (64-bit)
 - Microsoft® Windows® Server 2012 Standard (64-bit)
 - Microsoft® Windows® Server 2012 R2 (64-bit)
- Microsoft® .NET Framework 4.5 (Full Framework)

NOTE: *Custom display or form assemblies that target earlier versions of .NET will continue to function as before. However, saving changes made to such custom assemblies requires that they be upgraded, which is accomplished in different ways, based on the version of .NET:*

- *For an assembly that pre-dates .NET 4.0, you must upgrade the assembly when you open it. Failure to do so results in an error and the inability to save the edited assembly.*
- *For an assembly that targets .NET 4.0, the assembly is upgraded automatically when opened, and changes to such assemblies can be saved as before.*

Service providers that target versions of the .NET framework before version 4.5 must be recompiled targeting .NET 4.5.

- Microsoft® Internet Explorer 7 or greater
- Microsoft® Silverlight Runtime 5.0

Server Clustering and Failover Software Requirements in v2.5

This section describes the software requirements for your installation.

Operating System Options

The following operating systems are supported:

- Microsoft® Windows® Server 2008 R2 (64-bit)
- Microsoft® Windows® Server 2012 Standard (64-bit)
- Microsoft® Windows® Server 2012 R2 (64-bit)

PfMD SYSTEM REQUIREMENTS

The hardware and software requirements you require to install PfMD.

PfMD Hardware Requirements

PfMD 7.0 requires Proficy Workflow v2.5 to be installed and configured. The minimum PfMD hardware requirements are identical to the requirements of Proficy Workflow v2.5.

PfMD Software Requirements

PfMD 7.0 requires Proficy Workflow v2.5 to be installed and configured. The minimum PfMD software requirements are identical to the requirements of Proficy Workflow v2.5.

IMPORTANT: *PfMD 7.0 requires SQL Server 2012.*

In addition, PfMD requires Microsoft® SharePoint® Services 2010 or 2013 if you are using SharePoint® as your document repository.

THINGWORX SYSTEM REQUIREMENTS

The hardware and software requirements you need to install ThingWorx 6.5.

IMPORTANT: *ThingWorx is required only if you will be using the Production Manager Add-on.*

ThingWorx Hardware Requirements

This section describes the minimum hardware required to run ThingWorx 6.5 and all of the software that it requires.

The following requirements are the minimum recommendations for production. Actual sizing depends on the application and use scenarios. Server-class hardware is recommended.

- Quad core processor with 16 GB RAM (minimum)

NOTES:

- *Make sure that a percentage of the dedicated memory is allocated to the Java VM.*
- *When you are determining if your environment meets the minimum requirements, make sure that you take into account that virtual environments may use their own terminology to specify the number of CPUs/Cores that are provided.*

- 100 GB free hard disk space (minimum)

NOTE: This size accommodates only the default ThingWorx web application installed in Tomcat, as well as the initial ThingworxStorage (dB) directory and some initial configuration data.

Disk speed of 10,000 RPM or SSD is required. Speed is important if you are storing data on the ThingWorx platform. ThingWorx recommends the fastest disk(s) you can afford, but you should not use disks slower than 10,000 RPM.

NOTES:

- *Consider a RAID configuration to increase disk performance.*
- *If you are performing regular system backups, we highly recommend that you use an additional physical disk on its own controller and not a separate partition on the same physical disk.*

ThingWorx Software Requirements

This section describes the software requirements for your installation.

IMPORTANT: *The ThingWorx Platform is supported only on 64-bit operating systems.*

Operating System Options

The following operating systems are supported:

- Microsoft® Windows® Server 2012 Standard (64-bit)
- Microsoft® Windows® Server 2008 R2 (64-bit) SP1
- Amazon EC2 Linux (64-bit)
- Red Hat Enterprise Linux (RHEL) 7 Update 1

Browser Options

The following Internet browsers are supported:

- Chrome 18 and greater

Prerequisites

Oracle JDK and Tomcat must be installed before installing ThingWorx.

- Oracle JDK 1.8.0 (64-bit)

***NOTE:** Open JDK is not supported.*

- Tomcat (Linux) 8.0.23 (64-bit) (minimum version of 7.0.54 is required)

***NOTE:** Installed manually because the standard package management does not typically have the latest versions available.*

- Tomcat (Windows) 8.0.23 (64-bit) (minimum version of 7.0.54 is required)

***NOTE:** Installed using the Windows service installer.*

PROFICY OPEN ENTERPRISE SYSTEM REQUIREMENTS

The hardware and software requirements you require to install Proficy Open Enterprise.

Proficy Open Enterprise is used to integrate with your Enterprise Resource Planning (ERP) system.

Open Enterprise Hardware Requirements

Proficy Open Enterprise requires Proficy Workflow 2.5 to be installed and configured. The minimum Proficy Open Enterprise hardware requirements are identical to the requirements of Proficy Workflow 2.5.

Open Enterprise Software Requirements

Proficy Open Enterprise v2.2 requires Proficy Workflow v2.5 to be installed and configured. The minimum Proficy Open Enterprise software requirements are identical to the requirements of Proficy Workflow 2.5.

For Plant Applications messaging, the following components must be installed:

- Plant Applications v6.2 (for Plant Applications messaging)
- Proficy Host v2.2 (for Plant Applications messaging off-node)
- Plant Applications Service Provider v6.2 (for Plant Applications messaging)

LICENSE MANAGEMENT

The Proficy License Manager provides a single, easy-to-use tool to both view and manage online software licensing.

To access the online help for the Proficy License Manager, perform the following steps.

NOTE: For more information regarding licensing, see <http://support.ge-ip.com/licensing>.

1. From the desktop, select Start > Programs > Proficy Common > License Documentation.
The Proficy License Manager online help opens.

COMPATIBILITY WITH OTHER PROFICY PRODUCTS

PfMD may be used with a number of other Proficy products. It is important to determine whether the version of each such product is compatible with the latest version of this application.

Depending on the product or product version, you may need to ensure compatibility between the products. If so, the notes in the following table provide the necessary details.

PfMD	Proficy Workflow	Proficy Open Enterprise
7.0	2.5 SIM3	2.2
6.3 SP3	2.2 SP1 SIM4	2.2
6.3 SP2	2.2 SP1	2.2
6.3 SP1	2.2 SP1	2.2
6.3	2.2	2.2
6.2	2.1	1.6

NOTE: Proficy Open Enterprise 1.6 can be run only with the 32-bit version of Proficy Workflow 2.1. However, the 32-bit version of Proficy Workflow 2.1 can be installed on a 64-bit machine. For more information, see the Architecture Considerations topic in the Proficy Workflow Getting Started Guide.

INSTALLATIONS

This section describes the installation steps for each of the components used in PfMD.

Install Proficy Workflow

For information about installing Proficy Workflow v2.5, see the Proficy Workflow Getting Started Guide that is provided with that product.

Install PfMD

The following information guides you through the PfMD installation process.

1. Place the product DVD in the DVD drive. If you have Autoplay enabled, the installation launcher splash screen appears.
NOTE: If it does not appear, run Setup.exe on the root directory of the PfMD DVD.
2. Click Install PfM Discrete.
The License Agreement page appears.
3. Review the license agreement, select the I accept the terms in the License Agreement check box, and then click Install.
A message box appears indicating that the Proficy services must be stopped and started.
4. Click Yes.
The Configure Site tool appears.
NOTE: This process may take a few minutes.
5. In the Disabled Product Options area, ensure the Essential check box is selected for PfMD, and then click Enable.
The PfMD product option is moved to the Application Server Instances and Enabled Product Options area.
NOTE: Click the Move Up or Move Down button to move the PfMD product option under the appropriate server.
6. Click Save.
The site deployment information is updated.
7. Click Exit.
The Proficy services are restarted.
8. Click Finish.
9. When the installation is complete, click Exit.

Install ThingWorx

For information about installing ThingWorx v6.5, see the ThingWorx installation documentation.

IMPORTANT: *ThingWorx is required only if you will be using the Production Manager Add-on.*

Install Proficy Open Enterprise

For information about installing Proficy Open Enterprise v2.2, see the Proficy Open Enterprise Getting Started Guide that is provided with that product.

SYSTEM SETUP

PfMD provides the ability to configure a number of application settings to customize your system.

The PfMD installation includes a series of files, called master data, containing production data (process segment, definition segment, work definition, and work data), a material class, and three equipment classes. You must import this data in order to use the Route Management and Execution Management modules.

Production Execution Setup

In order to set up Route Management and subsequently use the Execution Management module, you must import the master data provided on the installation DVD. The master data import is performed on the PfMD Configuration Editor General tab. Clicking the Restore Defaults button imports the master data and sets the execution statuses and their default colors, as well as many other settings that are used throughout PfMD.

IMPORTANT: *To be able to import the master data or restore the default data, the ProficyClient.exe (found in <installdir>\Proficy\Proficy Workflow\Program) must be set to run as an administrator.*

After the master data is imported, your system will contain the resources that are required to configure your production, material, and equipment resources.

When you are configuring Proficy Workflow resources to use within Route Management, use the following guidelines.

- Equipment
 - For departments, only the following configurations are recognized:
 - Equipment specifications are associated with the equipment class PFM_Department.
 - For an equipment hierarchy, only the following configurations are recognized:
 - Production Lines are associated with the PFM_ProductionLine class.
 - Work Cells are associated with the PFM_WorkCenter class.
 - Equipment Modules are associated with the PFM_Machine class.
 - To add levels of filtering for equipment resources to be used in a route, either of the following configurations are recognized:
 - An equipment specification is configured using any equipment class. This allows you to select any equipment instance that is associated with the specified class.
 - The Scoped by Line check box for the equipment specification is selected on the check box for a class-based equipment specification is selected on the Resource Settings tab to limit the equipment that can be selected by restricting the available equipment instances to child resources of the production line configured for the route.
 - To allow an operator to see operations that are assigned to a specific work center, the equipment that the Proficy client is linked to for that work center must be configured as a machine. For more information, see [Set up a work center as a machine](#).

