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# Installation and Configuration Guide

process backbone

## Exigen Universal Process Link 5.6

### Channel Services

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# Table of Contents

# Preface

This preface is an introduction to the *Exigen Universal Process Link Installation and Configuration Guide.*

The following topics are included in this preface:

- [Audience](#)
- [How to Use This Guide](#)
- [Related Information](#)
- [Typographic Conventions](#)

# Audience

This guide is intended mainly for system administrators who install and configure Exigen Universal Process Link.

To effectively use this guide, knowledge of the following software is required:

- Exigen Workflow
- Genesys CIM Platform

# How to Use This Guide

The following is an overview of the guide:

- [Chapter 1: Introducing Exigen Universal Process Link](#) describes Exigen Universal Process Link.
- [Chapter 2: Managing Exigen Universal Process Link Installation](#) describes how to install, upgrade, or remove Exigen Universal Process Link.
- [Chapter 3: Configuring Exigen Universal Process Link](#) describes how to set up Exigen Universal Process Link components.
- [Chapter 4: Best Practices and Recommendations](#) provides recommendations to solution implementation teams for using workflow statistics.
- [Appendix A: Workflow Statistics Architecture](#) describes the workflow statistics architecture.
- [Appendix B: Internal Configuration of Workflow Statistics](#) describes workflow statistics internal configuration.

# Related Information

The following is a list of sources containing information related to Exigen Universal Process Link:

- Exigen Workflow documentation
- Genesys CIM Platform documentation

# Typographic Conventions

The following styles and conventions are used in this guide:

| Typographic styles and conventions | |
| --- | --- |
| **Convention** | **Description** |
| **Bold** | • Represents user interface items such as check boxes, command buttons, dialog boxes, drop-down list values, field names, menu commands, menus, option buttons, perspectives, tabs, tooltip labels, tree elements, views, and windows. <br> • Represents keys, such as **F9** or **CTRL+A.** <br> • Represents a term the first time it is defined. |
| `Courier` | Represents file and directory names, code, system messages, and command-line commands. |
| **`Courier Bold`** | Represents emphasized text in code. |
| Select **File > Save As** | Represents a command to perform, such as opening the **File** menu and selecting **Save As.** |
| *Italic* | • Represents any information to be entered in a field. <br> • Represents documentation titles. |
| `< >` | Represents placeholder values to be substituted with user specific values. |
| [Hyperlink](#) | Represents a hyperlink. Clicking on this field takes you to the identified place in this guide. |

# Chapter 1: Introducing Exigen Universal Process Link

This section introduces Exigen Universal Process Link and describes its components and basic functionality.

The following topics are described in this section:

- What is Exigen Universal Process Link?
- Exigen Universal Process Link Architecture
- Understanding the Interaction Flow

## What is Exigen Universal Process Link?

**Exigen Universal Process Link** is a solution containing a set of configuration components that integrate Exigen Workflow and Genesys CIM Platform systems in a call center environment to provide blended delivery of interactions to agents according to call center business rules. Exigen Universal Process Link interacts with Genesys CIM Platform using Open Media interfaces.

The following table describes the systems integrated using Exigen Universal Process Link:

| Exigen Universal Process Link integration solutions | |
| --- | --- |
| **Solution** | **Description** |
| Exigen Workflow | Customizable workflow management and document imaging system. Although Exigen Workflow does not include decision-making procedures for real-time routing, its document management for non-real time processing is flexible and meets broad business needs. |
| Genesys CIM Platform | Real-time interaction management system. |

The following diagram illustrates how Exigen Workflow, Exigen Universal Process Link, and Genesys CIM Platform interact to provide work item and call processing and deliver interactions to agents:
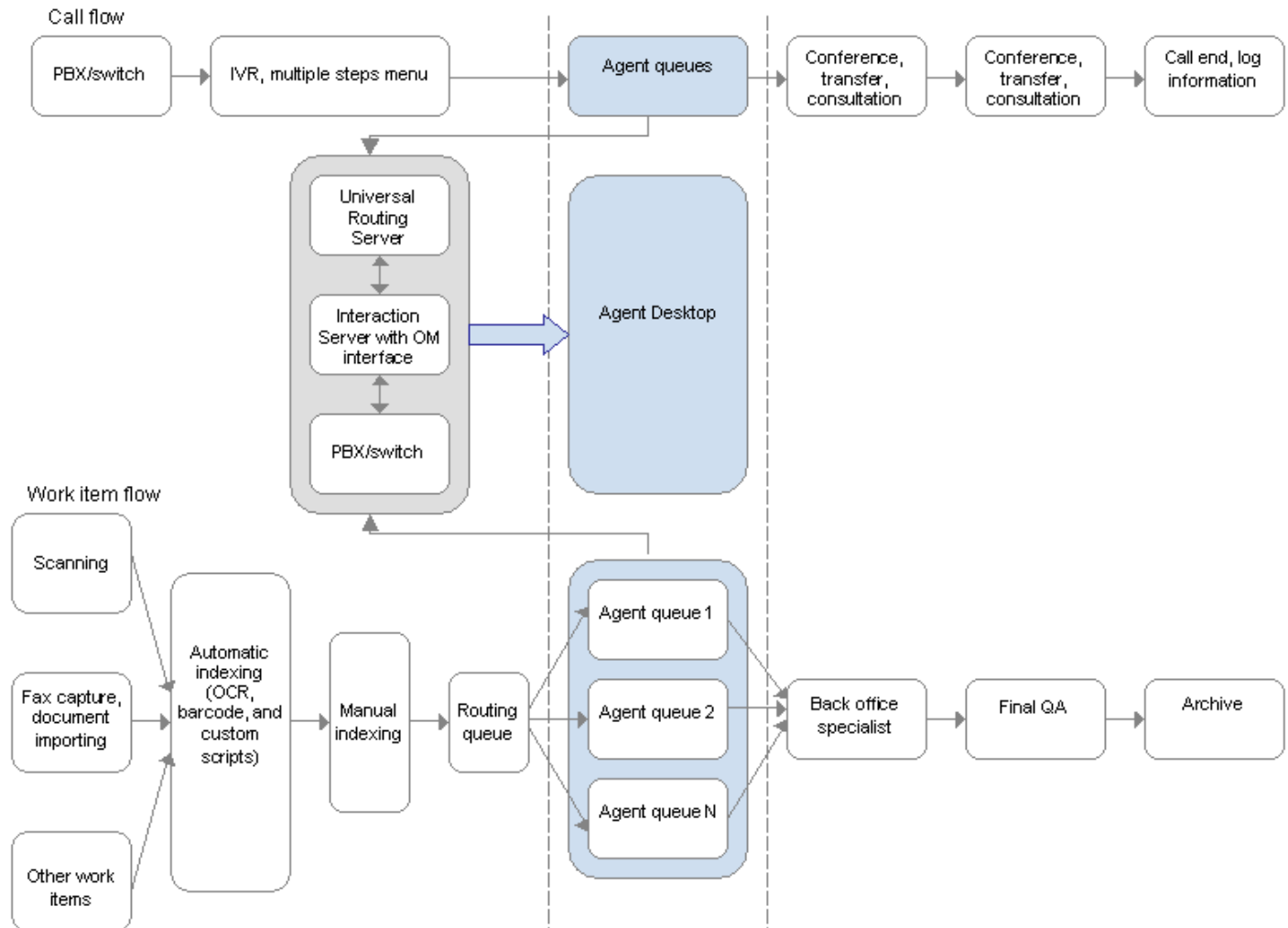
*Figure 1: Exigen Workflow, Exigen Universal Process Link, and Genesys CIM Platform functional flow*

The upper part of the diagram shows a typical Genesys call processing flow. The lower part of the diagram illustrates an example of Exigen Workflow work item processing flow. The middle of the diagram shows a link between Genesys CIM Platform and Exigen Workflow. Agents receive calls or work items as input and perform tasks initiated by physical or virtual calls. To perform business tasks more efficiently, agents have a unified desktop. For example, agents use the same desktop for consulting a customer via the phone and processing customer's documents captured by Exigen Workflow.

# Exigen Universal Process Link Architecture

This section describes the main components involved in the Exigen Universal Process Link architecture.

The following diagram represents Exigen Universal Process Link architecture with Exigen Universal Process Link components colored in blue:
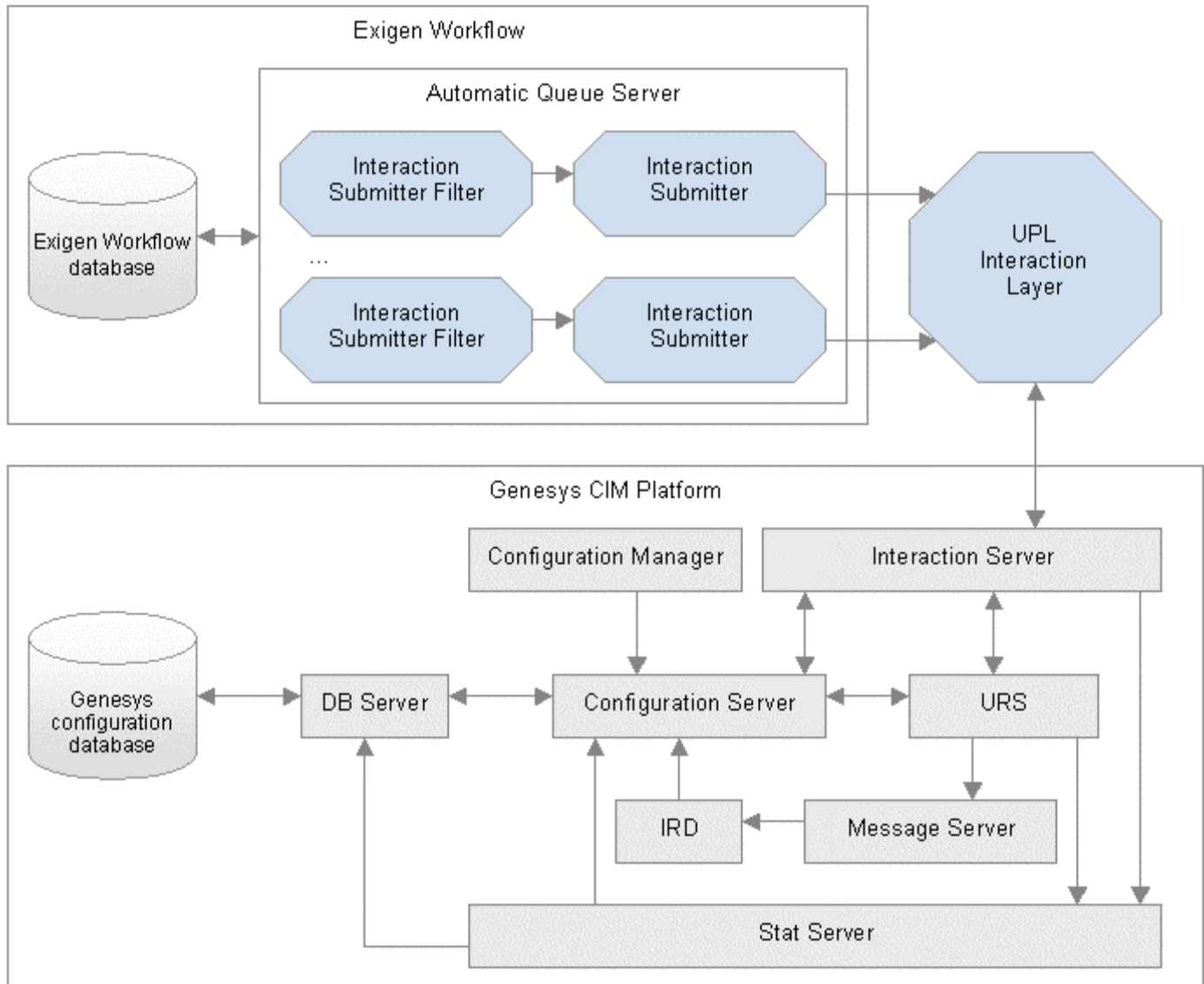
*Figure 2: Exigen Universal Process Link architecture*

