Proficy Workflow 2.6 SP1

Important Product Information (IPI)

We want to hear from you. If you have any comments, questions, or suggestions about our documentation, send them to the following email address:

doc@ge.com

Chapter 1. About the IPI

The IPI (Important Product Information) provides a quick reference to what's new in the latest version of Workflow.

The following information is available for Workflow 2.6 SP1.

Category	Description
What's New or Changed in This Release	This section outlines the new and updated product features that are available for this release. Links are available to relevant documentation.
Recommendations	Recommendations provide procedures that may be useful in specific circumstances. Links are available to relevant documentation.
Limitations	Limitations provide notifications about possible application and system constraints or restrictions in this release.
Resolved Issues	Resolved issues are those defects that have been fixed for the release.
Known Issues	Known issues are those issues that are documented in the defect tracking system that affect this release, and may be fixed in a future release.

Chapter 2. Release Notes

Provides a list of new and updated features for this release, as well as any resolved issues, limitations, and known issues.

Release Information

Module Name	Workflow
Release Date	June 22, 2020
Documentation Build Date	June 19, 2020

Beginning with Workflow 2.6, information is available on a single page with links to relevant documentation. Use the following links to navigate to each section on this page.

- [What's New or Changed in This Release](#) *(page 4)*
- [Recommendations](#) *(page 4)*
- [Limitations](#) *(page 5)*
- [Resolved Issues](#) *(page 5)*
- [Known Issues](#) *(page 8)*

What's New or Changed in This Release

This section outlines the new and updated product features for the 2.6 SP1 release.

- Install Workflow Task Client from the `InstallFrontEnd.exe` file. The installer adds the task client plugin to Operations Hub. See:
    - Install the Task Client *(page   )*
- Workflow is updated to the latest released version of the Common Licensing software, v18.9.
- SQL Server 2019 is supported for Workflow. See:
    - [SQL Server Options](#) *(page 15)*
- Workflow is updated with the latest End User License Agreement (EULA) and copyright stamp, where applicable.
- Workflow is migrated to the Visual C++ 2015-2019 Redistributable package for both 32-bit and 64-bit operating systems.
- Workflow is integrated with the Web Help system to provide help documentation, which is accessed using any regular browser.

Recommendations

Recommendations provide procedures that may be useful in specific circumstances.

- When installed on the same machine, GE Web HMI and Workflow both require port 8444 for installations prior to Workflow 2.6. The Workflow 2.6 default port is now 8447, however during an upgrade from versions earlier than 2.6, the port number is NOT changed, and remains 8444. For information about resolution of port conflicts, see Resolve Port conflicts between prior Proficy Workflow installations and Web HMI *(page   )*.
- Upgraded Workflow 2.6 installations from earlier versions continue to use the existing configured certificates, regardless of the operating system. If you are upgrading or installing Workflow on an older operating system and you want certificates with SAN properties, you can use the Workflow ConfigureCertificates tool to generate new certificates. See Install Certificates on older Operating Systems *(page   )* to generate certificates with the SAN property.
- You can now configure Workflow to connect to a remote SQL Server instance using Windows Authentication. Prior to Workflow 2.6, it was mandatory to configure the Workflow SQL Server instance to use Mixed Mode Authentication. This requirement has been removed from Workflow 2.6 and it is now possible for Workflow to connect to a SQL Server instance configured for Windows Authentication only. For security reasons, Windows Authentication is recommended as it eliminates the need for Workflow to save the database user name and password to disk. See Configure Windows Authentication for Workflow *(page   )*.

Limitations

Limitations provide notifications about possible application and system constraints or restrictions in this release.

- Beginning with the Workflow 2.6 release, Vision is not shipped as a part of Workflow. The Vision help topics have not been updated, and only apply to prior Workflow versions. Note that Vision 6.3 can be installed separately and will function with Workflow 2.6.

Resolved Issues

Resolved issues are those defects that have been fixed for the current release.

📝 **Note:** These fixes are ported to 2.6 SP1 from 2.5 SP4 SIM 5, SIM 6, and SIM 7 releases.