- Material
 - For BOM (Bill of Material) definitions, only the following configurations are recognized:
 - Material specifications of the material class PFM_BOMMaterial must contain the predefined BOM prefix, and be associated with the PFM_Operation_Process_Segment work process segment.
 - Material definitions that are associated with the material class, PFM_BOMMaterial.
 - For a part family, only the following configurations are recognized:
 - Material Classes use the prefix you define on the Route Management tab of the PfMD Configuration Editor.
 - For material definitions that are members of a part family, only the following configurations are recognized:
 - Material definitions are associated with a material class whose name contains the prefix defined on the Route Management tab of the PfMD Configuration Editor.
 - Material Definitions are associated with the PFM_ProducedMaterial class.
 - For material definitions that are not members of a part family, only the following configurations are recognized:
 - Material definitions are associated with the PFM_ProducedMaterial class.
 - To specify whether produced material (that is, material that is produced as the result of a completed shop order) is serialized or non-serialized, only the following configurations are recognized:
 - Material definitions that are used as part numbers in a route are associated with the PFM_ProducedMaterial class.
 - The value of the IsSerializedPart property for the material definition is set to True for serialized or False for non-serialized produced material.
- Personnel
 - To allow an operator to see operations that are assigned to a personnel class, the user account for the logged in user must be configured with that class. For more information, see the *Associate a personnel class with a user* topic in the Proficy Workflow online help.

Set Up the Proficy Client on a Local Computer

You must configure various aspects of the PfMD modules before you can use them.

Import master data and apply equipment classes

You must import the provided production, material class, and equipment class data before you can use Route Management, and subsequently, the Execution Management modules.

IMPORTANT: To be able to import the master data or restore the default data, the *ProficyClient.exe* (found in `<installdir>\Proficy\Proficy Workflow\Program`) must be set to run as an administrator.

WARNING: Clicking the *Restore Defaults* button restores your system to the default master data and deletes all customizations that you have added to your system! To prevent loss of data, make sure that you [export](#) your route settings before restoring the master data.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
2. The PfMD Configuration Editor appears.
3. Click the General tab, and then click Restore Defaults.
4. The master data is imported, and the execution statuses and default colors are set. In addition, the default quality form, route management, and qualification management values are also set.
5. Click Apply Equipment Classes.
6. The PFM_ProductionLine, PFM_WorkCenter, and PFM_StorageUnit equipment classes are automatically associated with the production lines, work centers, and storage unit equipment instances that have been configured in the equipment model. The equipment instances can be used when configuring routes and for locating produced lots during production execution.

Set up a work center as a machine

To allow an operator to see operations that are assigned to a specific work center, the equipment that the Proficy client is linked to for that work center must be configured as a machine.

1. In the navigator, click Proficy System > Proficy System > Computers.
2. From the Computers list, select the computer that you want to configure.
3. In the Displays panel, select the Computer Editor.
4. Click the Client Configuration tab.
5. In the Equipment Link section, click Link to Equipment.
6. The Universal Browser appears.
7. Select an equipment resource that has been configured as a machine, and then click OK.
8. Click Save.

Configure the equipment class and filters for departments

All equipment instances that are associated with the equipment class that is designated as the department class are considered to be departments. You can then associate material definitions and users with a department.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the General tab, and then click Select next to Department Class.
The Universal Browser appears.
3. Select the equipment class that you want to designate as the department class, and then click OK.
4. To filter the material definitions or users that can be associated with the equipment departments, click Select for each class type, and then select the classes that you want to use as filters.

***NOTE:** Only the material definitions and users that are associated with the selected classes will be available for selection on the Department Configuration editor.*

5. Click Save.

Configure the produced material class prefix

To configure material classes for a part family, you must define a prefix for those material classes.

When you import the master data for routes, a default part family prefix is provided, which you can either accept or change, depending on your business needs.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the General tab.
3. In the Produced Material Class Prefix field, enter the prefix that you want to use when configuring produced material classes for part families.
4. Click Save.

Configure storage filters

Equipment instances that are configured with the selected storage filter or storage linkable classes can be used to associate storage equipment with equipment locations.

By default, the Storage Filter Class and Storage Linkable Filter Class are set to PFM_StorageUnit and PFM_WorkCenter, respectively.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
2. Click the General tab, and then click Select next to Storage Filter Class.
The Universal Browser appears.
3. Select the equipment class that you want to designate as the storage class, and then click OK.
4. Click Select next to Storage Linkable Filter Class.
The Universal Browser appears.

5. Select the equipment class that you want to designate as the storage linkable class, and then click OK.
6. Click Save.

Configure the display format for route revision numbers

Depending on your business needs, you can choose to have route revision indicators display as either alphabetic or numeric.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the General tab.
3. From the Revision Display Format drop-down list, select the display format that you want to use.
4. Click Save.

Configure department equipment

You can associate material and personnel resources with equipment that has been configured as departments.

1. In the Displays panel, click PfMD Common > Department Configuration.
The Department Configuration editor appears.
2. From the Departments list, select the department equipment that you want to configure.
3. In the Material Definitions area, from the Not Associated with Department list, select the material definitions that you want to associate with the selected department equipment, and then click the right arrow.

NOTE: *If a material class was configured for the department class, then only the material definitions that are associated with that material class are available for selection.*

TIP: *You can select multiple material definitions using Ctrl+Click or Ctrl+Shift.*

4. In the Persons area, from the Not Associated with Department list, select the users that you want to associate with the selected department equipment, and then click the right arrow.

NOTE: *If a personnel class was configured for the department class, then only the users that are associated with that personnel class are available for selection.*

TIP: *You can select multiple users using Ctrl+Click or Ctrl+Shift.*

5. Click Save.

Configure a reason tree

A reason tree is a multiple level hierarchy that contains several reasons that you use to associate an individual reason with one of the levels within the tree hierarchy. The hierarchy contains general reasons for a defect to more specific reasons at lower levels of the hierarchy. You can use different levels of the tree for reporting purposes.

1. In the Displays panel, click PfMD Common > Reason Tree Configuration.
2. Click the Reason Configuration tab.
3. Click Add Reason, and then in the Name field, enter a unique name.
4. Repeat step [3](#) until you have added all of the reasons that you require.
5. Click Save.
6. Click the Reason Tree Configuration tab.
7. Click Add Tree.

The Edit Reason Tree dialog box appears.

8. In the Name field, enter a unique name for the reason tree, and then click OK.
9. Select the reason tree on the right, and then click Add Reason.

The Select Reason dialog box appears.

10. Select a reason to add to the tree, and then click OK.

***TIP:** You can filter the available reasons by entering the full or partial name of the reason(s) that you want to add to the selected tree.*

11. Repeat step [10](#) until you have added all of the reasons to the tree that you require.
12. Click Save.

Associate storage equipment with equipment locations

You can associate storage equipment instances with equipment locations so that the produced lots can be moved into storage units between operations.

You must have selected the storage and storage linkable filter classes on the PfMD Configuration Editor, and associated your storage equipment and equipment locations with these classes.

1. In the Displays panel, click PfMD Common > Storage Configuration.
2. From the Equipment list, select the equipment location that you want to work with.

***NOTE:** Equipment locations are equipment instances that are associated with the configured Storage Linkable class. Storage equipment are equipment instances that are associated with the configured Storage class.*

3. From the Not Associated with storage linkable list, select the equipment storage that you want to associate with the selected equipment location.

***TIP:** You can filter the available storage equipment by entering the full or partial name of the storage equipment into the Filter field.*

4. Click the right-facing arrow to move the selected storage equipment to the Associated with storage linkable list.
5. Click Save.

Copy the storage equipment association from an existing storage location

You can copy the equipment storage association from one equipment location to another.

1. In the Displays panel, click PfMD Common > Storage Configuration.
2. From the Equipment list, select the equipment location that you want to work with.
3. From the Copy Associations drop-down list, select the equipment location whose storage equipment associations you want to copy.
4. Click OK, and then click Save.

Configure inspection groups

An inspection group includes one or more inspections that you can use to associate with a route operation. You can add and delete inspection groups and then add or delete individual inspections within each inspection group.

IMPORTANT: *Inspections may not be applicable to your business.*

1. In the Displays panel, click PfMD Common > Inspection Configuration.
The Inspection Configuration editor appears.
2. To add a new inspection group, do the following:
 - a) Click Add Group.
 - b) In the Name field, enter a unique name for the inspection group. The default value is New Inspection Group.
 - c) In the Description field, enter a description for the inspection group.
3. To add an inspection to an inspection group, do the following:
 - a) Click Add Inspection.
The Add Inspection dialog box appears.
 - b) In the Name field, enter a name for the inspection. The default value is New Inspection.
 - c) In the Display Name field, enter the name you want displayed on screen for the inspection.
 - d) In the Description field, enter clarifying information about the inspection.
 - e) Click OK.
The inspection appears in the Related Inspections section.
 - f) Repeat step [3](#) until you have added all of the inspections that you require.
 - g) Click Save.
4. To delete an inspection from an inspection group, do the following:
 - a) From the inspection group, select the inspection you want to delete, and then click Remove Inspection.
The inspection is deleted from the inspection group.
 - b) Click Save.

NOTE: An inspection that is being used in a route cannot be deleted. If you try to delete an inspection used in a route, an error message is displayed in the Feedback Zone.

5. To delete an inspection group, do the following:
 - a) From the Inspection Groups list, select the inspection group you want to delete, and then click Remove Group.
The inspection group is deleted.
 - b) Click Save.

NOTE: An inspection group that is being used in a route cannot be deleted. If you try to delete an inspection group used in a route, an error message is displayed in the Feedback Zone.

Execution Status Settings

Configure execution statuses

You can add, modify, and delete execution statuses for operations, steps, and shop orders.

Adding new statuses in this display, and editing or deleting default statuses or their attributes, has no effect on the statuses when they are viewed in the Execution Management displays. If you add a new status in this display, the status name must exactly match a status that exists in your production execution system in order for it to be used in the Execution Management displays and in the WIP Viewer.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Execution Statuses tab.
3. From the Execution Status Groups list, select the group that you want to configure execution statuses for.
4. To add a new execution status, do the following.
 - a) Click Add Configuration.
The New Configuration dialog box appears.
 - b) In the Name field, enter a name for the status that is stored in the system.
NOTE: The value in this field must exactly match a status that is supported by your production execution system.
 - c) In the Display Name field, enter the name that you want displayed on screen for the status.
 - d) In the Description field, enter clarifying information about the status.
 - e) In the Seq. No. field, enter a unique sequence number for the status.
 - f) In the Background Color field, either enter the hexadecimal value for the color that you want to use for the status, or click the drop-down arrow and select a color from the color palette.
 - g) In the Foreground Color field, either enter the hexadecimal value for the color that you want to use for the status, or click the drop-down arrow and select a color from the color palette.