The following table describes components involved in Exigen Universal Process Link architecture:

| Exigen Universal Process Link components | | |
|---|---|---|
| **System** | **Component** | **Description** |
| Exigen Workflow | Exigen Workflow database | Storage place for work items and other workflow data. It is also used to store configuration parameters, such as workflow maps, agent credentials, system settings, and other parameters. |

| Exigen Universal Process Link components | | |
| --- | --- | --- |
| **System** | **Component** | **Description** |
| | Automatic Queue Server | Workflow object that automatically processes work items in background mode without user interaction. Automatic Queue Server can be mapped to multiple custom scripts that implement customer-specific business logic. In Exigen Universal Process Link, Automatic Queue Server is used to select work items from the Exigen Workflow database to be delivered to Genesys Interaction Server through the Interaction Submitter handler and Exigen Universal Process Link (UPL) Interaction Layer. |
| Genesys CIM Platform | Genesys configuration database | Storage place for the following data:<br>• call center configuration required by Genesys components<br>• primary agent credentials |
| | DB Server | Component that provides standard access to the Genesys database. |
| | Configuration Server | Component that performs the following:<br>• provides access to configuration data<br>• ensures configuration data integrity<br>• casts real-time notifications when the configuration is modified |
| | Configuration Manager | Application used to edit configuration data managed by Configuration Server. |
| | Interaction Server | Component that performs the following:<br>• monitors all call center interactions in near real-time<br>• provides control over interactions<br>• casts notifications about interaction progress |
| | Universal Routing Server (URS) | Component that selects the most appropriate target to receive call center interactions.<br><br>URS is triggered by notifications received from Interaction Server and uses the Interaction Server application programming interface (API) to indicate to which target interactions must be delivered. To select the target for submitted interactions, URS evaluates target selection algorithms. |
| | Interactive Routing Designer (IRD) | Application used to build target selection algorithms or strategies. |
| | Message Server | Communication channel between IRD and URS controlling the delivery of messages between the applications to provide IRD users with a real-time view of interaction routing status.<br><br>In general, Message Server provides centralized processing and storage of all application maintenance events. Therefore, it can be used by any Genesys server component. |
| | Stat Server | Component that on request supplies statistical information about customer interaction networks to client applications such as URS and CCPulse+.<br><br>For example, URS can use numerical statistics provided by Stat Server as routing criteria. |

| Exigen Universal Process Link components | | |
| --- | --- | --- |
| **System** | **Component** | **Description** |
| Exigen Universal Process Link | Interaction Submitter | Automatic Queue Server handler that submits Exigen Workflow work items as interactions to Genesys Interaction Server through UPL Interaction Layer and transforms work item properties to interaction properties. |
| | | For information on configuring Interaction Submitter, see Configuring the Interaction Submitter Job. |
| | Interaction Submitter Filter | Automatic Queue Server filter handler that selects work items that are due for submission to Genesys CIM Platform. |
| | | Automatic Queue Server invokes Interaction Submitter Filter to retrieve additional criteria for work item retrieval from the Exigen Workflow database. |
| | | For information on configuring Interaction Submitter Filter, see Configuring the Interaction Submitter Job. |
| | UPL Interaction Layer | Windows service application that connects to Genesys CIM Platform and submits interactions using the Genesys Open Media interaction layer API. |
| | | UPL Interaction Layer works as a bridge between Interaction Submitter and Genesys CIM Platform. |
| | | For information on configuring UPL Interaction Layer, see Configuring UPL Interaction Layer. |

# Understanding the Interaction Flow

This section describes a typical interaction flow to show how system components work together to distribute and deliver work items.

The following is a typical sequence of steps that are performed in the interaction flow:

1. Exigen Workflow work items are delivered to a designated mailbox that is a juncture of a workflow node and a workflow user. Work items remain in the mailbox until they are either dispatched to Genesys CIM Platform by Exigen Universal Process Link or removed from the mailbox by another process.

2. The dedicated Automatic Queue Server job monitors the mailbox using Integration Submitter Filter. Integration Submitter Filter is responsible for selecting work items due for submission, thus enabling delayed submission of work items.

3. Selected work items are dispatched for processing to Integration Submitter. Integration Submitter is responsible for actions required to be performed to submit an interaction. These actions include the following:
   - changing the work item state
   - transmitting properties from work items to interactions
   - submitting interactions to UPL Interaction Layer

4. UPL Interaction Layer submits interactions to the Genesys Interaction Server using the Genesys Open Media API. After submission, interactions remain in the Interaction Server database.

5. URS executes routing strategies and, in conjunction with Interaction Server, delivers interactions to call center agents for processing. Life cycle durations of interactions submitted to Genesys CIM Platform depend on strategies used by the business.

# Chapter 2: Managing Exigen Universal Process Link Installation

This section provides Exigen Universal Process Link system requirements and describes how to install, upgrade, and remove Exigen Universal Process Link.

The following topics are described in this section:

- System Requirements
- Installing Exigen Universal Process Link
- Upgrading Exigen Universal Process Link
- Removing Exigen Universal Process Link

## System Requirements

The following table lists Exigen Universal Process Link system requirements:

| Exigen Universal Process Link system requirements | |
| --- | --- |
| **Component** | **Description** |
| Operating system | Windows Server 2003 Service Pack 1 or higher |
| Processor | Pentium IV 1.5 GHz or higher |
| Database server | One of the following database brands is required:<br>• SQL Server 2000<br>• Oracle 10.1 |
| Software | The following software is required:<br>• Exigen Workflow 5.6.12<br>• Genesys CIM Platform 7.2<br>• MDAC 2.8 or higher<br>• .NET 2.0 |
| RAM | 1 GB |
| Free disk space | 500 MB |

## Installing Exigen Universal Process Link

To install Exigen Universal Process Link, proceed as follows:

1. If Automatic Queue Server is already installed on the workstation and its service is running, stop the Automatic Queue Server service to allow registering Exigen Universal Process Link handlers.

2. In the Exigen Universal Process Link installation package, launch the Setup.exe file located in the Windows directory.

   The **Exigen Installer Setup** window appears.

*Figure 3: Exigen Installer startup window*

3.  Wait while Exigen Installer verifies the list of installed applications.

    The **Exigen Installer Setup** window is updated with product information.
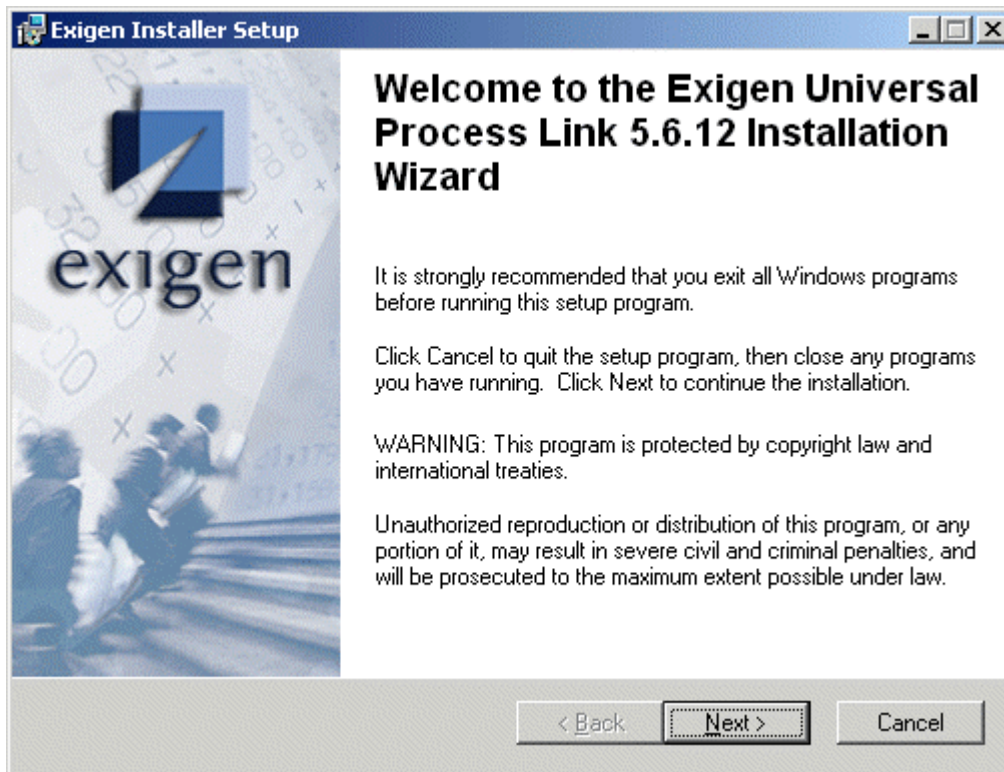
*Figure 4: Exigen Universal Process Link welcome window*