Tracking ID	Description
US421239	The method `DeleteMaterialLotOrSublotWithActuals` introduced in 2.5 SP4 SIM4 has been removed from the IMaterial interface. This method did not perform consistently in all cases.
DE136625	Report synchronization failed due to a duplicate key issue in the `Dim_WorkflowSchedule` and `Dim_SegReqEquipmentSpecification` packages. To resolve the issue, data staging queries for the two reporting packages have been modified to exclude any duplicate records.
DE136672	There were no alerts or reminders for security certificates that are expiring within a month. This issue has been resolved. Workflow certificates are checked daily for their expiration period. If any certificate is due for expiry within a month, a warning message is displayed to the logged in user.

Tracking ID	Description
DE136677	Errors occurred when saving class changes for model objects due to performance issues. This issue has been resolved.
DE136635	Resolved performance issues related to export and import of materials in a model, and also browsing these materials on the Client: • **For Export**: Fixed the redundant data creation, and optimized the export logic. • **For Import**: Improving the export performance resulted in less number of excel files for import. Import logic is also optimized while saving the GUIDs in excel.
DE136626	Workflow instances stopped working due to `System.Data.SQLClient.SQLException` and had to be terminated. Handled the specific exception by retrying workflow instance completion three more times. This allowed for an extra time frame of total 180 (60*3=180) seconds to resume the network.
DE136627	After restarting the Proficy Server, Workflow calendar based time events do not occur if the event's first occurrence date is in the past. This issue is resolved by setting the `Repeat event every __ day` field value appropriately. It is set to 1 if the recurrence is needed daily.
DE136631	Export/Import of user solutions failed without throwing any error messages. To fix this issue, a validation logic has been added to check all the dependent displays of the user solution that are added in the content.
DE136628	The communication object could not be used for communication. To fix the issue, the `MaxMessageSize` attribute needs to be configured in `ProficyClient.exe.config` and `ProficyServer.exe.config` by increasing the value from 10485760 to 15728640. The `MaxItemsinObjectGraph` quota is increased from 300000 to 1500000.
DE136630	Synchronizing tags from Historian to Workflow failed due to conflicts in SQL database collation. This issue has been resolved.

Workflow 2.6 SIM 1 Fixes:

Tracking ID	Description
US274688	The **Full Name** field can be entered for a Workflow user to display assigned task user's full name in the Web HMI Task List. This field is used when displaying assignment and performer information in the Web HMI Task List.
US287276	Enabled to import user's full name when synchronizing users from the Active Directory. A user's full name is retrieved from the domain controller during the authentication process, and is used to populate the **Full Name** field on the created user account.
DE9510	Previously, you were not able to duplicate the jumps defined in the eSOP task steps from the Task Editor screen. This issue has been resolved.
DE15101	Previously, on duplicating an eSOP task, the email configuration was not duplicated correctly. To fix this, all email configuration is now preserved when duplicating an eSOP task.
DE47848, DE82901	When importing model objects with aspects applied (such as when Plant Applications is used in conjunction with Workflow), it lead to import failure. The import process is fixed now to handle null values in the import file.
DE49185	Equipment provisioning script created records with invalid parents. To resolve the issue, equipment creation commands are now validated for proper parent-child relationships before creating the equipment.

Tracking ID	Description
DE50264	Equipment provisioning script "create property" command (6) created property with NULL data type. To resolve this issue, additional checks have been added to ensure that a valid property data type has been specified.
DE52998	Communication exception occurred due to a faulty channel state. As a fix, the communication channels are reclaimed if they are detected to be expired, or in a non-opened state.
DE64489	The workflow instances screen displayed an error whenever a workflow instance in the 'Stopped' state was selected. This issue introduced in 2.5 SP3 has been resolved.
DE68886	Projects and Import/Export functions were allowing to import duplicate process segment specifications. To resolve this issue: • Database schema has been modified to prevent creation of process segment specifications with a duplicate S95Id. • Projects and Import/Export functions have been modified to fail and display a meaningful error message when an attempt is made to import a process segment specification with a duplicate S95Id.
DE79117	Previously, an exception was thrown when editing a Configure Event Activity. This issue has been resolved.
DE79380	Previously, keywords were not replaced in task level work instructions on the desktop client. This issue has been resolved. Keywords are now replaced as expected in the initial load of work instructions.
DE79400	The Edit Database connection screen was incorrectly limiting port number range, and created incorrect connection string when the port is specified. This issue has been resolved. The valid range for the SQL Server port number is now 1 to 65535. The data source in the connection string excludes the instance name if a port number is also specified.
DE79401	Previously, you were not able to save the database connection with Excel ODBC data provider DSN. This error happened due to a missing database (worksheet) property on the DSN. The error message has been updated.
DE82900	Exporting an equipment failed for the equipment that contained the property with ' (single quote) in its name. The S95 editor also failed to show any properties for the equipment instance when such a property was created. This issue has been resolved.
DE82902	Assigning tasks dynamically made the tasks visible to incorrect users. This issue has been resolved. Assignment context is now correctly determined when the assigned resource is not set until runtime.
DE89213	Previously, indexes duplicating the primary key existed on many SOADB tables. The duplicate indexes are no longer created, and existing duplicate indexes will be removed during an upgrade from earlier versions.
DE83062	Previously, importing personnel class failed if the target system was missing aspects from the source system. Personnel objects can now be imported successfully when the target system does not have all personnel model aspects present on the source system.
DE83916	Configure Server was not updating the port numbers in the `UserStartup.xml` file. This issue has been resolved. If the server HTTP or TCP ports are modified using the Configure Server tool, the local client configuration is also updated to connect on the new ports.