Configure the Proficy SOA database as the document repository

If you are using your Proficy SOA database as your document repository, you must manually enable FileStream types in the SQL Server that hosts this database.

IMPORTANT:

- *Before you configure the Proficy SOA database as your document repository, open the Configure Database utility and verify that you are configured to use Windows Authentication. You cannot use SQL Authentication if you want to use the Proficy SOA database as your document repository.*
- *If your SQL Server is remote, then using FileStream with PfMD is supported only in a Windows domain environment. A domain environment is not required if the SQL Server is local.*
- *FileStream is not supported with use on external network drives.*

1. Click Start > All Programs > Proficy > Proficy Workflow > Configuration > Configure Database. The Database Configuration page appears.

2. Verify that your system is configured to use Windows Authentication. For more information, see *Modify your Proficy application server database* in the Proficy Workflow Getting Started Guide.

3. Work with your SQL administrator to manually enable FileStream types in the SQL Server instance that hosts this database.

4. When FileStream has been enabled, restart the SQL Server instance.

5. Configure the logon credentials of the Proficy Server service to be a domain user that has access to the Proficy SOA database

6. Start the Proficy SOA Server.

7. In the Proficy SOA database, verify that the DocumentRepositoryInfoDmc table contains two records, as shown in the following diagram.

8. If a FileGroup of the FileStream type does not exist, the system will create a FileStream file in the Primary FileGroup and a data folder in the same location as the *.mdf database file.

NOTE: *If a FileGroup of the FileStream type exists, it will be used instead of creating a new one. This can be useful if you want the stored files to be located on a different disk. If this is the case, work with GE Intelligent Platforms to create a FileStream file in the Proficy SOA database.*

9. Launch a Proficy client.

10. In the Displays panel, click PfMD Common > PfMD Configuration Editor.

The PfMD Configuration Editor appears.

11. Click the Document Management tab.

12. Select the Use Proficy SOA Database option, and then click Save.

Quality Forms Settings

Configure Quality Form system settings

You can modify the default quality form settings and, if required, add additional units of measure, which are used when configuring quality variables.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Quality Forms tab.
3. To modify the text required in the names of the workflows that you want to make available to the Workflow Method control in the quality forms designer, do the following.
 - a) In the Workflow Button Simple Filter field, enter a value to filter the workflows that will be available for selection. The workflows that contain this text anywhere in the name will be available for selection.
 - b) In the Workflow Button Regular Expression Filter field, enter a value to filter the workflows that will be available for selection. You can use any regular expression syntax to filter the workflow name.
 - c) Select the Is this filter case sensitive? check box to indicate that only those workflows whose names match the case entered in the Workflow Button Regular Expression Filter field will be available for selection.
4. To modify the document type that is required to store image files in the document repository so that they can be used in quality forms, perform the following step.
 - a) In the Allowable Image Type Filter field, enter the name of a document type that you have already created (or will create) in the Document Type Editor specifically for images. This name must exactly match the document type name. The default value is Image.
5. To modify the document type that is required to upload signed quality form .pdf files to the document repository from within the Genealogy Viewer, perform the following step.
 - a) From the Quality Form Signed Doc Type drop-down list, select the document type that you have already created in the Document Type Editor specifically for signed quality forms. The default value is Signed Form.
6. To configure the format for quality variable names, perform the following steps.
 - a) In the Regular expression field, enter the regular expression that you want to use to format quality variable names.
 - b) In the Hint field, enter the text that will be displayed when a quality variable name is created.
7. To display the {No Value} text in applicable quality form controls, select the Empty Control Value Setting check box.
8. To configure units of measure, perform the following step.
 - a) In the UoM Name field, enter a unit of measure to use in quality variables, and then click Add.

NOTE: The default units of measure (that is, m for meters, and mm for millimeters) can be modified or deleted.

9. Click Save.

Route Management Settings

Configure the standard route type

You can configure the general settings for the route components that will be used for your routes.

When you [import the master data](#), a master work process segment named PFM_Master_Process_Segment is included and is set as the default value.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then in the Route Types list, click Standard Route.
3. Click the Settings tab, and then in the Name field, enter a unique name for the standard route type. The default value is Standard Route.
4. Select the One Per Material and Line check box to indicate that only one route of this type is permitted for each distinct combination of produced material (or produced material class) and production line.
5. Click Change to select a new master work process segment.

CAUTION: Do not modify this setting without assistance from GE Intelligent Platforms.

The production line, produced material, and parameters that are configured for the selected work process segment are displayed .

6. [Configure the validation rules](#) that will apply to all routes.
7. Click Save.

Configure the route level item types

You can configure the settings, including how the Route Editor will appear, for the route level item types that will be used for your routes.

WARNING: Clicking the Restore Defaults button on the General tab restores your system to the default master data and deletes all level items that you have added to your system! To prevent loss of data, make sure that you [export](#) your route settings before restoring the master data.

NOTE: By default, Level 2 items are not required to configure routes.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, select either Level 1 or Level 2 in the Route Types list, and then click Add Level Item.
A new item is added under the selected level.
3. Click the Settings tab, and then in the Name field, enter a unique name to identify the item. The default value is New Item.
4. Click Change to select a work process segment.

NOTE: Each level item must be configured with a different work process segment.

The parameters and resources that are configured for the selected work process segment are displayed on the Settings and Resource Settings tabs, respectively.

5. Click the Editor Settings tab and configure how the Route Editor will appear for the level item.

NOTE: The Route Editor can be configured differently for each level item that you add, and the Available Form Elements (such as parameters and resources) that can be configured for the Overview tab on the Route Editor are determined by the configuration of the work process segment selected for each level item.

By default, no properties or tabs are configured to be shown for a new level item. You should select at least one tab and, if the Overview tab is selected to be visible, you should add at least one property to it.

6. Click Save.

Add linked route types

You can add multiple route types that are based on the configuration of your standard route type.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then in the Route Types list, click Standard Route.
3. Click Add Linked Type.
A new route type is added to the Route Types list.
4. On the Settings tab, in the Name field, enter a unique name to identify the linked route type.
5. Select the One Per Material and Line check box to indicate that only one route of this type is permitted for each distinct combination of produced material (or produced material class) and production line.
6. Click Save.

Transfer route configurations

You can configure all of your route components and then export those configurations to move them to another computer.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then click the Settings tab.
3. Click Export.
A standard Save As dialog box appears.
4. Navigate to the location where you want to save the file, enter a file name, and then click Save.
5. On the Route Management Settings tab on the destination computer, click Import, locate the file that you created when you exported the route configurations, and then click Open.
The previously exported route configurations are imported.

CAUTION: *Importing route configurations will overwrite portions of existing configurations.*

Configure resources for department equipment

You can associate material and personnel resources with an equipment resource that is configured as a department.

When a material or personnel specification is associated with a department equipment specification, the resources configured for that specification can be used only with the equipment resources that are associated with the selected department.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then from the Route Types list, click the level item whose resources you want to configure.
3. Click the Resource Settings tab, and then in the Resources table, select the material or personnel specification that you want to associate with a department equipment resource.
4. Double-click in the Department field, and then select the department equipment resource.
5. Click Save.

Configure equipment resource filtering

You can add a level of filtering to the equipment resources when you configure routes and/or route segments. Filtering applies only to equipment specifications that are not configured as the route level production line.

By adding an equipment specification that is specified by class to one or more of the process segments used in your system, you can restrict the specification resource to the work centers or other equipment that is a child or descendant of the route's production line in the S95 model hierarchy.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then from the Route Types list, click the level item whose resources you want to configure.
3. Click the Resource Settings tab.
4. In the Resources table, double-click in the Scoped by Line field for the equipment specification that was configured for the process segment that is associated with the level item, and then select the check box.
5. Click Save.

Configure resource properties to use for route operations

You can configure any or all of the resource properties to have configurable values when you are configuring route operations. These properties are associated with the specifications that are configured for the work process segment PFM_Operation_Process_Segment or any work process segment that is used by a Level 1 item.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then from the Route Types list, click the level item whose resources you want to configure.
3. Click the Resource Settings tab, and then in the Resource Properties table, double-click in the Is Specification Property field to enable the check box for the resource property that you want to make configurable in route operations.
4. Select the Is Specification Property check box, and then in the Custom Type field, select the custom data type whose values will be used for configuring the resource property in route operations.
5. Click Save.

Configure Route Management editor settings

You can customize the default Route Management Editor by selecting additional tabs and/or display elements. These customizations can be configured at all three levels of a route (that is, at the route level itself, the operation level, and the step level).

CAUTION: Do not modify these settings without assistance from GE Intelligent Platforms.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then from the Route Types list, click the level item whose editor settings you want to configure.
3. Click the Editor Settings tab.
4. In the Tabs area, select the check box for each of the tabs that you want to make available in the Route Management Editor for the selected level.
5. In the Overview Configuration area, configure the Overview tab for the selected level as follows.
 - a) From the Available Form Elements list, select an element that you want to add to the Overview tab, and then click Add.
TIP: If you want to nest the form element within another applicable form element, click Add Into. This button is available only when the element that is selected in the Available Form Elements list can be contained within the element selected in the Custom Layout Structure.
 - a) In the Custom Layout Structure area, select the form element, and then in the Properties area, configure the properties for the element.
TIP: Use the Move Up and Move Down arrows to move the form element to the desired position.
6. Click Save.

Configure multi-line editing for work process segment parameters

If you configure any of the work process segments that are used in your system setup (including the default master work process segment) with parameters with a String data type, you can configure any or all of those parameters to be editable and to allow multiple lines of text for the values.

In order to enter multiple lines of text in string parameters, the individual parameters must be visible on the Overview tab of the route revision and/or route component that you configured them for. If the work process segment's parameters are displayed in the table on the Parameters tab, you can enter only one line of text in the value field for string parameters, regardless of whether they are configured for multi-line editing.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then from the Route Types list, click the level item that you want to configure.
3. Click the Editor Settings tab.
4. From the Available Form Elements list, select the Parameters element.