4.  Click **Next.**

    The **User Information** window appears.
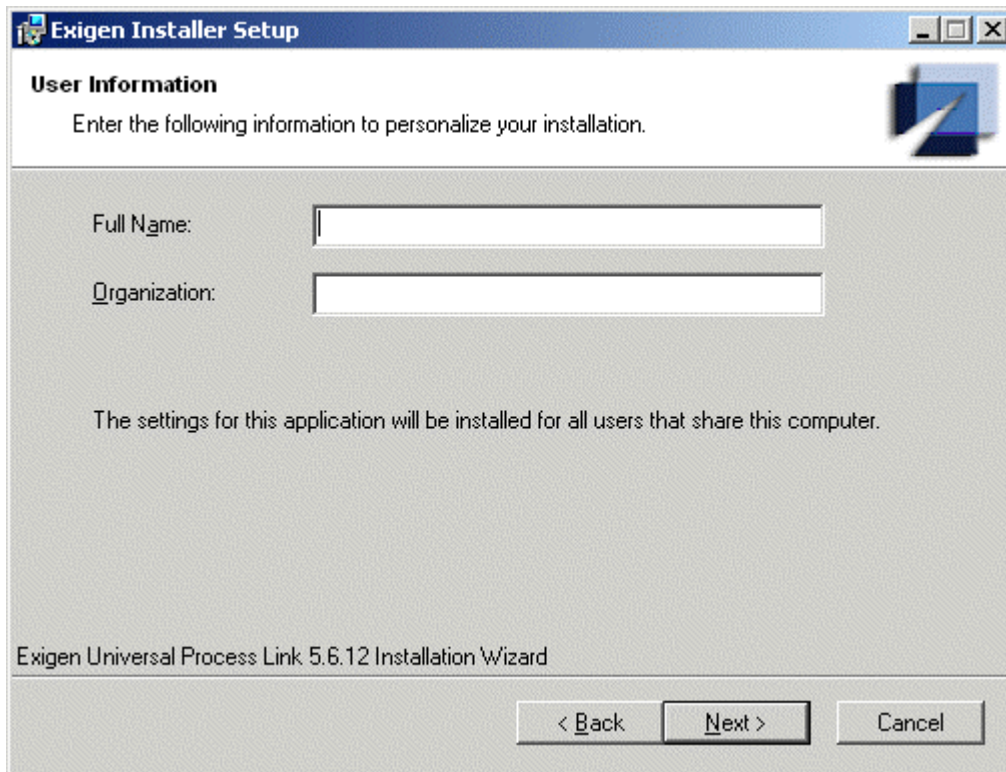
*Figure 5: Specifying user information*

5.  Enter the user and organization name and click **Next.**

    The **Select Installation Type** window appears.

*Figure 6: Selecting the installation type*

6.  Select **Custom** and click **Next.**

    The **Setup Folder** window appears.

7.  Click **Next.**

    The list of Exigen Universal Process Link components appears.

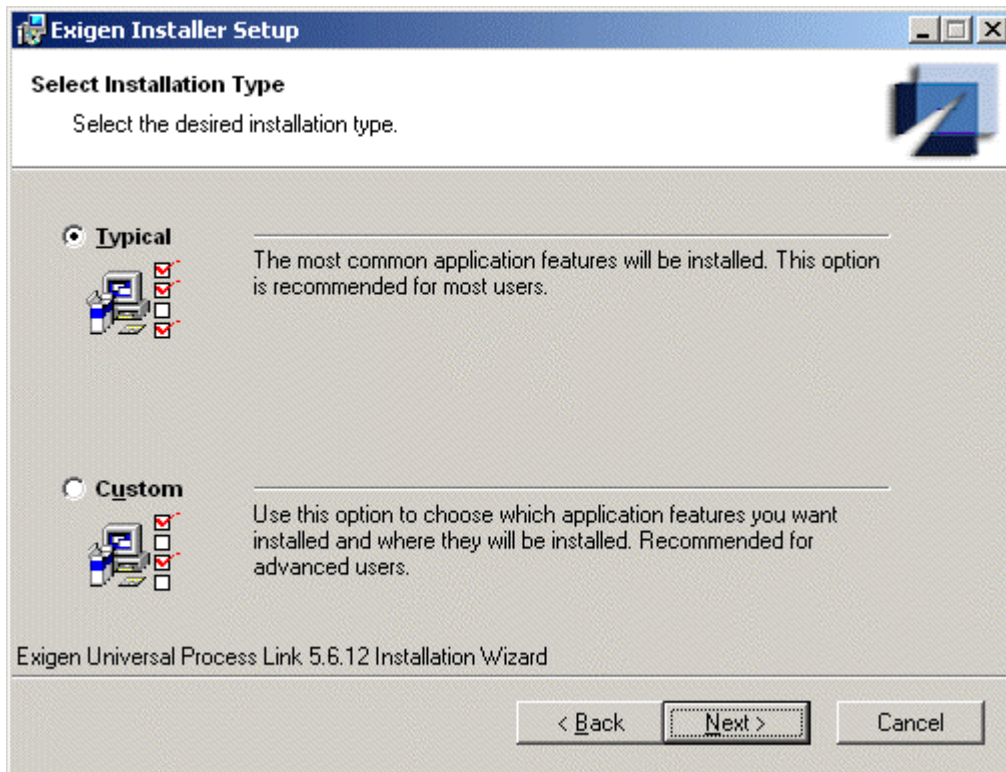| Component group | Remove Typical/Custom | | Install/Upgrade Typical/Custom | | |
|---|---|---|---|---|---|
| Application Services | 5.6.12004.214 ☐ | | Additional CD ☐ | | ? |
| Automatic Queue Server | 5.6.12001.207 ☐ | | Additional CD ☐ | | ? |
| Exigen Java Extension for Genesys Stat Server | ☐ | | 5.6.12000.289 ☐ | | ? |
| UPL Commons | 5.6.12000.289 ☐ | | 5.6.12000.289 ☐ | | ? |
| UPL Handlers Layer | 5.6.12000.289 ☐ | | 5.6.12000.289 ☐ | | ? |
| UPL Interaction Layer | 5.6.12000.289 ☐ | | 5.6.12000.289 ☐ | | ? |

All typical ☐ Full ☐     All typical ☐ Full ☐     ?

To see the description of the corresponding Exigen Workflow component, click ?.

Select the Remove check box to remove the item from your workstation or Install/Upgrade to install or upgrade the item. If both check boxes are selected, the previous version of the item is removed and the new version is installed. If both check boxes are cleared, the currently installed version of the item remains on the workstation.
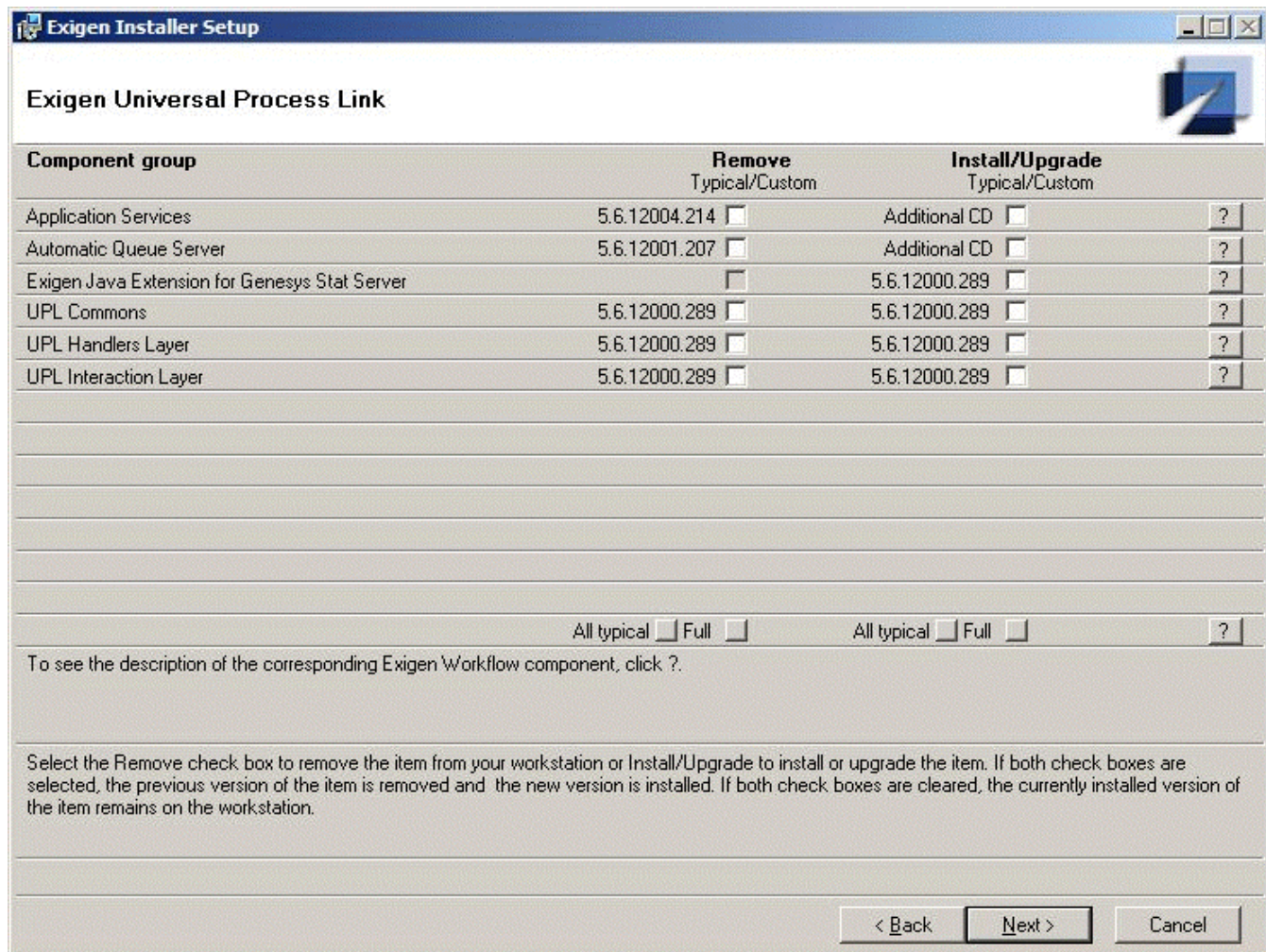
*Figure 7: Exigen Universal Process Link components*

Although Application Services and Automatic Queue Server are displayed in the list, they are not physically available in the Exigen Universal Process Link installation package. Application Services and Automatic Queue Server are included in the components list for the following reasons:

- It is possible to see which component versions are installed and if they are installed at all.
- Exigen Installer is able to check if correct component versions are installed.
- If Application Services and Automatic Queue Server are not installed, the administrator can install them during Exigen Universal Process Link installation without launching the Exigen Workflow setup application.