Tracking ID	Description
DE91292	You can now delete a lot or sublot and all associated material actuals from the production responses. A new method has been added to the IMaterial interface: `DeleteMaterialLotOrSublotWithActuals`. Use this method with caution!
DE91394	Instance class cannot be found during process to create or update material definition properties. This issue has been resolved.
DE95051	The default height of the navigator did not facilitate the visibility of all the models. The navigator has been fixed with more vertical space to display all the default models without the need to scroll through them.
DE95754	The Generate Web HMI Model process failed with the following error: "Unable to cast object of type 'System.DBNull' to type 'System.String'" on Equipment instances with null descriptions." This issue has been resolved to correctly process the equipment instances with null description fields.

Known Issues

Known issues are those issues that are documented in the defect tracking system that affect this release, and may be fixed in a future release.

Tracking ID	Description
DE8399	Browsing OPC Items from RSLinx Classic OPC Server - When browsing OPC items from the server, branches show items from previously expanded branches. **Workaround**: Reset the browser by clicking the **Browse Server** button again, then browse the desired branch.
DE56348	After an OPC connection to a Cimplicity server is added in Workflow, new projects added to the Cimplicity OPC server are not visible from the OPC Item browser in Workflow. **Workarounds**: • Change the **ProgID** of the OPC connection to a different value and **Save**. Then change the **ProgID** back to the original value and **Save**. • Delete the OPC server connection from Workflow and re-create it. • Restart Proficy Server. Performing any of the above actions will cause the correct list of items to be returned from the Browse action.
DE76343	After installation on Windows 10 or Window Server 2016 "General Electric" Start Menu has no content. This issue is caused by Microsoft's Windows operating system. **Workaround**: Log out of your current Windows session and log back in.

Tracking ID	Description
DE136938	Guest user privileges updated in Workflow are not getting updated to Operations Hub task client. As a result, when guest users with no privileges are upgraded to possess administrative rights in Workflow, they still are not able to access their scheduled tasks in the task client widget in Operations Hub. **Workaround**: Restart Proficy Server.

Related concepts
SQL Server Options *(page 15)*

Related tasks
Install the Task Client *(page   )*
Resolve Port conflicts between prior Proficy Workflow installations and Web HMI *(page   )*
Install Certificates on older Operating Systems *(page   )*
Configure Windows Authentication for Workflow *(page   )*

Chapter 3. Upgrade Workflow

Overview

⚠️ **Important:** When you upgrade the application server, you must also upgrade all of the remote clients that connect to that server to use the same version of Workflow. You can upgrade Workflow without having to uninstall the program.

Upgrade Paths

The following upgrade paths are supported:

- From Workflow 2.5 with latest SIM to Workflow 2.6
- From Workflow 2.5 SP1, SP2, SP3, SP4 with latest SIM to Workflow 2.6
- From Workflow 2.5 Reporting SP1, SP2, SP3, SP4 with latest SIM to Workflow 2.6
- From Workflow 2.2 SP1, SP2 to Workflow 2.6
- From Workflow 2.2 SP1, SP2 Reporting to Workflow 2.6 Reporting
- From Workflow 2.5 to Workflow 2.5 SP1

   📝 **Note:** All versions of Workflow prior to version 2.5 SP1 must first be upgraded to version 2.5 before you can upgrade to Workflow 2.5 SP1.