5. In the Custom Layout Structure, select the element that you want the Parameters element to follow, and then click Add.
6. Repeat steps [4](#) and [5](#) for each of the individual parameters that you want to make available for editing on the Overview tab.
7. In the Custom Layout Structure, for each parameter element, select it, and then in the Properties area, select the True option for Multi-Line Editing.
8. Click Save.

Configure Route Management validation settings

You can customize the validation rules for routes. These rules apply to all routes regardless of their configuration.

NOTE: Clear the check box for any default validation rule (in either column) that you do not want to use.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Route Management tab, and then in the Route Types list, click Standard Route.
3. Click the Validation tab.
4. In the Is Enabled column, select the check box for each of the validation rules that you want to use.
5. In the Prevents Approval column, select the check box for each of the validation rules that you want to use to prevent approval if the route configuration does not meet the validation criteria.
6. Click Save.

Serialized and Non-serialized Produced Material

PfMD provides the ability to configure your part numbers (material definitions) as serialized or non-serialized.

All part numbers that are to be used for produced material (whether they are members of a part family or not) must be associated with the PFM_ProducedMaterial class, which is included in the PfMD master data. This class is preconfigured with a property named IsSerializedPart.

When this property is set to True for a particular part number, then when a shop order is created for a route that is associated with this part number, a material lot is created for each of the specified quantities. For example if the quantity is 5, then five material lots are created. These material lots are then selected by the operator as the shop order's operations are being worked on.

If a part number's IsSerializedPart property is set to False, then when a shop order is created for a route that uses that part number, only one material lot is created, regardless of the specified quantity.

Qualification Management Settings

Configure the qualification test result expiry interval

The system periodically checks qualifications to determine whether they have expired. You can modify the length of time between these system checks.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Qualification Management tab.
3. In the Test Results Expiry Check Interval field, enter a value to represent the interval between system checks on qualification expirations.
4. Click Save.

Execution Management Settings

Configure the Execution Management buttons

You can configure which actions can be performed on the Execution Management displays, as well as establish the order and groupings of the available buttons. You can add custom buttons to one or more views, or you can modify the default buttons for a view.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Execution Management tab.
3. From the Display drop-down list, select the execution management view that you want to configure buttons for.

4. Modify a default button or add a custom button as follows:

To...	Then...
Modify a default button	<ol style="list-style-type: none"> 1. Select a button, and then click Edit. 2. Change the button attributes, as required. <p>NOTE: Changing the button attributes applies only to the selected view. For example, if you clear the Visible check box, the button will not be available on the selected view; however, if the button is configured to be visible on any other view, it will remain visible there.</p>
Add a custom button	<ol style="list-style-type: none"> 1. Click Add. 2. Configure the button attributes, as required. The button is added to the top of Group 1. <p>NOTE: When you are adding a custom button, you must select an extension whose input and output parameters match those defined for the selected execution management view. This property is not available if you selected a default button.</p> <ol style="list-style-type: none"> 3. Use the Move Up or Move Down button to move the button to another position within the group, or click Move to Group to move the button to another group.

5. Click Save.

Custom Logic Settings

Add a custom extension to an extension point

You can configure your extension points with a workflow or database statement that was configured for use as an extension within your system in order to execute a specific action.

- You must have created workflows and/or database statements before you can configure your extension points. If you configure workflows to be used as extensions for any of the extension points, you must configure the input and output parameters exactly as they are described in the Extension Point Details panel for the specific extension point. If a workflow or database statement is not configured correctly, it will not be available for selection in the Select Extension dialog box.
- The .dll files that contain the custom-coded extension points must be available to both the server and the client(s). Create a user-defined application folder and PfmDExtensions subfolder on the server machine, and then add the .dll files to the subfolder. After adding the .dlls to the PfmDExtensions subfolder, you can package the application folder into a product option file, and then install it so that the application folder is deployed to all servers and clients. Clients are 32-bit, so the .dll files must be deployed to the 32-bit directory on the client machine(s). If the server is 32-bit, the .dll files must be deployed to the 32-bit directory on the server machine. If the server is 64-bit (the default configuration on a 64-bit machine), the .dll files must be deployed to the 64-bit directory on the server machine.
 - On a 32-bit server, create an application folder here: <install dir> Program Files (x86)\Proficy\Proficy Workflow\Program\Applications with a PfmDExtensions subfolder.

- On a 64-bit server, create an application folder here: <install dir> Program Files\Proficy\Proficy Workflow\Program\Applications with a PfMDExtensions subfolder.

NOTE: *If you add custom coded extensions to your system, you must restart the Proficy client and the Proficy Server service.*

For information about packaging and deploying product options, see the *Proficy Service Provider Deployment* section in the *Proficy Service Provider Authoring* help.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Custom Logic tab.
3. Select the extension point that you want to add a custom extension for, and then click Select.
The Select Extension dialog box appears.
4. Select the extension that you want to use for the extension point, and then click OK.
5. Click Save.

Non-Conformance Management Settings

Select reason and defect trees for non-conformance records

After reason trees have been configured, you must select a defect tree and a cause tree. The defect tree is used to select a defect category when you or an operator create a non-conformance record. The cause tree is used to select a cause category when you create a disposition plan for a non-conformance record.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Non-Conformance Management tab.
3. From the Cause Tree drop-down list, select the reason tree that will be used to select the cause category when you are creating a non-conformance record.
4. From the Defect Tree drop-down list, select the reason tree that will be used to select the defect category when you are creating a non-conformance record.
5. Click Save.

Application Assembler Server

You must configure your Application Assembler Server settings and connect to it in order for your operators to access work order information on a web client.

You can make changes to your Application Assembler Server settings; however, these changes affect the server connection.

- If the system made a connection attempt during the current Proficy Server service process and you change the Application Assembler Server configuration, then the following message is displayed: "The configuration for the current connection is different from the latest saved configuration." You must disconnect the Application Assembler Server and then reconnect.
- If the system is connected to the Application Assembler Server and the Proficy Server service is stopped, the system attempts to reconnect to the Application Assembler Server when the Proficy Server service restarts. However, if any of the configuration settings are changed after the initial connection to the Application Assembler is made, the system will not reconnect to the Application Assembler Server. New configurations must be applied by manually connecting Application Assembler Server.
- If the connection fails, a message is displayed in the Feedback Zone.

Configure the Application Assembler server

You must configure the connections settings to the Application Assembler Server in order for your operators to use a web-based client to access work order information.

IMPORTANT: For information on the effects of changing your Application Assembler Server configuration, see [Application Assembler](#).

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Application Assembler tab.
3. In the Application Assembler Server URI field, enter the address of your Application Assembler Server.
4. In the Application Assembler Application Key ID field, enter the ID that was generated on your Application Assembler Server.
5. From the table in the Extension Sources Configuration area, select the extension source whose methods you want to make available, and then click (missing or bad snippet).
TIP: Click (missing or bad snippet) to prevent the extension source methods from being exposed in the web client.
6. Click Save.
7. Click Connect.

Windchill Settings

Configure the Windchill system to integrate with PfMD

Configure the Windchill settings so that PfMD can communicate with the Windchill server that will provide the files that contain the information for creating routes.

You must first create a document type in the Document Type Editor that is configured as externally managed, externally linked, unique within production line, and linked to route. In addition, do not configure any allowed document extensions.

1. In the Displays panel, click PfMD Common > PfMD Configuration Editor.
The PfMD Configuration Editor appears.
2. Click the Windchill tab.
3. In the Windchill Export Directory field, enter the location that the Windchill server will export files to. This location must be a folder that is local to the Proficy Server. The Proficy Server requires the Modify permission on this folder and its contents. PfMD monitors this location and imports the files as they are generated from Windchill.
4. From the Default Production Line drop-down list, select the production line that will be used when creating routes from Windchill process plans that do not have an associated line.
5. From the Document Type drop-down list, select the document type that was created for categorizing Windchill documents.
6. Select the Auto Approve check box to indicate that all routes that are imported from Windchill will be automatically approved.
7. Configure the WindchillServer Settings for communicating with the Windchill server.
8. Click Save.

Windchill Naming Conventions and Limitations

Windchill uses specific naming conventions for routes, personnel classes, equipment classes, and material definitions. However, due to character limitations with Proficy Workflow, the names provided by Windchill may need to be truncated to fit within these character limitations.

Be aware of the following Windchill naming conventions and how these names are affected by the character limitations.

NOTE: *Cagecode is optional in Windchill process plans. If a process plan does not have this value configured, then it is not used.*

Route Names

Full (untruncated) name: Number ; Name ; Cagecode

This combination makes the route unique and allows for different revisions of the same route.

If a route name (that is, Number + Name + Cagecode) exceeds 45 characters, truncation occurs in the following order: end of cagecode, name, and then number.

NOTE: *Additional truncation occurs when the route name is no longer unique by allowing (1), (2), (3), and so on, at the end of the name.*

Personnel Class, Equipment Class, and Material Definition Names

Full (untruncated) name: Number ; Name ; Cagecode ; Version _ Iteration

This combination makes the resource name unique and allows for different versions and iterations of the same resource.

If a resource name (that is, Number + Name + Cagecode + Version + Iteration) exceeds 46 characters, truncation occurs in the following order: end of cagecode, name, and then number. The version and iteration information is not truncated.

***NOTE:** Additional truncation occurs when the route name is no longer unique by allowing (1), (2), (3), and so on, at the end of the name.*

Documents

Full (untruncated) name: Number ; Name ; Version _ Iteration

This combination makes the document name unique and allows for different versions and iterations of the same document.

No truncation is required because the maximum characters allowed is 255 and the total of the maximum sizes for each part is less than 255 characters.

***NOTE:** If a document name is not unique, (1), (2), (3), and so on can be added at the end of the name.*

Quality Variables

Full (untruncated) name: Number ; Name ; Version _ Iteration

This combination makes the variable name unique and allows for different versions and iterations of the same variable.

No truncation is required because the maximum characters allowed is 255 and the total of the maximum sizes for each part is less than 255 characters.

PfMD does not allow the characters ., {, or } in variable names. If these characters exist in a variable name they are changed to _.