8. In the **Install/Upgrade** column, select the check box for Exigen Universal Process Link components to install.

9. If Application Services and Automatic Queue Server are not installed or if incorrect versions are installed, in the **Install/Upgrade** column select the check boxes as appropriate.

Since Application Services and Automatic Queue Server installation packages are not available in Exigen Universal Process Link, when Exigen Installer prompts for their installation source, the administrator must install the components from the Exigen Workflow installation CD.

10. Click **Next.**

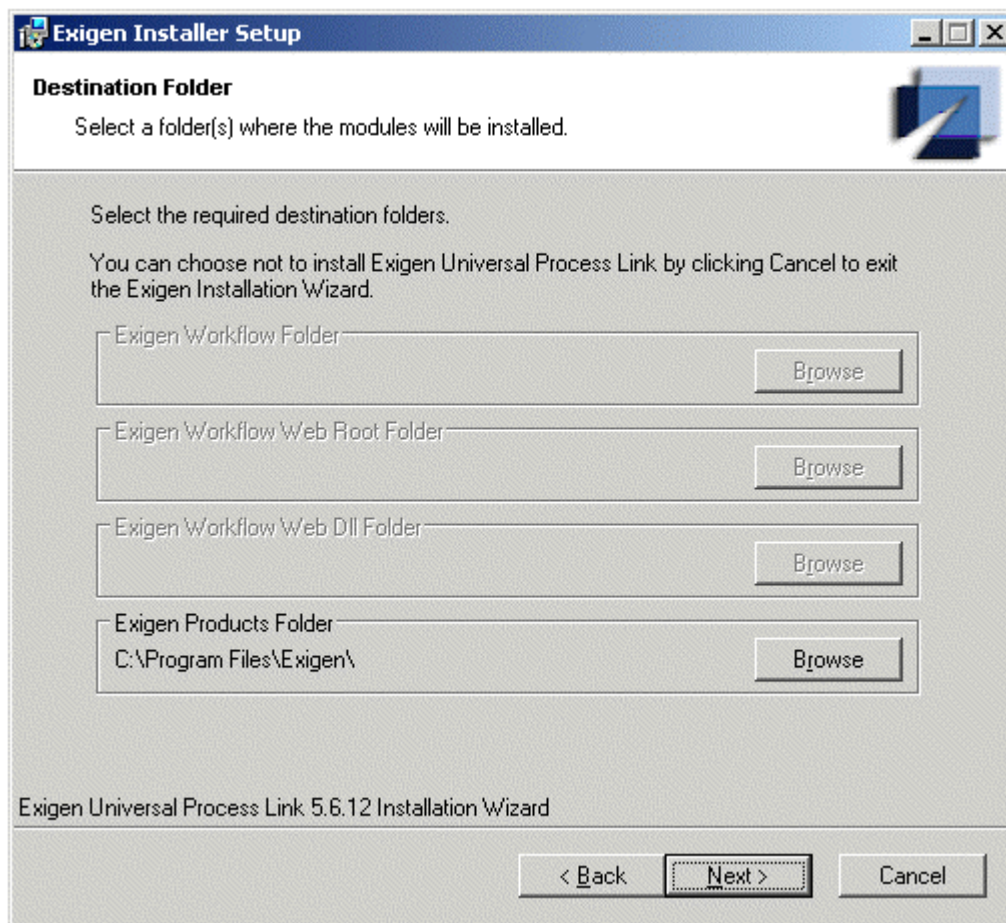    The **Destination Folder** window appears.



*Figure 8: Destination Folder window*

11. In the **Exigen Products Folder** box, click **Browse** and select the directory where Exigen Universal Process Link files must be installed.

12. Click **Next.**

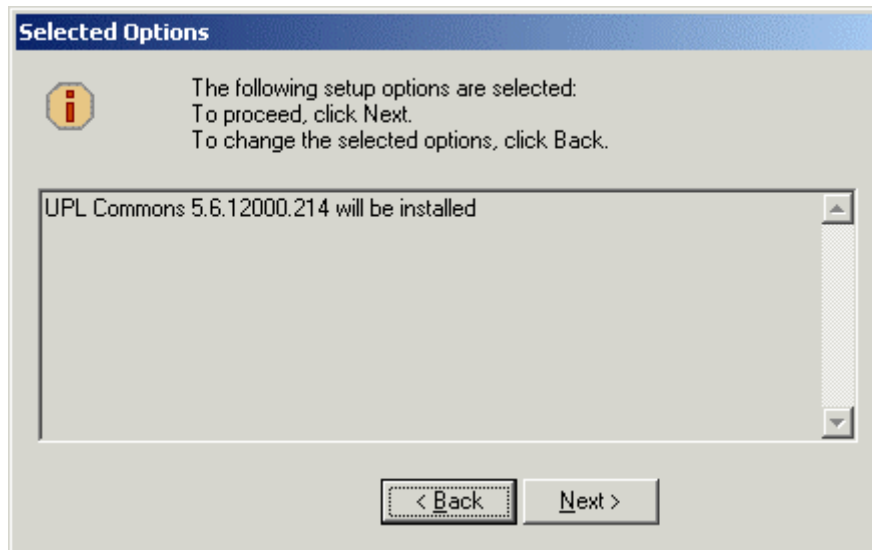    The **Selected Options** window appears.

*Figure 9: List of selected options*

13. Click **Next.**

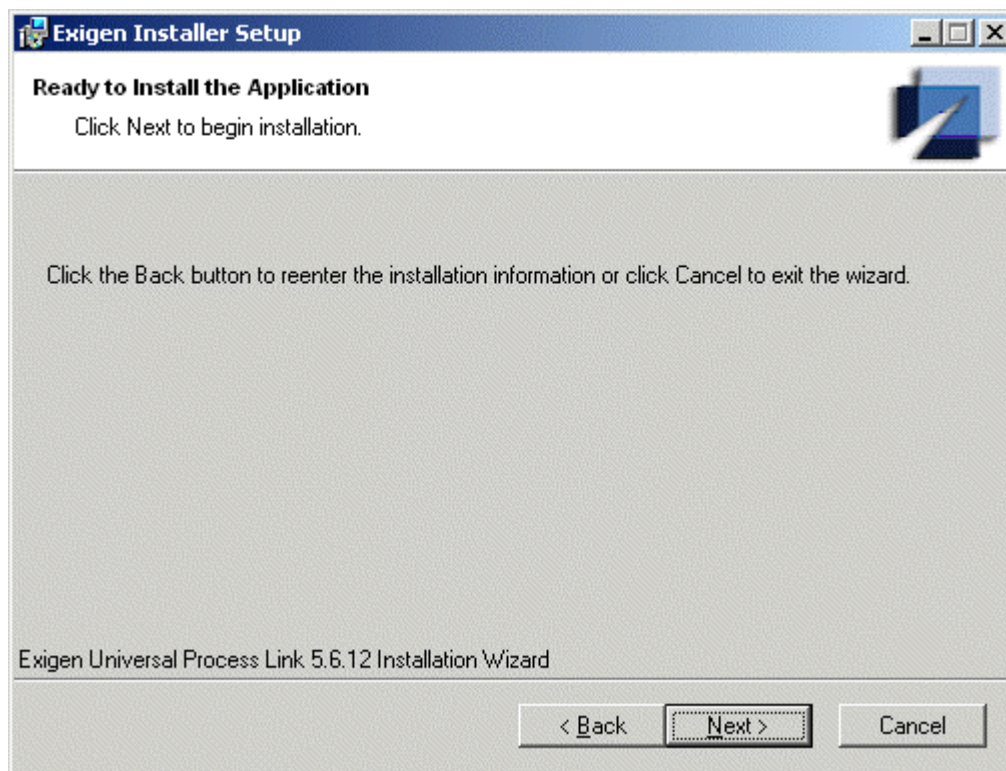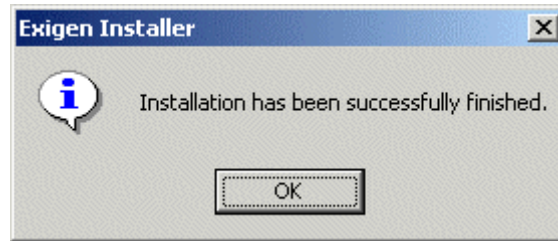    The **Ready to Install the Application** window appears.



*Figure 10: Ready to Modify the Application window*

14. Click **Next.**

    Exigen Installer installs Exigen Universal Process Link files.

When the installation is finished, a message box appears.



*Figure 11: Successful completion message*

15. Click **OK.**

Exigen Universal Process Link is installed.

16. If Automatic Queue Server is installed, start the Automatic Queue Server service.

# Upgrading Exigen Universal Process Link

To upgrade Exigen Universal Process Link to a newer version, proceed as follows:

1. In the Exigen Universal Process Link installation package, launch the `Setup.exe` file located in the `Windows` directory.

   The **Exigen Installer Setup** window appears.