- From Workflow 2.1 to Workflow 2.5
- From Workflow 2.2 service pack 1 (SP1) to Workflow 2.5
- From Vision 6.2 to Vision 6.3

   📝 **Note:** All versions of Vision prior to version 6.3 must be uninstalled before being upgraded to Workflow 2.5 SP1.

- From Workflow 2.1 to Workflow 2.2 service pack 1 (SP1)
- From Workflow 2.0 to Workflow 2.2 service pack 1 (SP1)
- From Workflow 1.5 service pack 4 (SP4) to Workflow 2.2 SP1

   📝 **Note:** You must first upgrade Workflow 1.5 SP4 to Workflow 2.0.

If you are upgrading from an earlier version of Workflow, contact Technical Support.

Legacy Certificates

Starting with Workflow 2.5, legacy certificates are no longer supported.

Upgrading Extension Servers

If you are installing or upgrading an extension server (Workflow or User), you must have already installed or upgraded an application server of the same version to host the Core services on a separate machine.

Upgrading 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.

Upgrading Web-based Forms for the Task List

If you have web-based forms as part of an existing workflow that you have created prior to the release of Workflow 2.2 SP1, you must bind them again inside the **Form activity** in order for them to function in the Task List.

📑 **Note:** This upgrading issue affects existing web-based forms only, and not HTML5 web forms that are created in Workflow 2.2 SP1.

Upgrading a Clustered Environment

After upgrading Workflow on the primary server machine, you must reconfigure the failover server in the cluster, as well as reconfigure that machine as the primary server in the cluster.

SQL Server Database Replication

When upgrading the application, if you are using a replicated database and have replication turned on, you must turn it off, upgrade, and then turn it on again. You must also upgrade the replicated database. For more information, see **Upgrade a Replicated Database**.

Password Security

During an upgrade installation, the account lockout capability is automatically enabled; all other password security features are disabled, by default. To enable any of the other password security features, you must use the **Configure Security** tool after the upgrade installation has successfully completed.

Windows Users

Workflow 2.0 supports Windows domain names with personnel names and login names. If you choose to use the new functionality included with Workflow 2.0 (that is, active directory universal or global groups mapped to Workflow groups), then when your Windows users log in, their personnel name and login name will both be updated to include the domain name, and the personnel name will change to match the login name. For example, the personnel name *John Smith* and login name *johnsmith* will both change to *<domain name>\johnsmith*.

⛔ **Warning:** If you were using Windows user accounts in a prior version of Workflow, any workflows that reference individual users will no longer work! These personnel names will NOT be updated when the Windows users log in. You must manually change these names to include the domain name with a backslash character between the domain name and personnel name. However, if you reference personnel classes in your workflows, no change is required; the workflows will work as they did in the previous version of Workflow.

Related tasks
Configure a Form activity *(page   )*
Configure the failover cluster server *(page   )*
Configure the primary cluster server *(page   )*
Upgrade a replicated database *(page   )*

Upgrading Workflow

You can upgrade your Workflow software without uninstalling the previous version.

📄 **Note:**

- If you are upgrading your database to SQL Server 2019, you must first upgrade Workflow to v2.6 or greater, and then upgrade SQL Server.
- Administrative user names and passwords used during your initial installation are not retained during the upgrade process. You can set these credentials again during this process.
- Starting with Workflow 2.5, legacy certificates are no longer supported.

1. Run the installation software. If the splash screen does not appear, run `InstallFrontEnd.exe` on the root directory of the installation folder.

2. Review the license agreement, and then click **I Agree**.
The **Security** page appears.

3. Specify the administrator's authentication credentials.

   a. In the **Name** field, accept the default name or enter a new name.

   b. In the **Password** field, enter a password.

   > 📝 **Note:**
   > • If password complexity is enabled and configured, the Administrator password must
   >   follow the same rules as defined for user passwords.
   > • If you are using the **Workflow Task List in Web HMI**, select the **Web HMI Access**
   >   check box, enter the `Web HMI Host name` or `IP address`, and then click **Next** to
   >   view the **Application Upgrade** page.