***NOTE:** If a variable name is not unique, (1), (2), (3), and so on can be added at the end of the name.*

PfMD COMMON INTERFACES

The PfMD Common interface topics provide descriptions of the fields and controls used to set up your system before you begin configuring the individual components you need to use.

General System Setup Tab

The General configuration tab is used to configure settings that are used for various aspects of PfMD.

The following table describes the attributes available for configuring general system settings.

Property	Description
Restore Defaults	Click to import the master data so that you can create routes that are used to create shop orders, which are then used within the Execution Management displays.
Apply Equipment Classes	Click to apply the following equipment classes to the respective production lines, work cells (work centers), and storage units that are configured in the equipment model. <ul style="list-style-type: none"> ▪ PFM_ProductionLine ▪ PFM_WorkCenter ▪ PFM_StorageUnit These equipment classes are included as part of the master data and are used when configuring routes and for locating produced lots during production execution.
Produced Material Class Prefix	Specifies the prefix you want to use to indicate that one or more material classes are available for use with route revisions.
Department Class	Click Select to choose the equipment class that you want to use to identify equipment instances that are considered Departments. If you do not select an equipment class, then all equipment instances are considered departments.
Material Filter Class	Click Select to choose the material class that you want to use to filter the material definitions when you are configuring your departments. Only the material definitions that are associated with the selected material class will be available for selection. <p><i>NOTE: If you have already configured a department with material definitions that are not associated with the selected material class, those definitions will still be associated with the department unless you manually remove them.</i></p>
Personnel Filter Class	Click Select to choose the personnel class that you want to use to filter user names when you are configuring your departments. Only the users who are associated with the selected personnel class will be available for selection. <p><i>NOTE: If you have already configured a department with users who are not associated with the selected personnel class, those definitions will still be associated with the department unless you manually remove them.</i></p>

Storage Filter Class	Click Select to choose the storage class that you want to use to filter the equipment instances that will be available for storage configuration. By default, this class is set to PFM_StorageUnit.
Storage Linkable Filter Class	Click Select to choose the storage linkable class that you want to use to filter the equipment instances that will be available for storage configuration. By default, this class is set to PFM_WorkCenter.
Revision Display Format	<p>Specifies the display format for route revision indicators.</p> <p>Alphabetic</p> <p>The alphabetic option displays the revision indicator as A, B, and so on. When you create a new revision, the revision letter of the route is incremented to the next letter in the alphabet. When the end of the alphabet is reached, the revision letters are doubled; for example, AA, AB, ... ZA, ZB, and so on. Adding letters to the revision continues with each cycle through the alphabet.</p> <p>Numeric</p> <p>The numeric option displays the revision indicator as 001, 002, and so on.</p> <p>NOTE: <i>You can change the revision indicator at any time. If you change the display format, all existing revision indicators are changed to the corresponding format. For example, revision A converts to revision 000; revision B converts to revision 001, and so on.</i></p>
Configuration Name	<p>Specifies the name of the database connection to use to execute a custom extension query in the Execution Management display.</p> <p>NOTE: <i>You must have created the database connection before you can execute your custom extension queries.</i></p>
Work Instruction	Specifies the document type(s) of work instruction images that you can select from when configuring work instructions on operations in the Route Editor.

DEPARTMENT CONFIGURATION

The Department Configuration editor is used to associate material and personnel with equipment instances that have been designated as departments.

The following table describes the information available for configuring department equipment.

Property	Description
Departments	Specifies the list of equipment instances that are designated as departments (that is, the equipment instances that are associated with the equipment class that was configured in the general settings).
Material Definitions: Not Associated with Department	Specifies all of the material definitions that are available to associate with the selected equipment department. <i>NOTE: If a material class was configured for the department class, then only the material definitions that are associated with that material class are available for selection.</i>
Material Definitions: Associated with Department	Specifies all of the material definitions that are already associated with the selected equipment department.
Filter	Specifies the full or partial material definition name to use to filter the list. This field is available for both lists.
Persons: Not Associated with Department	Specifies all of the user accounts that are available to associate with the selected equipment department. <i>NOTE: If a personnel class was configured for the department class, then only the users that are associated with that personnel class are available for selection.</i>
Persons: Associated with Department	Specifies all of the user accounts that are already associated with the selected equipment department.
Filter	Specifies the full or partial user name to use to filter the list. This field is available for both lists.

***NOTE:** If, in a previous version of PfMD, you had selected material definitions or users that are not associated with the configured material or personnel classes, those selections will remain associated with the department. If you remove the association between those material definitions/users and the department, those selections will no longer be available.*

Inspection Configuration

The Inspection Configuration editor is used to associate inspections with inspection groups. After you have configured inspection groups, you can assign individual or multiple inspections to route operations.

IMPORTANT: *Inspections may not be applicable to your business.*

The following table describes the information available for configuring inspection groups.

Property	Description
Add Group	Click to create a new inspection group.
Remove Group	Click to delete the selected inspection group. An inspection group that is being used in a route cannot be deleted. If you try to delete an inspection group used in a route, an error message is displayed in the Feedback Zone.
Add Inspection	Click to create an inspection for the current group.
Remove Inspection	Click to delete an inspection. An inspection that is being used in a route cannot be deleted. If you try to delete an inspection used in a route, an error message is displayed in the Feedback Zone.

Reason Tree Configuration

You can configure a reason tree in order to associate a material defect with a cause for that defect. Reason trees are used in the Non-Conformance Management tab in the PfMD Configuration Editor.

What is a Reason Tree?

A reason tree is a multiple level hierarchy that contains several reasons that you use to associate an individual reason with one of the levels within the tree hierarchy. The hierarchy contains general reasons for a defect to more specific reasons at lower levels of the hierarchy. You can use different levels of the tree for reporting purposes.

Reason Configuration Tab

You can configure reasons to be used when creating and dispositioning a non-conformance record.

Property	Description
Add Reason	Click to create a new reason.
Delete Reason	Click to delete the selected reason. A reason that is being used in a reason tree cannot be deleted and an error message is displayed in the Feedback Zone.

Reason Tree Configuration Tab

You can create reason trees, and then add reasons that you defined on the Reason Configuration tab. Reason trees can have a maximum of only four levels below the tree and you cannot use a reason more than once at a single level. For example, you cannot use New Reason11 more than once under New Reason10; however, you can use New Reason11 under New Reason20 or New Reason30 in addition to New Reason10.

Button	Description
Add Tree	Click to create a new reason tree.
Edit Tree	Click to modify the selected reason tree's name.
Delete Tree	Click to delete the selected reason tree. <i>NOTE: If you delete a reason tree that is used in existing non-conformance records, those records are not affected; however, you will not be able to select a defect or cause category for future non-conformance records until a valid reason tree is configured.</i>
Add Reason	Click to add a reason to the selected reason tree.
Delete Reason	Click to remove the selected reason from the current reason tree. Deleting a reason from within a reason tree deletes all of that reason's child reasons.

Storage Configuration

The Storage Configuration Editor is used to associate storage equipment with a storage location. This allows an operator to set the produced lot location to a particular storage equipment (at some location) between operations.

Property	Description
Equipment	Specifies the list of all of the equipment locations that are configured with the storage linkable class. By default, this class is set to PFM_WorkCenter.
Not Associated with storage linkable	Specifies the storage equipment instances that are configured with the Storage class, and are available to be associated with the selected equipment location.
Associated with storage linkable	Specifies the storage equipment instances that are already associated with the selected equipment location.
Filter	Specifies the full or partial name of the equipment instances that you want to use to filter the list of available items.
Copy Associations	Specifies the equipment location whose storage associations you want to copy to the selected equipment location.

Execution Status Settings

The Execution Statuses tab is used to configure the foreground and background colors of execution status text for operations, steps, and shop orders when they are viewed in the WIP Viewer.

The execution statuses are not directly linked to the statuses viewed in the Execution Management displays. The value in the Name field of the default execution statuses in this editor must exactly match the statuses that are supported by your production execution system. If you change the Name field of a default status in this display (for example, if you change Complete to Finished), the WIP Viewer will display the original value (that is, Complete) and the background and foreground colors will be displayed in white and black, respectively, regardless of the colors that you assigned.

Adding new statuses in this display, and editing or deleting default statuses or their attributes, has no effect on the statuses when they are viewed in the Execution Management displays. If you add a new status in this display, the status name must exactly match a status that exists in your production execution system in order for it to be used in the Execution Management displays and in the WIP Viewer.

The following table describes the attributes available for configuring execution statuses.

Property	Description
Execution Status Groups	Specifies the production execution groups that you can configure statuses for.
Seq. No.	Specifies the sequence number for the selected status.
Name	Specifies the system name for the status.
Display Name	Specifies the name of the status as displayed in the Operator Interface.
Background Color	Specifies the color of the status' text.

Foreground Color	Specifies the color of the status' text.
Description	Specifies clarifying information about the status.

Actions

The following table describes the action you can perform on the Execution Statuses tab.

Property	Description
Add Configuration	Click to open the New Configuration dialog box to add a new execution status. <i>NOTE: Non-default execution statuses are used only if they are supported by your production execution system.</i>
Edit Configuration	Click to open the Edit Configuration dialog box to modify an execution status. <i>NOTE: Modifying the Name value of a default execution status takes effect only if the new name is supported by your production execution system. If the new name is not supported by your production execution system, then the WIP Viewer will continue to display the original name.</i>
Remove Configuration	Click to delete the selected execution status. <i>NOTE: Make sure you select the correct execution status to delete. You are not prompted to confirm the deletion. Deleting a default status has no effect in the Execution Management displays; however, the background and foreground colors of the status will be displayed in white and black, respectively, in the WIP Viewer.</i>

Document Management Settings

You can use either Microsoft® SharePoint® or the Proficy Connect database as your document repository.

Proficy SOA Database Document Repository

If you are using the Proficy SOA database, your SQL administrator must manually enable Filestream types in the SQL Server instance that hosts this database. A Filestream file is automatically created in the same location as the .mdf database file when you configure PfMD to use the Proficy SOA database as the document repository. If a Filestream file already exists for the Proficy SOA database, then PfMD will use that file.

CAUTION: Do not create a Filestream file without assistance from GE Intelligent Platforms.