*Figure 12: Exigen Installer startup window*

2. Wait while Exigen Installer verifies the list of installed applications.

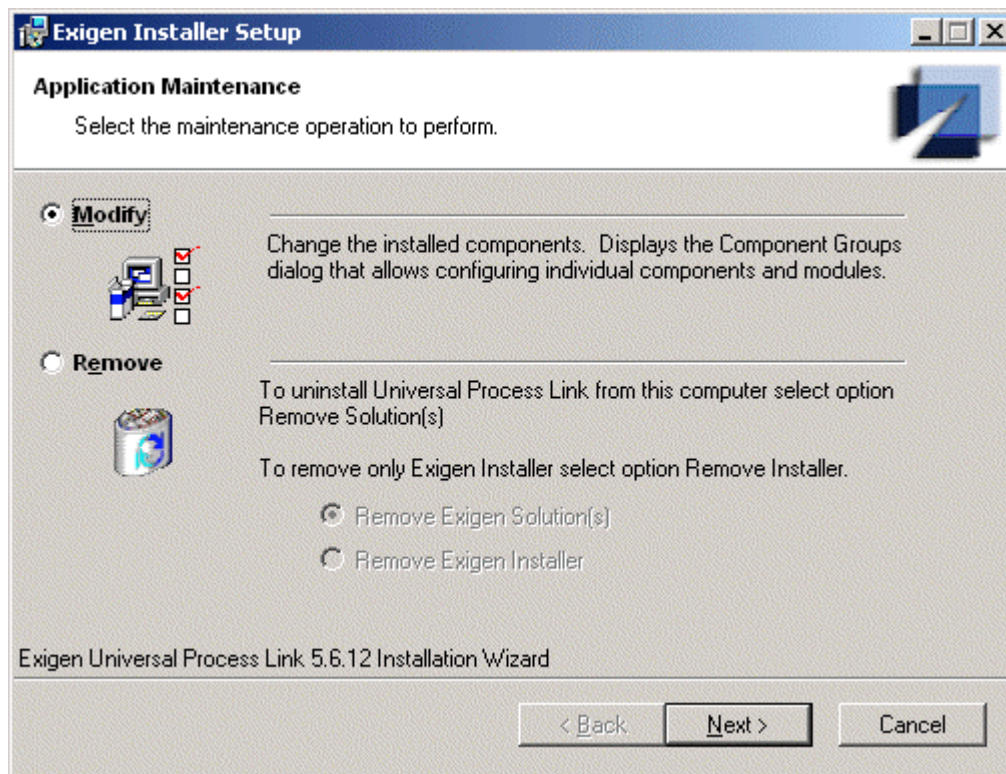   The **Application Maintenance** window appears.

*Figure 13: Application Maintenance window*

3.  Select **Modify** and click **Next.**

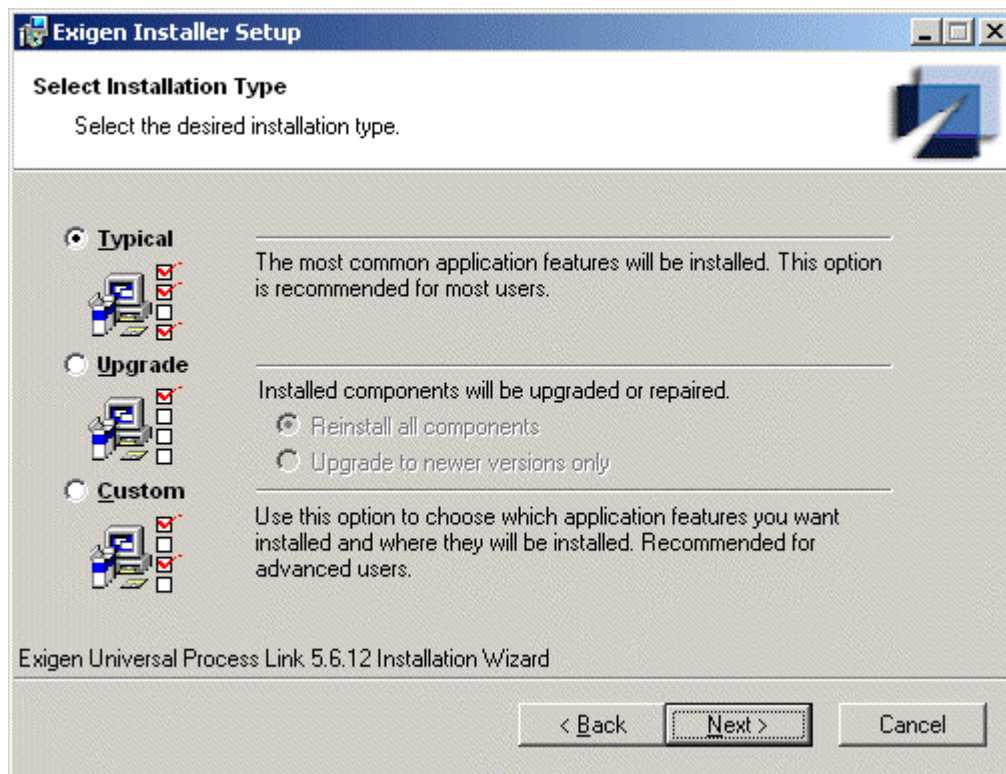    The **Select Installation Type** window appears.

*Figure 14: Selecting the installation type*

4.  Select **Upgrade** and **Upgrade to newer versions only.**

5.  Click **Next.**

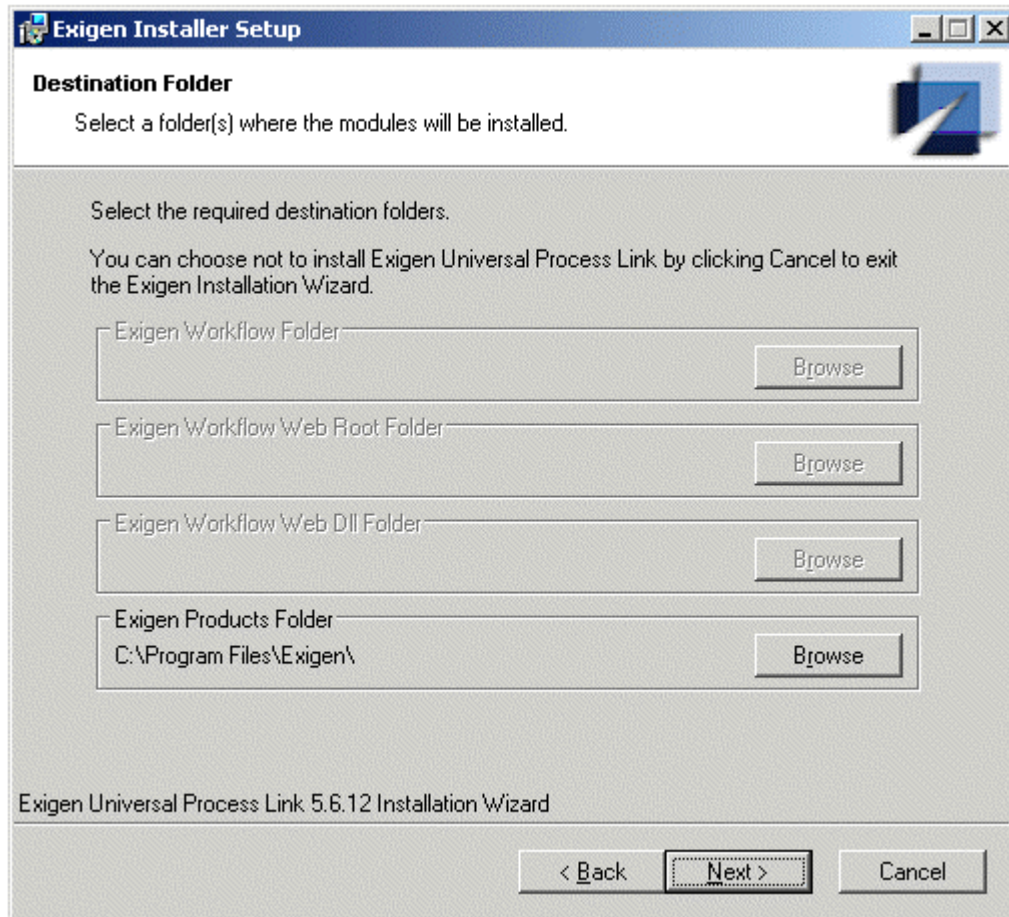    The **Destination Folder** window appears.

*Figure 15: Destination Folder window*

6. In the **Exigen Products Folder** box, click **Browse** and select the directory where Exigen Universal Process Link files must be upgraded.

7. Click **Next.**

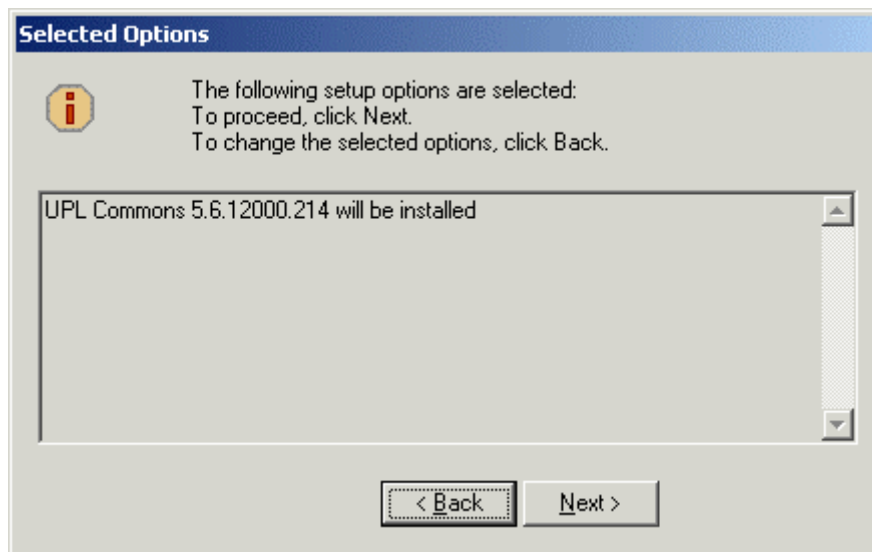   The **Selected Options** window appears.