   > ⚠️ **Important:** When you use the Configure Security tool to make changes to password
   > security, you must re-enter and confirm the Administrator user's password before you can
   > save your changes.

   The **Application Upgrade** page appears.

4. **Optional:** If you do not want to back up your SQL Server database, or if you have performed
   your own backup, select the Do not back up the database automatically check box.

   > ℹ️ **Tip:** At any time during the configuration process, you can click **Back** to return to a
   > previous page to change your settings.

5. Click **Install**.
   The **Installation** page appears, displaying the status of each installation step.

6. When the installation is complete, click **Exit**.

📝 **Note:**

If the installation fails at any point during the Database setup and configuration, you will have to
uninstall Workflow via the Windows Control panel, restore your database from backup, resolve the
database issue and perform the upgrade again.

If the installation fails at any point after the Database setup, or you want to change a configuration
setting after the installation completes, you can open the appropriate standalone component to
configure the required information. For more information, see: Post-installation Configuration *(page)*.

Chapter 4. Software Requirements

Application Server Software Requirements

This topic describes the software requirements for your installation.

Installation

📄 **Note:** In addition to the following material, see the **Architecture Considerations** in the web help for information on options related to the operation mode when installing on a 64-bit computer.

Use the following links to view the various options:

Related concepts
Enable Connection between Workflow and SQL Server *(page   )*

Operating System Options

Operating system options apply to all servers that utilize Workflow.

The following operating systems are supported:

- Microsoft® Windows® 10 (32- or 64-bit)
- Microsoft® Windows® 8 (64-bit)
- Microsoft® Windows® 7 Professional SP1 (32- or 64-bit)
- Microsoft® Windows® Server 2019 (32- or 64-bit)
- Microsoft® Windows® Server 2016 (32- or 64-bit)
- Microsoft® Windows® Server 2012 R2 (64-bit)

  📄 **Note:** You must have the April 2014 updated rollup for Windows® Server 2012 R2 (2919355) installed.

- Microsoft® Windows® Server 2012 Standard (64-bit)
- Microsoft® Windows® Server 2008 SP2 (32-bit only)
- Microsoft® Windows® Server 2008 R2 SP1 (64-bit)

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

SQL Server Options

SQL Server options apply to all servers that utilize Workflow.

📝 **Note:**

- The Workflow 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.
- For security reasons, we recommend that SQL Server be configured with Windows authentication, but Mixed Mode authentication is also supported.

The following SQL Server systems are supported:

- Microsoft® SQL Server 2019

  📝 **Note:** If you are upgrading your database to SQL Server 2019, you must first upgrade Workflow to v2.6 SP1 or greater, and then upgrade SQL Server.

- Microsoft® SQL Server 2017
- Microsoft® SQL Server 2016
- Microsoft® SQL Server 2014 (32- or 64-bit)
- 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® Windows® Server 2012 Essentials

  📝 **Note:** In order for Workflow to connect to any edition of Microsoft® SQL Server 2012 or later, you must configure SQL Server to enable the *sysadmin* role for the applicable login account. For more information, see **Enable Connection between Workflow and SQL Server 2012**.

- Microsoft® SQL Server 2008 R2 with the latest service pack
- Microsoft® SQL Server 2008 Standard or Enterprise Edition (32- or 64-bit)
- Microsoft® SQL Server 2008 Express

  📝 **Note:** If you are using SQL Server Express with the Workflow application server, you cannot use the Reporting Database.

The 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.

.NET Requirements

.NET requirements apply to all servers that utilize Workflow.

The following .NET option is supported:

Microsoft® .NET Framework 4.6 (Full Framework) or greater)

📒 **Note:** .NET 4.7 (Full Framework) is mandatory if you are using FIPS or TLS 1.2.

📒 **Note:** Custom display or from 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 or greater.

Other Requirements

Other requirements apply to all servers that utilize Workflow.

The following requirements are supported:

- Microsoft® Excel 2007 or greater. 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.

    📒 **Note:** 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 R2

- • Windows Communication Foundation HTTP Activation musts be enabled.
- • Microsoft System CLR Types (32-bit only) for Microsoft SQL Server 2016, 2017, and 2019.

Other Supported Software

Other supported software applies to all servers that utilize Workflow.

The following software is supported:

📄 **Note:** Proficy Portal and all features associated with this product are no longer supported with 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 visualization system for x86-64 systems
- • Remote Desktop Session Host (Terminal Services)
- • 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.