Microsoft® SharePoint® Document Repository

If you are using SharePoint®, you must configure a connection to the SharePoint® server.

The following table describes the information available for configuring SharePoint® as your document repository.

Property	Description
URL	Specifies the address of the SharePoint® server. For example, http://spServer1.corpDomain.com .
Library	Specifies the name of the library located on the SharePoint® server that you are connecting to.
User Name	Specifies the name of a valid SharePoint® user.
Password	Specifies the password configured for the user.
Domain	Specifies the name of the domain that the user is part of.

Quality Forms Settings

The Quality Forms settings allow you to configure various settings to suit your business needs.

Workflow Method Button Control Filter

The Quality Forms Designer provides a control called Workflow Method, which is a button that can be configured to trigger a workflow when it is clicked on a quality form during run time. To select a workflow to associate with this quality form control, you must name your workflow(s) to meet the configured filter criteria.

The following table describes the properties that set global variable values in your Proficy Connect database.

Property	Description
Workflow Button Simple Filter	Specifies the filter to use when configuring workflows that can be used with the Workflow Method control. Workflows with this text anywhere in the name are available for selection. This property is not case sensitive; therefore, does not have to match the case of the Workflow Button Regular Expression Filter property.
Workflow Button Regular Expression Filter	<p>Specifies the regular expression that is used to filter the workflows that are available when configuring the Workflow Method control. This value is used with the Is this filter case sensitive? check box.</p> <p>For example, if you leave the default value of ^qfm, and select the Is this filter case sensitive? check box, then the only workflows that are available to select are those whose name begins with qfm. If any of your workflow names begin with QFM, they will not be available.</p> <p>IMPORTANT: <i>If you have a large number of workflows to select from, you can use the search filter to reduce the number of workflows to choose from. For more information, see the Filter and search topic in the PfMD online help.</i></p>
Is this filter case sensitive?	Select this check box to indicate that the value you use as a prefix to name the workflows that can be used in quality forms is case sensitive. For example, if you select this check box and leave Workflow Button Regular Expression Filter with the default value, then the only workflows that are available for configuring the Workflow Method control are those whose name contains the prefix qfm. If you include QFM as the prefix in the workflow names, or if qfm appears anywhere but at the beginning of the workflow name, those workflows will not be available for selection.

Image Control Filter

If you use images in your quality forms, they must be located in the document repository and have the document type of that you configure here. If you change the default Allowable Image Type Filter property, you must create a document type that matches this value.

The following table describes the properties that set global variable values in your Proficy Connect database.

Property	Description
Allowable Image Type Filter	Specifies the name that must be given to the document type that you create to associate with images that can be used in quality forms. The default document type name is Image.

Quality Form Signed Doc Type

If you use printed quality forms in your process but you want to maintain electronic copies in Document Management, you can scan the forms to create .pdf files, and then upload those forms from the Genealogy Viewer to Document Management.

To provide this function, you must create an externally managed document type to use for this purpose, and then configure the Quality Form Signed Doc Type property with that document type.

***IMPORTANT:** These .pdf files do not retain their original file names. When external .pdf files are uploaded from the Genealogy Viewer, the file name changes to include the associated route revision name, serial number, and operation and step names.*

The following table describes the properties that set global variable values in your Proficy Connect database.

Property	Description
Quality Form Signed Doc Type	Specifies the document type to use to manage uploaded .pdf files to the document repository. The default document type name is Signed Form.

Variable Name String Mask

To use quality variables within your quality forms, you must configure the format of the variable names. This provides a consistent variable naming convention.

The following table describes the system settings that are available.

Property	Description
Regular expression	Specifies the regular expression to use for quality variable creation.
Hint	Specifies the text to display when you are creating quality variables.

Show or Hide the NoValue String from Designer Controls

Depending on your business needs, you may not want or require the text, {No Value}, to appear in quality form controls at run time. If you select this check box, the following controls will not display the term, {No Value}:

- Combo Box
- Radio Group
- Text Box
- Date/Time Picker
- Label
- Any controls within the Data Grid control

The following table describes the properties that set global variable values in your Proficy Connect database.

Property	Description
Empty Control Value Setting	Select this check box to indicate that the text, {No Value}, will not be displayed in any of the applicable quality form controls. If you do not select this check box, then the {No Value} text will be visible.

Units of Measure

Units of measure can be used when configuring quality variables. However, the units of measure that are available to choose from must be configured before you can configure your variables.

The following table describes the system settings that are available.

Property	Description
Units of Measure	Specifies the units of measure that are available to use when configuring quality variables. The default units of measure are m (meter) and mm (millimeter).
UoM Name	Specifies the unit of measure that you want to add to the Units of Measure list.
Add	Click to add the unit of measure to the Units of Measure list.
Remove	Click to delete the selected unit of measure.

Route Management Settings

The Route Management Settings tab is used to configure route types and route components.

Standard and Linked Route Types

The Standard Route type is configured with a master work process segment. The master work process segment must contain a Production Line equipment specification that is associated with the PFM_ProductionLine equipment class and a Produced Material (or Produced Material Class) material specification that is associated with the PFM_ProducedMaterial class.

You can create linked route types, which are based on the Standard Route type and share the same master work process segment, but are distinct types for route creation.

The following table describes the attributes available for configuring the standard and linked route types.

Property	Description
Name	<p>Specifies the name for the route type. By default, the name of the standard route type is Standard Route, and the default name of the linked route types is Route Type 1, Route Type 2, and so on. These default names can be changed to suit your business needs.</p> <p>The route types are available for selection when you create new routes. Routes that you created in an earlier version of PfMD are automatically assigned the Standard Route type.</p>
One Per Material and Line	<p>Select this check box to indicate that only a single route of this type is permitted for each distinct combination of produced material (or produced material class) and production line.</p>
Master Work Process Segment	<p>Specifies the master work process segment that you want to use to configure your routes.</p> <p>Master process segment information is displayed only when Standard Route is selected in the Route Types list but applies to all linked routes because linked routes are based on the Standard Route.</p> <p><i>NOTE: When you import the master data, a master work process segment named PFM_Master_Process_Segment is included and is set as the default value.</i></p>
Production Line	<p>Specifies the production line that is associated with the selected master work process segment. This value is read-only and is based on the master work process segment that is configured for your system.</p>
Produced Material	<p>Specifies the produced material (or produced material class) that is associated with the selected master work process segment. This value is read-only and is based on the master work process segment that is configured for your system.</p>
Parameters	<p>Specifies the parameters, and their attributes, that are configured for the selected master work process segment. These parameters are read-only on this display.</p>

Levels

There are three levels (or route components) available for route configuration. Level 1 and Level 2 are used to configure operations and steps/activities, respectively. Level 3 is, by default, not used but can be configured if it is required for your business needs.

The following table describes the attributes available for configuring the route levels. These values apply to all of the configured items for the selected level.

Property	Description
Is Enabled	Select this check box to indicate that the selected level/route component is required to be configured for use within your system. For example, if you do not require route revisions to contain steps, then clear this check box.
Max Per Parent	Specifies the maximum number of the selected component that a route can contain. The default value for each component is 20.

Level Types

Level 1 contains a default operation and Level 2 contains a default step/activity. You can add items to each level (inclusive of the default item) and configure each item's editor settings differently.

NOTES:

- *Each level item must be configured with a different work process segment.*
- *The default level items cannot be deleted, but can be renamed and configured to suit your needs, including changing the work process segment.*

The following table describes the attributes available for configuring the level types.

Property	Description
Name	Specifies the name for the route component. By default, the name of the component is the same as the object selected in the Route Types list; that is; Operation or Step. These default names can be changed to suit your business needs.
Work Process Segment	Specifies the work process segment that you want to use to configure your route component. <i>NOTE: When you import the master data, the work process segments, PFM_Operation_Process_Segment and PFM_Step_Process_Segment, are automatically set for the default operation and step, respectively.</i>
Parameters	Specifies the parameters, and their attributes, that are configured for the selected work process segment. These parameters are read-only on this display.

Common Actions

The following table describes the actions you can perform on the Settings tab.

Property	Description
Import	Click to import a .xml file that contains previously exported route configurations. CAUTION: <i>Importing route configurations will overwrite portions of existing route configurations. Click Yes to continue or No to cancel importing.</i>
Export	Click to create a .xml file that contains all of the configurations for your routes and route components. This file can be used as a backup for your data or as a means of transferring your route configurations to another server.
Add Level Item	Click to add a new item type to the current level. You cannot add a new level item if Standard Route is selected in the Route Types list.
Add Linked Type	Click to add a new route type that is based on the Standard Route type. This button is available only when Standard Route is selected in the Route Types list.
Remove	Click to remove the selected item (that is, linked route type or level item). You cannot remove default route components.
Change	Click to open the Universal Browser to select a work process segment to use for route configurations. For the standard route, you must select a master work process segment. CAUTION: <i>Do <u>not</u> modify this setting without assistance from GE Intelligent Platforms.</i>

Route Management Resource Settings

The material and personnel specifications that are configured for the work process segment you are using can be associated with an equipment department. You can also configure the specifications' property values so that they can be modified when you are configuring route types and route components.

Resources and resource properties are available on the Resources tab of the Route Management Editor only if the Resources tab was selected for visibility when the [Route Management Editor Settings](#) were configured. If the Resources tab is not visible on the Route Management Editor, the resources and resource properties can be configured to be available on the Overview tab.

Resources

You can also configure which material and personnel specifications can be scoped by equipment specifications that are configured as departments.

When a material or personnel specification is associated with a department equipment specification, the resources configured for that specification can be used only with the equipment resources that are associated with the selected department. For example, there is a personnel specification called Operator and a department equipment specification called Assembly. If the Assembly department (an equipment instance) is selected, then the operator specification can only be set to persons who are associated with the Assembly department.

The following table describes the information about the resources that are available to configure route types and components.

Property	Description
Order	Specifies the order in which the resource specifications will appear in the Route Management Editor.
Resource Type	Specifies the resource type of the selected specification is; that is, equipment, material, or personnel.
Specification	Specifies the name of the specification. These are the specifications that are associated with the work process segment configured on the Route Management Settings tab.
Description	Specifies clarifying information about the selected specification.
Department	Specifies the equipment specification that represents the department that is associated with the material/personnel specification.
Scoped by Line	Select this check box to indicate that the equipment resource will be restricted to be a descendant of the production line that is configured for the route.