*Figure 16: List of selected options*

8.  Click **Next.**

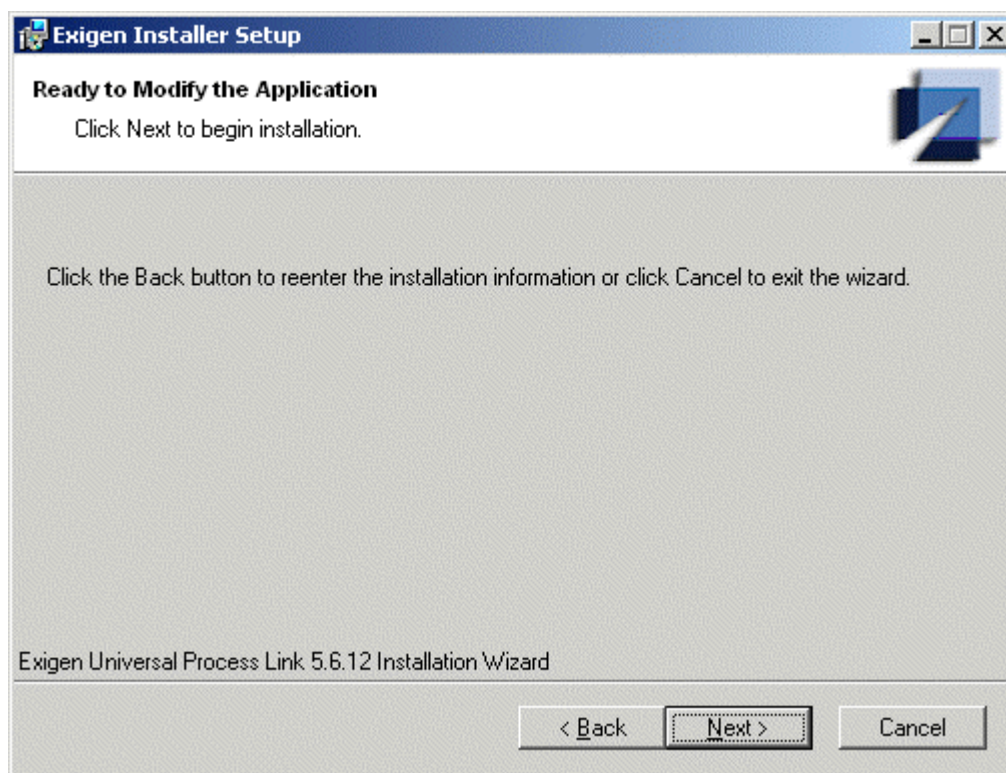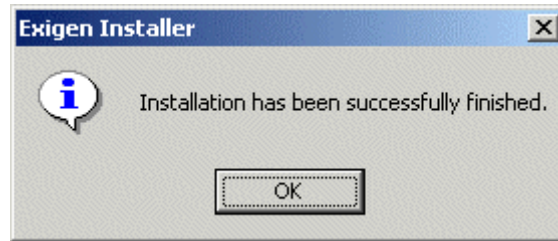    The **Ready to Modify the Application** window appears.



*Figure 17: Ready to Modify the Application window*

9.  Click **Next.**

    Exigen Installer upgrades Exigen Universal Process Link files.

When the installation is finished, a message box appears.



*Figure 18: Successful completion message*

10. Click **OK.**

Exigen Universal Process Link is upgraded.


# Removing Exigen Universal Process Link

To remove Exigen Universal Process Link, proceed as follows:

1. If Automatic Queue Server is installed on the workstation and its service is running, stop the Automatic Queue Server service to allow removal of files locked by Automatic Queue Server.

2. In the Exigen Universal Process Link installation package, launch the `Setup.exe` file located in the `Windows` directory.

   The **Exigen Installer Setup** window appears.

*Figure 19: Exigen Installer startup window*

3.  Wait while Exigen Installer verifies the list of installed components.

    The **Application Maintenance** window appears.

4.  Select **Remove** and **Remove Exigen Solution(s).**
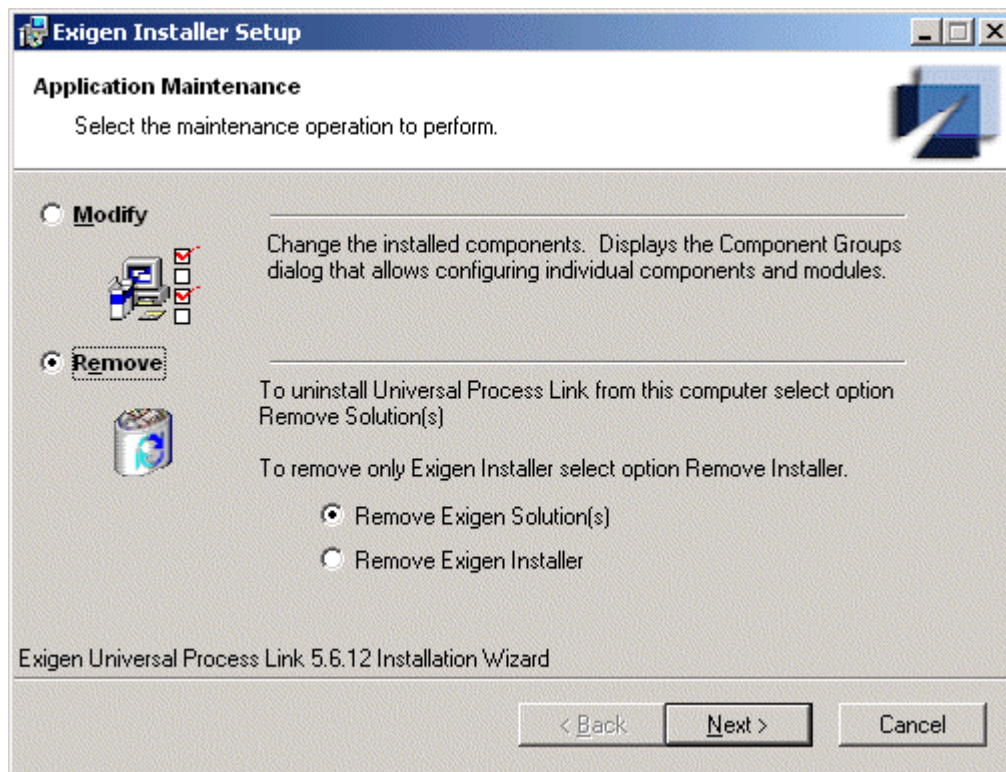
*Figure 20: Removing Exigen Universal Process Link*

5. Click **Next.**

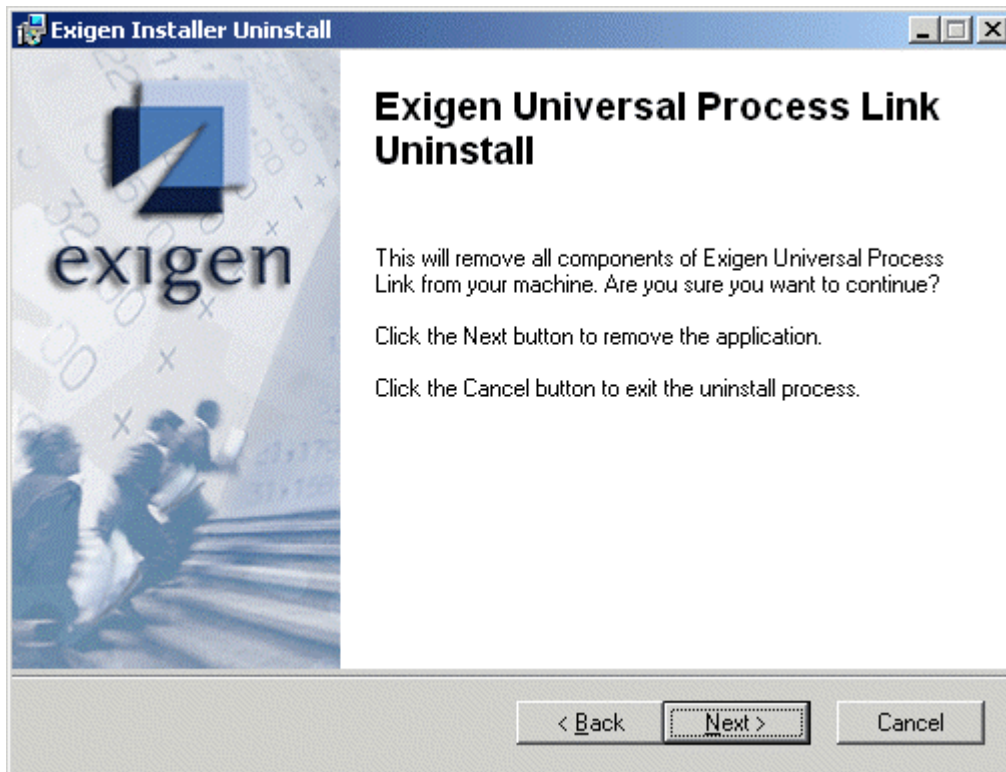   The **Exigen Installer Uninstall** window appears.

*Figure 21: Confirmation window*

6.   Click **Next.**

Exigen Installer removes Exigen Universal Process Link.

# Chapter 3: Configuring Exigen Universal Process Link

To set up Exigen Universal Process Link components, the following procedures must be performed:

- Configuring the Exigen Universal Process Link Genesys Application
- Using Exigen Universal Process Link Configuration Console
- Starting and Stopping UPL Interaction Layer
- Configuring the Interaction Submitter Job
- Configuring Genesys Management Layer

## Configuring the Exigen Universal Process Link Genesys Application

To import and configure the Exigen Universal Process Link application in Genesys Configuration Layer, proceed as follows:

1. Open Genesys Configuration Manager.

2. From the Exigen Universal Process Link installation package, from the `Templates` directory, import the Exigen_UPL template.