- • 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)

   📄 **Note:** For all new deployments, it is recommended you use Simulated Directory instead of AD LDS for increased performance.

Client-only Software Requirements

This topic describes the software requirements for your installation.

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

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

The software requirements for a client-only installation are the same as for the application server.

Use the following links to view the various options:

Reporting Database Software Requirements

This topic describes the software requirements for your installation.

The Reporting database must be installed on the same machine as the SQL Server instance which will hold the database. A remote SQL Server instance is not supported.

Reporting database installation have the same software requirements as the main application server installation.

Use the following links to view the various options:

Web Task List Software Requirements

This topic describes the software requirements for your installation.

Web Task List installations have the same software requirements as the main application server installation.

Use the following links to view the various options:

Workflow Task Client Software Requirements

This topic describes the software requirements for your installation.

In addition to the software requirements as the main application server installation, Workflow Task Client installation also requires the following to be installed on the same machine.

- Operations Hub 1.7

Use the following links to view the various options:

Server Clustering and Failover Software Requirements

This topic describes the software requirements for your installation.

Operating System Options

The following operating systems are supported:

- Microsoft® Windows® Server 2016 (32- or 64-bit)
- Microsoft® Windows® Server 2012 R2 (64-bit)
- Microsoft® Windows® Server 2012 Standard (64-bit)
- Microsoft® Windows® Server 2008 R2 (64-bit)

Other than the supported operating systems, the software requirements for Server clustering and failover installations are the same as for the main application server installation.

Use the following links to view the various options:

- SQL Server Options *(page 15)*
- .NET Requirements *(page 16)*
- Other Requirements *(page 16)*
- Other Supported Software *(page 17)*

Related concepts
Supported and Validated Cluster Configurations *(page   )*

Extension (Workflow and User) Servers Software Requirements

This topic describes the software requirements for your installation.

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

Use the following links to view the various options:

- Operating System Options *(page 14)*
- SQL Server Options *(page 15)*
- .NET Requirements *(page 16)*
- Other Requirements *(page 16)*
- Other Supported Software *(page 17)*

Related concepts
Enable Connection between Workflow and SQL Server *(page   )*

Chapter 5. Hardware Requirements

Hardware Recommendations

This section describes the recommended hardware specifications which are needed for Workflow to perform well.

The following table provides general guidelines for hardware recommendations based on 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 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 Workflow Server

The hardware recommendations above are for servers where the SQL Server is not on the Workflow server system. If you choose to run SQL Server on the 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 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 Digital applications, such as Historian, CIMPLICITY, or iFIX.

📝 **Note:** When using Windows$^{®}$ Server 2008 R2 or Windows$^{®}$ Server 2012 as the operating system, keep the following information in mind. 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:

- SQL Server machine: 4 GB RAM (*required minimum*)
- Use Windows Authentication only. For information on how to connect to a remote SQL Server instance using Windows Authentication, please see **Configure Windows Authentication for Workflow** in the Workflow Help documentation.
- Exclude the database files from anti-virus scanning
- Use multiple processors for every installation
- Enable the default backup job or create a maintenance plan
- For `tempdb`, the number of files configured should be based on the number of processors that the server has (for more information, see Optimizing tempdb Performance)

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

Hardware Requirements for an Application Server

This topic describes the hardware required for your product installation.

- 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 a scroll wheel or compatible pointing device (*such as a touch screen*)

Hardware Requirements for Single Servers

This topic 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^{TM} 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 a scroll wheel or compatible pointing device (*such as a touch screen*)

Hardware Requirements for Extension Servers

This topic describes the hardware required for your product installation.

- 3 GHz Core^{TM} 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 1024c768 resolution and at least 65535 colors
- Minimum monitor support
- Two-button mouse with scroll wheel or compatible point device (*such as a touch screen*)

Hardware Requirements for User Servers

This topic describes the hardware required for your product installation.

- 3 GHz Core^{TM} 2 Duo process 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

This topic describes the hardware required for your product installation.

- 3 GHz Core^{TM} 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

This topic describes the hardware required for your product installation.

- 3 GHz Core^{TM} 2 Duo Processor with 3 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

This topic describes the hardware required for your product installation.

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

- *Failover* clustering is supported on 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 Workflow legacy servers.
- 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.