Resource Properties

The following table describes the information about the properties that are configured for the resources that are available to configure route operations. You can configure any or all of the resource properties to have configurable values when you are configuring route operations.

Property	Description
Resource Type	Specifies the resource type of the selected specification is; that is, equipment, material, or personnel.
Specification	Specifies the name of the specification that the property is configured for.
Description	Specifies clarifying information about the specification that the property is associated with.
Property	Specifies the name of the property.
Type	Specifies the data type of the property.
Default Value	Specifies the default value that is configured for the property. If the Is Specification Property check box is selected, then you can modify this value when you are configuring property values on an associated route operation.
Unit	Specifies the unit of measure of the property.
Is Specification Property	Select this check box to indicate that the selected property value can be modified when you are configuring property values on an associated route operation.
Custom Type	Specifies the custom data type to associate with the property. The values that are configured for the selected data type are available when you are

	<p>configuring the property value on an associated route operation.</p> <p>This field is available only if the Is Specification Property check box is selected and if the property's data type is String.</p>
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Route Management Editor Settings

You can customize the layout of the Route Management Editor for routes, operations, and steps to suit your business needs.

CAUTION: Do not modify these settings without assistance from GE Intelligent Platforms.

Configuration Panes

The following table describes the attributes available for customizing the layout of the Route Management Editor.

Property	Description
Tabs	Select the check box for each tab that you want to make available in the Route Management Editor.
Available Form Elements	Specifies all of the elements that are available to use in the Route Management Editor. Each list is specific to the route level that you are configuring; that is, route, operation, and step.
Custom Layout Structure	Specifies the elements that are available for use in the Route Management Editor by default, or by customization.
Properties	Specifies the properties of the element selected in the Custom Layout Structure.

Overview Configuration Actions

The following table describes the actions you can perform when customizing the Route Management Editor.

Property	Description
Add	Click to add a form element to the Custom Layout Structure. New form elements are added to the bottom of the Custom Layout Structure if no existing element is selected; otherwise, they are added immediately under the element you have selected.
Add Into	Click to add the selected element within another element that is already included in the layout structure. This button is available only when the element that is selected in the Available Form Elements list can be contained within the element selected in the Custom Layout Structure.
Remove	Click to remove the selected element from the Custom Layout Structure.
Move Up	Click to move the selected element upwards within the Custom Layout Structure.
Move Down	Click to move the selected element downwards within the Custom Layout Structure.

Route Management Validation Settings

You can select the rules that are used to validate route configurations and indicate whether violation of an enabled rule prevents a route from being approved. The Validation tab is available only when you select Standard Route in the Route Types list.

The following table describes the attributes available for configuring validation rules.

Property	Description
Is Enabled	Select the check box for each validation rule that you want to apply to your route configurations.
Prevents Approval	Select the check box for each validation rule that you want to use to prevent approval if a route configuration does not meet the validation criteria.

Qualification Management Settings

The Qualification Management settings allow you to configure the expiry interval for qualification test results.

The following table describes the system settings that are available.

Property	Description
Test Results Expiry Check Interval	Specifies the time interval, in hours, that qualification test results will expire. The default is 1 hour.

Execution Management Settings

The Execution Management settings allow you to configure which actions can be performed on the Execution Management displays, as well as to determine the order and groupings of the buttons.

The Execution Management module contains multiple views and each of those views can be configured with the buttons that your users require to perform different actions. PfMD provides default buttons and button groupings for each of the available views. You can make some modifications to the default buttons, such as changing the button label, or disabling the button so that it is no longer visible on the selected view. The default buttons trigger actions that are configured from the Custom Logic settings, and the extension cannot be directly modified from the Execution Management settings.

You can also add your own custom buttons and configure them using workflows, code extensions, or database queries for the extension. The input and output parameters then match those displayed in the Edit Action dialog box for the selected execution management view.

The following table describes the information about the execution management views and the attributes of the buttons that are available on each view.

Property	Description
Display	<p>Specifies the view that you want to configure actionable buttons for. The available selections are:</p> <ul style="list-style-type: none"> ▪ Operations View ▪ Clocked On Operations View ▪ Assigned Operations View ▪ Lot Operations View ▪ Shop Orders View ▪ Shop Order View ▪ Produced Lot View ▪ Shop Order Operations View ▪ Steps View ▪ Step View
Name	Specifies a unique internal name for the button. This property cannot be modified for the default buttons.
Button Label	Specifies the display name of the button. This property is the text that will be shown to the user in the Execution Management view.
Description	Specifies clarifying information about the button. This property is displayed as a tool tip in the Execution Management view when the user hovers over the button.
Visibility	Specifies whether the button is visible on the selected view.
Extension	Specifies the code extension to use to execute the button's action. This property is applicable only for custom buttons.

Common Actions

The following table describes the actions you can perform on the Execution Management tab.

Property	Description
Add	<p>Click to add a custom button to your production execution system. When you add a custom button and make it visible, it is available only on the view that is selected in the Display field.</p> <p>For example, if you add a custom button to Execution Management Clocked On Operations View and make it visible, then the button will be available to operators only after they have clocked on to a shop order and navigated to the My Operations display in the production execution system.</p> <p>If you want a custom button to be available on multiple views, you must manually add it to each view.</p> <p>NOTE: <i>By default, custom buttons are added to the top of Group 1. You can</i></p>

	<i>then move the button to another location within the group, or move it to another group.</i>
Edit	Click to modify the attributes of the selected button. For buttons that are available by default, you can modify only the button label (display name), the description, and whether the button is visible on the selected view. For custom buttons that you add to a view, you can modify all attributes, including the extension that you selected to execute the button's action.
Remove	Click to remove the selected button. This button is available only when a custom button is selected. If you added the custom button to multiple views, you must manually remove it from each view that no longer requires it.
Move Up	Click to move the selected button upwards within its group. If you want to move a button to a different group, use the Move to Group button.
Move Down	Click to move the selected button downwards within its group. If you want to move a button to a different group, use the Move to Group button.
Move to Group	Opens a dialog box where you click to select the group you want to move the selected button to, or to create a new group. If you create a new group, it will be added at the bottom of the list of groups in the table, regardless of which group the selected button was originally in.
Move Group Up	Click to move the group that contains the selected button upwards.
Move Group Down	Click to move the group that contains the selected button downwards.

Edit Action

The Edit Action dialog box is used to add custom buttons to an execution management view, or to modify a custom or default button.

Property	Description
Name	Specifies the name of the button. This field is read-only when a default button is selected.
Button Label	Specifies the display name of the button.
Description	Specifies clarifying information about the button.
Visible	Specifies whether the button is visible on the selected view.
Extension	Specifies the workflow to use to execute the button's action. When you are adding a custom button, you must select an extension whose input and output parameters match those defined for the selected execution management view. This property is not available if you selected a default button.

Move to Group

The Select Group to Move To dialog box is used to move the selected button to a new group and, if applicable, create a new group. You can move both custom and default buttons from group to group.

NOTE: *You can move only one button at a time.*

Custom Logic Settings

The Custom Logic tab is used to view and configure code extensions that are used to execute specific actions within your system.

You can create workflows and/or database statements that can be used to replace the existing default extensions, or add custom coded extensions to your system. Custom coded extension are created in Visual Studio and, after compilation, are placed within the following Proficy installation directories:

The .dll files that contain the custom-coded extension points must be available to both the server and the client(s). Create a user-defined application folder and PfmDExtensions subfolder on the server machine, and then add the .dll files to the subfolder. After adding the .dlls to the PfmDExtensions subfolder, you can package the application folder into a product option file, and then install it so that the application folder is deployed to all servers and clients. Clients are 32-bit, so the .dll files must be deployed to the 32-bit directory on the client machine(s). If the server is 32-bit, the .dll files must be deployed to the 32-bit directory on the server machine. If the server is 64-bit (the default configuration on a 64-bit machine), the .dll files must be deployed to the 64-bit directory on the server machine.

- On a 32-bit server, create an application folder here: <install dir> Program Files (x86)\Proficy\Proficy Workflow\Program\Applications with a PfmDExtensions subfolder.
- On a 64-bit server, create an application folder here: <install dir> Program Files\Proficy\Proficy Workflow\Program\Applications with a PfmDExtensions subfolder.

NOTE: *If you add custom coded extensions to your system, you must restart the Proficy client and the Proficy Server service.*

For information about packaging and deploying product options, see the *Proficy Service Provider Deployment* section in the *Proficy Service Provider Authoring* help.

The following table describes the information available on the Custom Logic tab.

Column Heading	Description
Extension Point	Specifies the area of the application (for example, a button) that is associated with the configured extension.
Description	Specifies clarifying information about the extension.
Extension	Specifies the action that takes place when the extension is executed.
Source	Specifies the source of the extension. Valid sources are: Default System-defined extension that cannot be changed. Workflow User-defined extension that is configured in Proficy Workflow.

	<p>Database Statement</p> <p>User-defined extension that is configured in the SQL database.</p> <p><i>NOTE: To use a user-defined database statement, you must have configured a database connection for your Connect database and the Extension Query Database Connection Configuration Name on the General tab must be set to that database connection.</i></p> <p>Custom Code</p> <p>User-defined custom code that is created in Visual Studio.</p>
Extension Point Details	<p>Specifies detailed information, including input and output parameters, that are configured for the extension point. If you configure workflows to be used as extensions for any of the extension points, you must configure the input and output parameters exactly as they are described in this panel for the selected extension point.</p> <p><i>NOTE: This panel can be collapsed to increase the configuration viewing area.</i></p>

Non-Conformance Management Settings

The Non-Conformance Management tab is used to select the reason trees that will be used to configure the defect category for a non-conformance record and the cause category when the record is dispositioned.

The following table describes the information available on the Non-Conformance Management tab.

Property	Description
Cause Tree	Specifies the reason tree that will be used to define the root cause of a defect/non-conformance. The selected reason tree is available when you create a disposition plan for a non-conformance record.
Defect Tree	Specifies the reason tree that will be used to categorize a defect/non-conformance. The selected reason tree is available when you create a non-conformance record.