3. From the Exigen_UPL template, create a new application.

4. Right click the created application and select **Properties.**

   The **Properties** window appears.
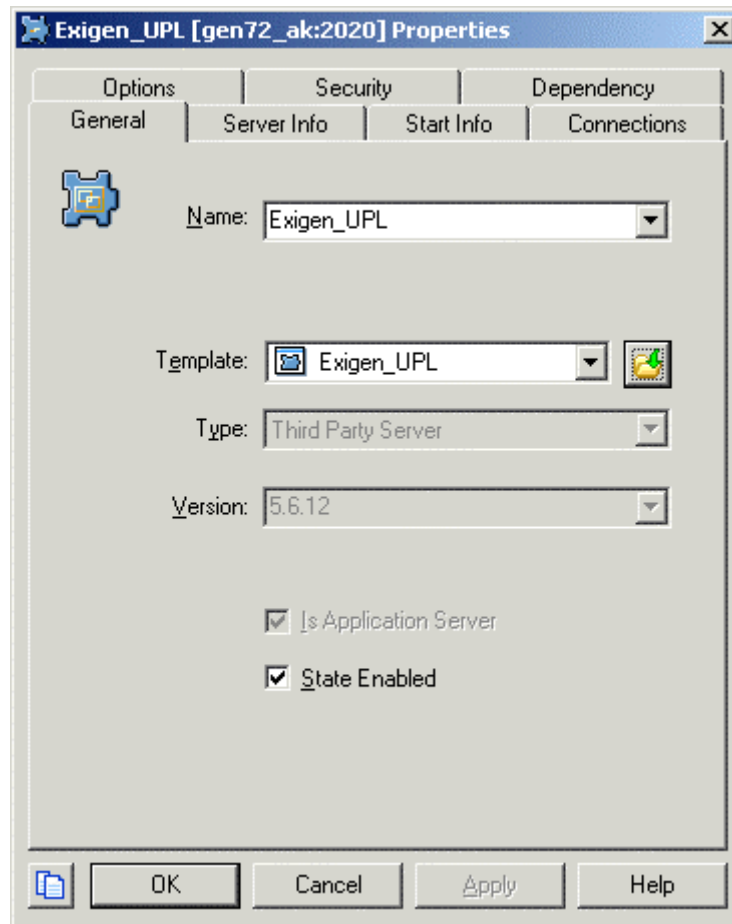
*Figure 22: UPL Interaction Layer application properties*

5.  If required, in the **General** tab, change the application name.
6.  Select the **Server Info** tab.

*Figure 23: Configuration server settings*

7.  In the **Host** list box, select the host on which the UPL Interaction Layer is running.

8.  In the **Communication Port** field, enter any unused port.

9.  In the **Backup Server** list box, select **[None].**

10. In the **Redundancy Type** list box, select **Not Specified.**

11. In other fields, leave default values.

12. Select the **Start Info** tab.
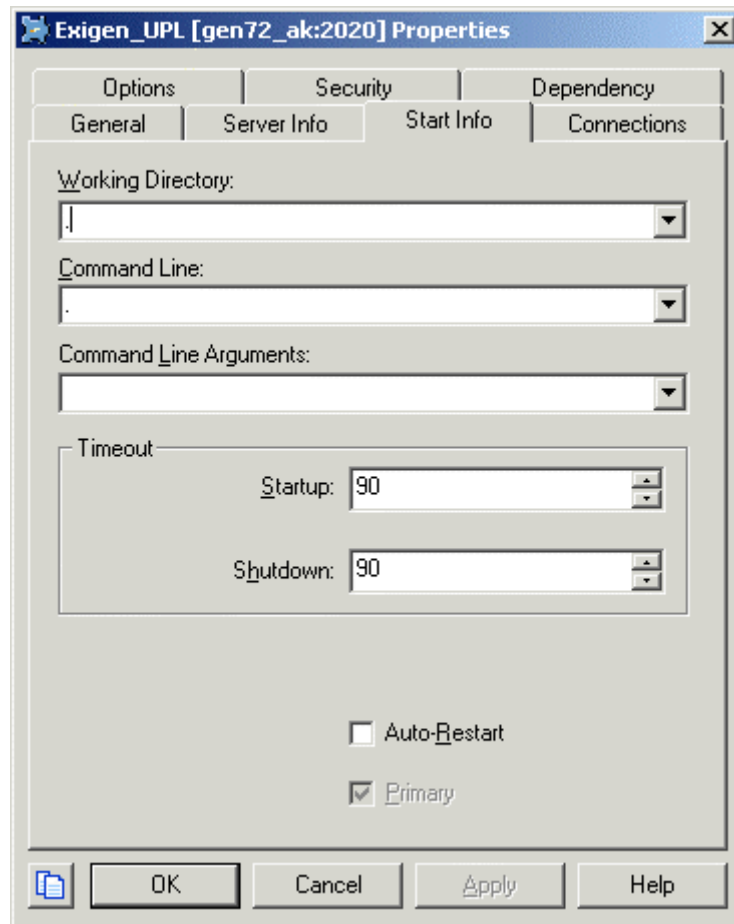
*Figure 24: Configuring starting parameters*

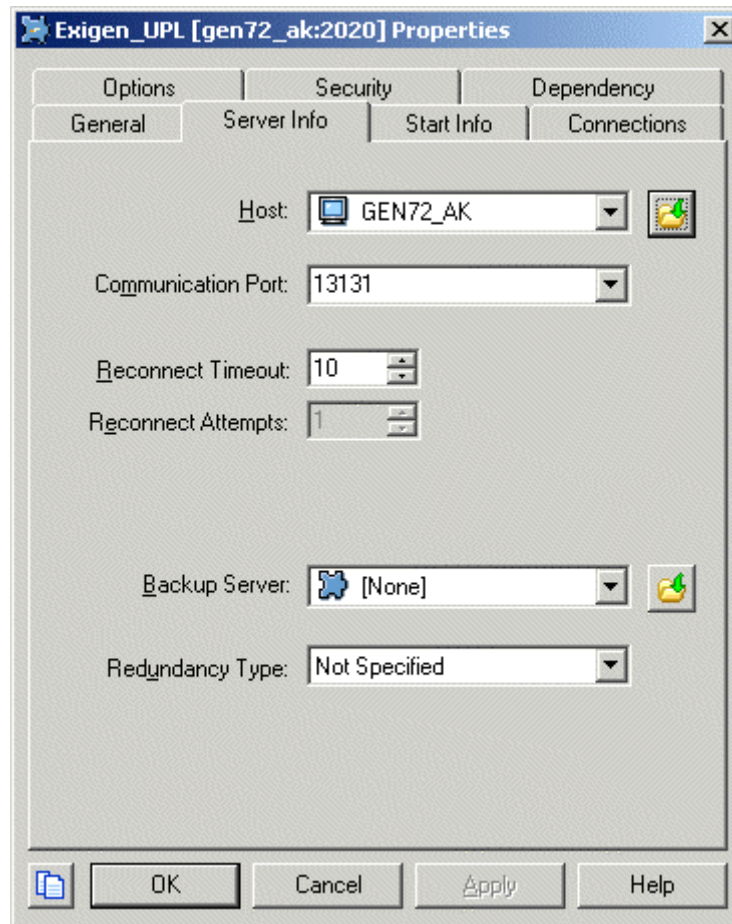13. In the **Working Directory** and **Command Line** fields, enter the following:

    .

14. Leave the **Command Line Arguments** field empty.

15. In other fields, leave default values.

16. Select the **Connections** tab.

    The **Connections** tab is used to define connections to Interaction Servers.

17. For each server connection to be added, proceed as follows:
    - Click **Add.**
    - Select the server to connect.
    - Leave the default parameter values.
    - Click **OK.**

*Figure 25: Creating connections for UPL Interaction Layer*

18. Select the **Options** tab.
19. In the list box, select **Log.**

*Figure 26: Configuring UPL Interaction Layer application log settings*

20. Enter log setting values as described in the following table:
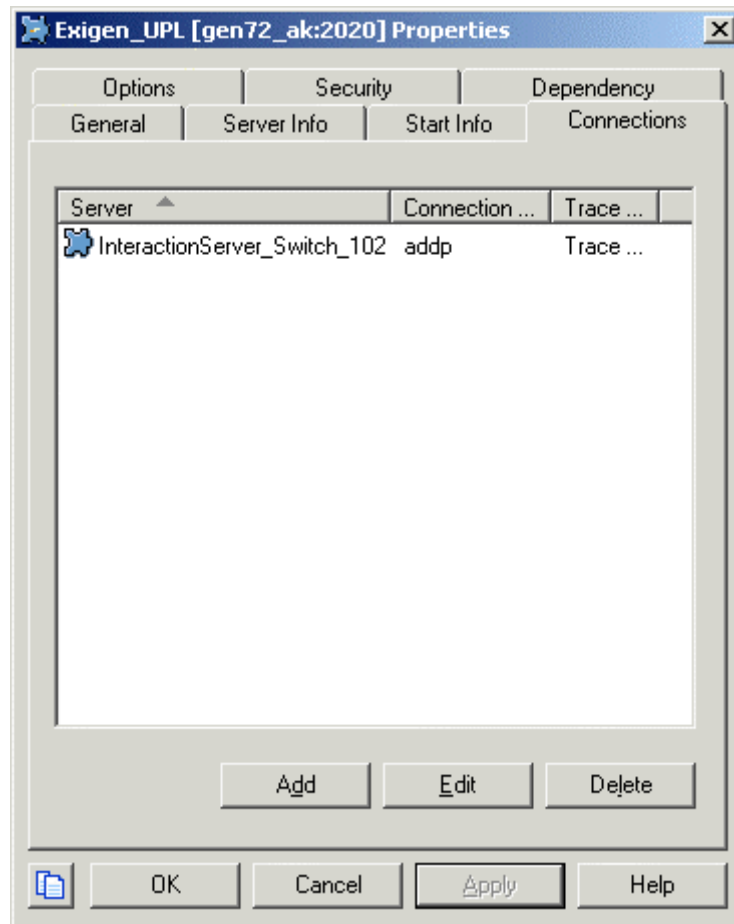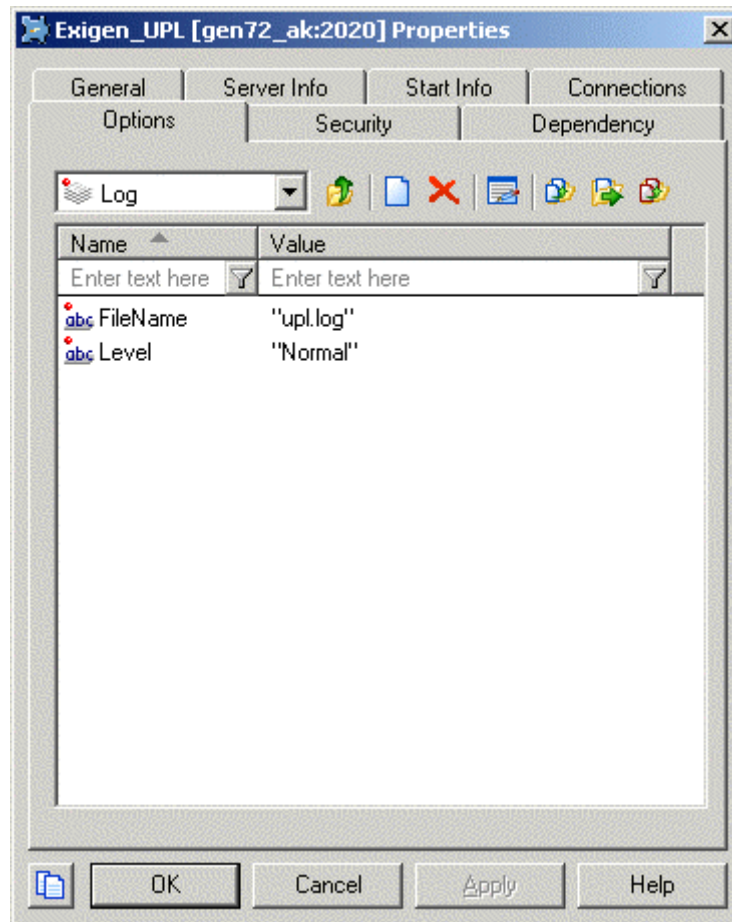
| UPL Interaction Layer application log settings | |
|---|---|
| **Name** | **Value** |
| **FileName** | Log file name. The default log file name is **upl.log.** When a full path to the log file is not specified, the file is created in the system directory. |
| **Level** | Log level. It can be set to one of the following values: |