Related concepts
Supported and Validated Cluster Configurations *(page   )*

Chapter 6. Compatibility

Compatibility and Upgrading with GE Products

If you plan to use one or more other GE products with Workflow, it is important to first determine whether the version of each such product is compatible with the latest version of this application.

Compatible GE Products

Workflow may be used with a number of other GE products. Depending on the product or product version, you may need to run Workflow in a particular architecture mode or take additional measures during set up to ensure compatibility between the products. If so, the notes in the following table provide the necessary details.

Workflow 2.6 SP1

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1	4.5	5.0	2.2	6.3	1.7	Not Supported	Not Supported	Not Supported
8.2	5.0	5.1		6.3 SP1				
9.0	5.5	5.5		6.3 SP2				
9.0 R2	6.0	5.8		7.0				
9.5	7.0	5.9		7.0.1				
10								

Workflow 2.6

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1	4.5	5.0	2.2	6.3	1.7	Not Supported	Not Supported	Not Supported
8.2	5.0	5.1		6.3 SP1				
9.0	5.5	5.5		6.3 SP2				
9.0 R2	6.0	5.8		7.0				
9.5	7.0	5.9		7.0.1				
10								

Workflow 2.5 SP4

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1	4.5	5.0	2.2	6.3	Not Supported	Not Supported	Not Supported	8.1
8.2	5.0	5.1		6.3 SP1				
9.0	5.5	5.5		6.3 SP2				
9.0 R2	6.0	5.8		7.0				
9.5		5.9		7.0.1				

Workflow 2.5 SP3

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1 8.2 9.0 9.0 R2	4.5 5.0 5.5 6.0	5.0 5.1 5.5 5.8	2.2	6.3 6.3 SP1 6.3 SP2 7.0	Not Supported	Not Supported	Not Supported	8.0

Workflow 2.5 SP2

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1 8.2 9.0 9.0 R2	4.5 5.0 5.5 6.0	5.0 5.1 5.5 5.8	2.2	6.3	Not Supported	Not Supported	Not Supported	7.5

Workflow 2.5 SP1

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1 8.2 9.0 9.0 R2	4.5 5.0 5.5 6.0	5.0 5.1 5.5 5.8	2.2	6.3	Not Supported	Not Supported	Not Supported	Not applicable at time of release

Workflow 2.5

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1 8.2 9.0 9.0 R2	4.5 5.0 5.5 6.0	5.0 5.1 5.5 5.8	2.2	6.3	Not Supported	Not Supported	Not Supported	7.0 7.0 SP2 7.0 SP3 7.0 SP4 7.0 SP5

Workflow 2.2 SP1

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1 8.2	4.5 5.0 5.5	5.0 5.1 5.5 5.8	2.2	6.2	Not Supported	2.2	3.5	6.3 SP1 6.3 SP2 6.3 SP3

Workflow 2.2

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1 8.2	4.5 5.0 5.5	5.0 5.1 5.5 5.8	2.2	6.2	Not Supported	2.2	3.5	6.3

Workflow 2.1

CIMPLICITY	Historian	iFIX	Open Enterprise	Plant Applications	Operations Hub	Plant Applications Service Provider (PASP) (PASP)	Proficy Portal	Production Manager
8.1	4.5	5.0	1.6	5.0	Not Supported	1.5	3.5	6.2
8.2	5.0	5.1		6.0				
	5.5	5.5		6.1				

📑 **Note:**

The following notes apply to product versions compatible with Workflow 2.5 and Workflow 2.6:

- CIMPLICITY 9.0: End points names must not exceed 32 characters.

The following notes apply to product versions compatible with Workflow 2.2, 2.2 SP1, 2.5:

- CIMPLICITY 8.1 and 8.2: OPC is recommended for exchanging data between Workflow and CIMPLICITY.
- Historian 5.0: Data types added to Historian 5.0 (ihUInt64, ihUInt32, ihUInt16, ihByte, ihBool) are not supported for binding to parameters or local variables in Workflow.