Application Assembler Connection Settings

The Application Assembler tab is used to configure connection information to the Application Assembler Server. You can also configure extension sources to make their methods available on the web client.

The following table describes the properties available on the Application Assembler tab.

Property	Description
Application Assembler Server URI	Specifies the location of the Application Assembler Server that you want your web clients to connect to.
Application Assembler Application Key ID	Specifies the ID of the application key that was generated on the Application Assembler Server that allows your web clients to connect to that server.
Connect	Click to connect to the configured Application Assembler Server. This button is not available until the connections settings are saved or if the connection status is <i>Connected</i> .
Disconnect	Click to disconnect from the Application Assembler Server. This button is available if the connection status is <i>Connected</i> .
Extension Sources Configuration	
Name	Specifies the name of the extension sources that contain the methods that you want to make available to your web clients.
RemoteThing Identifier	Specifies the identifier to set on the Remote Thing in order to bind it to the extension source.
Availability	Specifies whether the extension source and its methods are available.
Make Available	Click to make the selected extension source and its methods available for use by your web clients.
Make Unavailable	Click to make the selected extension source and its methods no longer available to for use by your web clients.

Windchill Settings

The Windchill tab is used to configure the integration settings between your system and the Windchill PLM system.

The following table describes the settings that are available to integrate the Windchill system with PfMD in order to create routes that can be used within PfMD.

Property	Description
Windchill Export Directory	Specifies the location that the Windchill server exports files to. This location must be a folder that is local to the Proficy Server. The Proficy Server requires the Modify permission on this folder and its contents. PfMD monitors this location and imports the files as they are generated from Windchill.
Default Production Line	Specifies the production line to use when creating a route when the Windchill process plan does not have a line associated with it. Process plans that are associated with a line in Windchill ignore this setting and use the corresponding line in Proficy when the route is created. For example, if you configure this setting with ProductionLine10 as the default and a process plan in Windchill is associated with ProductionLine3, the route that is created from the process plan will use ProductionLine3. If the process plan is not associated with a production line, then the route that is created from that process plan will use ProductionLine10.
Document Type	Specifies the document type that Windchill documents will be categorized as in PfMD. <i>NOTE: You must first create a document type in the Document Type Editor that is configured as externally managed, externally linked, unique within production line, and linked to route. In addition, do not configure any allowed document extensions.</i>
Auto Approve	Select this check box to indicate that all routes that are imported from Windchill will be automatically approved. <i>NOTE: If an imported route has validation errors, it will remain in Draft status until those errors are corrected.</i>
Windchill Server Name	Specifies the name of the Windchill server. This is the server that exports the process plans that contain the information that is required to automatically create routes. This name can be entered as either a host name or as an IP address.
Port Number	Specifies the port number that the Windchill server uses for communication.
Windchill User Name	Specifies the name of a valid Windchill user.
Windchill Password	Specifies the password for the Windchill user.
Maximum number of times to retry	Specifies the maximum number of times to try to send a processing acknowledgment to the Windchill server if one or more of the response messages cannot be sent; for example, if the server or network is down, or if the credentials failed. Retries do not include the original attempt to send a

	processing acknowledgment. Therefore, if you enter 10 in this field and the original attempt to send a response message fails, then up to 10 more attempts are made to resend the response message, for a total of 11 attempts. The maximum number of retries is 99.
Time to wait between retries	Specifies the length of time—in hours, minutes, and seconds—to wait between acknowledgment attempts.

UPGRADING PfMD

You can upgrade the installed version of PfMD.

NOTES:

- *If you are upgrading to PfMD v7.0, you must first upgrade Proficy Workflow v2.2 SP1 SIM4 to v2.5 SIM3*
- *If you are upgrading to PfMD v6.3 SP3, you must first upgrade Proficy Workflow v2.2 SP1 to v2.2 SP1 SIM4.*
- *If you are upgrading from PfMD v6.3 SP1 to v6.3 SP2 or greater, you do not need to uninstall SP1 first. All other upgrade paths require that you uninstall the previous version before installing the new version.*

The following upgrade paths are supported:

- Upgrade from PfMD 6.3 SP3 to PfMD 7.0
- Upgrade from PfMD 6.3 SP2 to PfMD 7.0
- Upgrade from PfMD 6.3 SP1 to PfMD 7.0
- Upgrade from PfMD 6.3 SP2 to PfMD 6.3 SP3
- Upgrade from PfMD 6.3 SP1 to PfMD 6.3 SP3
- Upgrade from PfMD 6.3 SP1 to PfMD 6.3 SP2
- Upgrade from PfMD 6.3 to PfMD 6.3 SP2
- Upgrade from PfMD 6.3 to PfMD 6.3 SP1
- Upgrade from PfMD 6.2 to PfMD 6.3 SP2
- Upgrade from PfMD 6.2 to PfMD 6.3 SP1
- Upgrade from PfMD 6.2 to PfMD 6.3

IMPORTANT: *The following upgrade considerations apply only if you are upgrading from v6.3 SP1 to v6.3 SP2 or greater.*

IsApproval Parameter and Requires Approval Attribute

In PfMD 6.3 SP1, when you used Restore Defaults to apply the master data, the work process segment, PFM_Step_Process_Segment, was automatically configured with a parameter called IsApprovalStep. If you wanted route steps to require approval, you then had to configure the route Editor Settings for steps (on the PfMD Configuration Editor) to use this parameter.

In PfMD 6.3 SP2, the IsApprovalStep parameter was removed from the master data setup and has been replaced with the Requires Approval field on the Route Management Editor. However, the IsApprovalStep parameter still remains on PFM_Step_Process_Segment to support existing routes.

The following table describes the upgrade information.

If this is...	Then...
a new 6.3 SP2 or greater installation	Restoring defaults sets up the Overview tabs for route operations and steps to automatically include the Requires Approval field on the Route Management Editor.
an existing 6.3 SP1 installation that is being upgraded to 6.3 SP2 or greater	<p>Restoring defaults sets up the Overview tabs for route operations and steps to automatically include the Requires Approval field on the Route Management Editor.</p> <p>The IsApprovalStep parameter remains on PFM_Step_Process_Segment. However:</p> <ul style="list-style-type: none"> ▪ the value of the IsApprovalStep parameter is not copied to the Requires Approval field. If you open an existing route (created in v6.3 SP1), the Requires Approval field value is False because that is the default value for the field. ▪ for existing shop orders (created in v6.3 SP1) with steps that were configured to require approval, those steps will still require approval, based on the original route configuration. ▪ for a shop order created in v6.3 SP2 from a route created in v6.3 SP1, none of the steps will require approval, based on the configuration stated above. ▪ if a step on an existing route (created in v6.3 SP1) requires approval, then you must create a new route or create a new revision of the existing route and configure the step(s) to require approval.

Tools Configuration Setup

In PfMD 6.3 SP1, if you wanted the ability to configure tool requirements, you had to manually add the attributes to the route Editor Settings for the route segment on the PfMD Configuration Editor.

In PfMD 6.3 SP2 or greater, the Tools configuration area is automatically included on the Route Management Editor when the default master data is restored.

If this is...	Then...
a new 6.3 SP2 or greater installation	Restoring defaults sets up the Overview tab for route operations and steps to automatically include the Tools configuration area on the Route Management Editor. The Tool_ prefix that is used for the tool resource name is also automatically included.
an existing 6.3 SP1 installation that is being upgraded to 6.3 SP2 or greater	<ul style="list-style-type: none"> ▪ Restoring defaults sets up the Overview tab for route operations and steps to automatically include the Tools configuration area on the Route Management Editor. The Tool_ prefix that is used for the tool resource name is also automatically included. ▪ Not restoring defaults requires that you manually add the Tools configuration information to the route operation and/or stepEditor Settings in the PfMD Configuration Editor. You must also configure the Tool_ prefix in the Properties area on the Editor Settings tab for

	each route level that you configure the Tools configuration information for.
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Apply Equipment Classes

The Apply Equipment Classes button on the PfMD Configuration Editor is new for v6.3 SP2. Using this button automatically associates the PFM_ProductionLine, PFM_WorkCenter, and PFM_StorageUnit equipment classes with all of the existing production lines, work centers, and storage unit equipment instances, respectively, that have been configured in the equipment model. If you do not want all of your equipment instances to be associated with these classes, then you can manually associate these classes with individual, applicable equipment instances.

IMPORTANT: *If you do not associate any of your equipment instances with these classes, then the WIP, Genealogy, and Document Management modules will not work correctly.*

Database Views

In PfMD v6.3 SP2, two SQL database views (ShopOrderOperationLotRootView and ShopOrderView), which were originally created in PfMD v6.2, have been removed.

If this is...	Then...
a new 6.3 SP2 or greater installation with a new SQL database	The database views are not created.
a new 6.3 SP2 or greater installation with an existing SQL database	The database views are retained, but are not used. You can remove the views manually to clean up your database.

Button Layout

The Execution Management tab on the PfMD Configuration Editor is used to configure the layout and visibility of the action buttons that are available on the Execution Management displays. If you upgrade to v6.3 SP2 or greater from an earlier version of PfMD, then the button layout that you configured in the earlier version is not affected if you restore the default master data in the new version.

Execution Statuses

In PfMD 6.3 SP2 or greater, new execution statuses are included in the master data. These execution statuses are used in conjunction with non-conformance records within the Execution Management module. The new statuses are:

- For shop orders:
 - Cancelled
- For operations:
 - Pending Approval
 - Hold

- Pending Rework
- Cancelled
- For steps:
 - Hold
 - Pending Rework
 - Cancelled

If this is...	Then...
a new 6.3 SP2 or greater installation	Restoring defaults automatically includes the execution statuses for non-conformances.
an existing 6.3 SP1 installation that is being upgraded to 6.3 SP2 or greater	<ul style="list-style-type: none"> ▪ Restoring defaults automatically includes the execution statuses for non-conformances. ▪ Not restoring defaults requires that you manually add the new execution statuses to the Execution Statuses tab on the PfMD Configuration Editor.

CONTACT INFORMATION

If you purchased this product through an Authorized Channel Partner, please contact the seller directly.

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Technical support e-mail:	support.ip@ge.com
Customer care e-mail:	customercare.ip@ge.com
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Primary language of support:	English

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