Compatible Upgrade Paths for Workflow 2.6

Workflow 2.6 can be used to upgrade the following versions of Workflow:

- Workflow 2.5 with latest SIM
- Workflow 2.5 SP1, SP2, SP3, SP4 with latest SIM
- Workflow 2.5 Reporting SP1, SP2, SP3 SP4 with latest SIM
- Workflow 2.2 SP1, SP2
- Workflow 2.2 SP1, SP2 Reporting

Compatible Upgrade Paths

The information in this section indicates the current product compatibility when upgrading from Workflow 2.5 to Workflow 2.5 SP1.

Task List

Workflow with:	Workflow client Task List	Supported
	ActiveX Task List	Supported

Vision 6.1 with:	Web Task List	Not Supported
	Workflow Mobile Task List	Not Supported
Vision 6.2 with:	Workflow Mobile Task List	Not Supported
Independent Host with:	Web Task List	Supported
Vision 6.3 with:	HTML Task List	Supported

Service Providers

Historian 4.0, 5.0, 5.5, 6.0	Supported
Plant Applications Service Provider (PASP)	Not Supported
MESCore SP	Supported
Custom Service Provider	Supported
Note: Service providers that target versions of the .NET framework before version 4.5 must be recompiled targeting .NET 4.5.	

Related concepts

Architecture Considerations *(page   )*

Compatibility Issues with Workflow

There are some specific compatibility issues that have been encountered in Workflow. These compatibility issues are necessary due to certain functionality changes that were made to improve the product.

- • Compatibility Issues with Workflow 2.6
    - ◦ The same compatibility issues for Workflow 2.5 apply to Workflow 2.6.
- • Compatibility Issues with Workflow 2.5
    - ◦ Service Providers *(page 32)*
    - ◦ Legacy Certificates *(page 33)*
- • Compatibility Issues with Workflow 2.2
    - ◦ Silverlight Forms *(page 33)*
    - ◦ Custom Application Logging *(page 33)*

Compatibility Issues with Workflow 2.5

Customer Service Providers

Some DMS methods and fields are now obsolete, and have been replaced, in Workflow 2.5. The deprecated fields should be replaced with the new fully qualified fields. If you do not use these new fields, your code will not compile.

📒 **Note:** If you have an existing custom service provider that is both using the deprecated methods and .NET Framework 4.5, you must compile your code again in order to ensure that your service providers function as expected.

Table 1. ModelObject.cs

Obsolete	Replacement
ModelObject.TableName	FullyQualifiedTableName

Table 2. DataSetMap.cs

Obsolete	Replacement
GetTableName()	GetFullyQualifiedTableName()
GetTableNames()	GetFullyQualifiedTableNames()
TableName	FullyQualifiedTableName
HistoryTableName	HistoryFullyQualifiedTableName

ℹ️ **Tip:** If required, you may choose to use the Table Name that has no schema prefix, such as BaseTableName.

Legacy Certificates

Starting with Workflow 2.5, legacy certificates are no longer supported.

Compatibility Issues with Workflow 2.2

Silverlight 5

You must upgrade from Silverlight Runtime v4.0 to Silverlight Runtime v5.0, as well as from Silverlight SDK v4.1 to Silverlight SDK v5.0. All forms will automatically be updated.

Custom Application Logging

Custom applications that directly reference Log4Net for logging purposes may stop working with Workflow version 2.2, which installs an updated version of Log4Net. To prevent such compatibility problems going forward, we recommend that custom applications instead be designed to log messages through the ILog interface in `Proficy.Platform.Core.Diagnostics`. If this is not feasible, you must ensure that custom applications reference version 1.2.11 of Log4Net, and be prepared to update the version of Log4Net referenced by custom applications upon upgrade to future releases of Workflow.

Changes to Functionality and Supporting Technology

In planning for upcoming releases of Workflow, please note that a number of changes to functionality and supporting technology are scheduled.

- Support for installing and running Workflow in Legacy (compatibility) mode has been discontinued. It will be possible to upgrade legacy systems to non-legacy systems, but doing so may require updating any service providers that rely on the previous service provider architecture to use the new service provider architecture.
- Support for installing and running the Workflow on Microsoft® Windows XP has been discontinued.
- Support for one-click installation of Workflow will be discontinued in a future release of the software. The client installation should be used when one-click installation is discontinued.

- All Workflow assemblies are now compiled in .NET Framework version 4.5. Custom displays and applications that reference an earlier version of .NET must change to instead reference .NET v4.5 in order to function properly.
- Starting with Workflow 2.5, legacy certificates are no longer supported.

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