| Value | Description |
|---|---|
| **Silent** | Messages are recorded about important events, such as start, stop, and critical errors that result in the failure of the system to respond. |
| **Normal** | Messages are recorded for effective actions, for example, creating connections or objects, or performing component tests. All messages listed under silent mode are recorded as well. This is the default value. |
| **Trace** | All actions, including step-by-step results are recorded in the log file. |

21. To specify the application timeout value, in the list box select **Connection** and enter the value in seconds for the **Timeout** parameter.
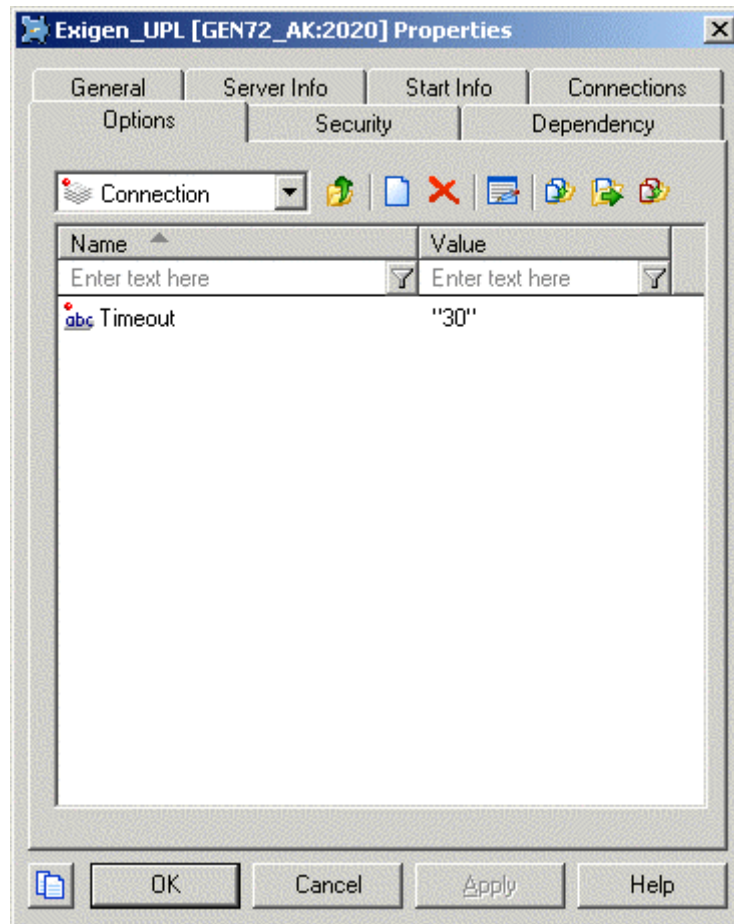
*Figure 27: Configuring the application timeout value*

The default value is 10.

22. Select the **Security** tab.
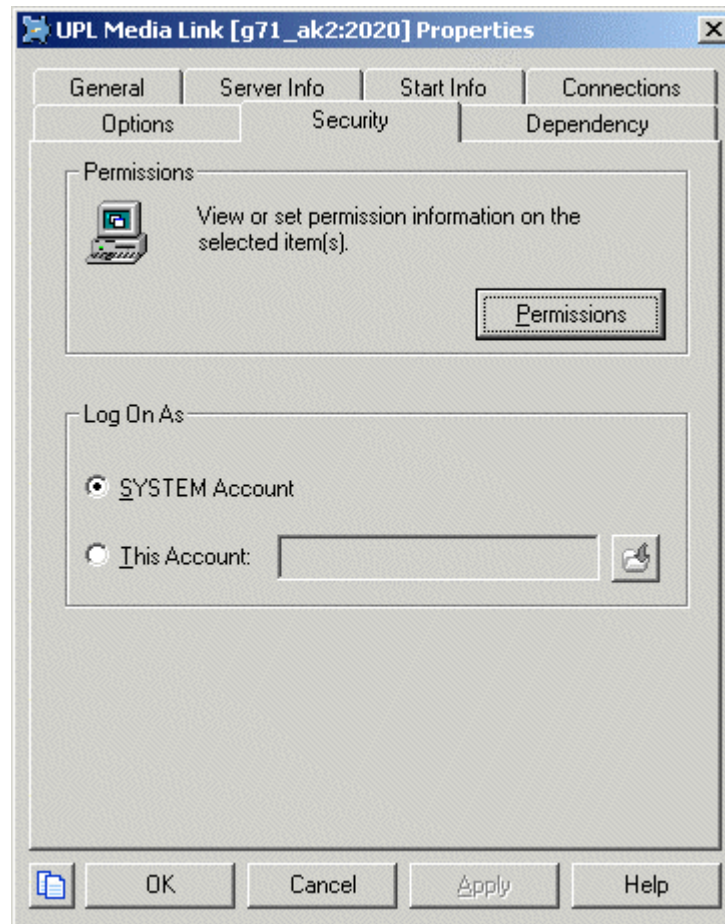
*Figure 28: Configuring UPL Interaction Layer security*

23. Click **Permissions** and modify access rights as appropriate.
24. To save changes, click **OK.**
25. Close Genesys Configuration Manager.

# Using Exigen Universal Process Link Configuration Console

For information on Exigen Universal Process Link Configuration Console, see Appendix A: Workflow Statistics Architecture.

The following topics are described in this section:

- Configuring UPL Interaction Layer
- Configuring Workflow Statistics
- Handling Errors

# Configuring UPL Interaction Layer

This section describes how to configure UPL Interaction Layer using UPL Configuration Tool. UPL Interaction Layer serves as the link between Exigen Workflow and Genesys CIM Platform.

To configure UPL Interaction Layer, perform the following steps:

1.  To start UPL Configuration Tool, select **Start > Programs > Exigen Solution > UPL > UPL Configuration Tool.**

    The **UPL Configuration** window appears.

2.  Enter the value as described in the following table:

| UPL Interaction Layer parameters | |
| --- | --- |
| **Parameter** | **Description** |
| **Host** | Genesys Configuration Server host name. |
| **Port** | Genesys Configuration Server port. |
| **UPL Application** | UPL application name in Genesys Configuration Management Environment (Genesys CME). |
| **Login** | User name for connecting to Genesys Configuration Server. |
| **Password** | Password for connecting to Genesys Configuration Server. |
| **Stat Server Application** | Stat Server application name in Genesys CME. |

3.  Click **OK.**
4.  Start UPL Interaction Layer as described in <u>Starting and Stopping UPL Interaction Layer</u>.

# Configuring Workflow Statistics

The **Workflow Statistics Configuration** window configures database connection settings and manages individual metrics. All configuration values in this and other windows are retrieved from or updated in Genesys Configuration Server. All values are specific to the instance of Stat Server specified in the main window.

The following topics are described in this section:

*   <u>Configuring Exigen Workflow Database Connection Properties for an Individual Project</u>
*   <u>Configuring Statistical Items</u>

### Configuring Exigen Workflow Database Connection Properties for an Individual Project

Exigen Workflow project databases are the sources of statistical data. Workflow statistics can be obtained individually from every project. Workflow statistics are not available for the master database, as it contains no project specific run-time data.

To configure Exigen Workflow database connection properties for an individual project, proceed as follows:

1.  Run UPL Configuration Tool.

    The **UPL Configuration** window appears.

2.  In the **UPL Configuration** window, click **Workflow Statistics Configuration.**

    The **Workflow Statistics Configuration** window appears.



*Figure 29: Workflow Statistics Configuration window*

3.  In the **Project name** list, select the predefined master project.

4.  Enter configuration values as described in the following table:

| Database connection parameters | |
| --- | --- |
| **Parameter** | **Description** |
| **Project Name** | Exigen Workflow project name. This parameter is read-only. |
| **Database driver class** | `JDBC` driver class name. |
| **Database URL** | Connection `URL` specific to the `JDBC` driver. |
| **Database user** | Username used to connect to the project database. |
| **Database password** | Password used to connect to the project database. |
| **Pooling frequency (seconds)** | Time in seconds between statistical value updates to the Stat Server cache. |

5.  To read all projects from the Exigen Workflow database, click **Refresh.**

6.  In the **Project name** list, select the appropriate project.

    In the **Workflow Statistics Configuration** window, the **Statistics used** check box appears, and the **Statistical Items** tab is enabled.
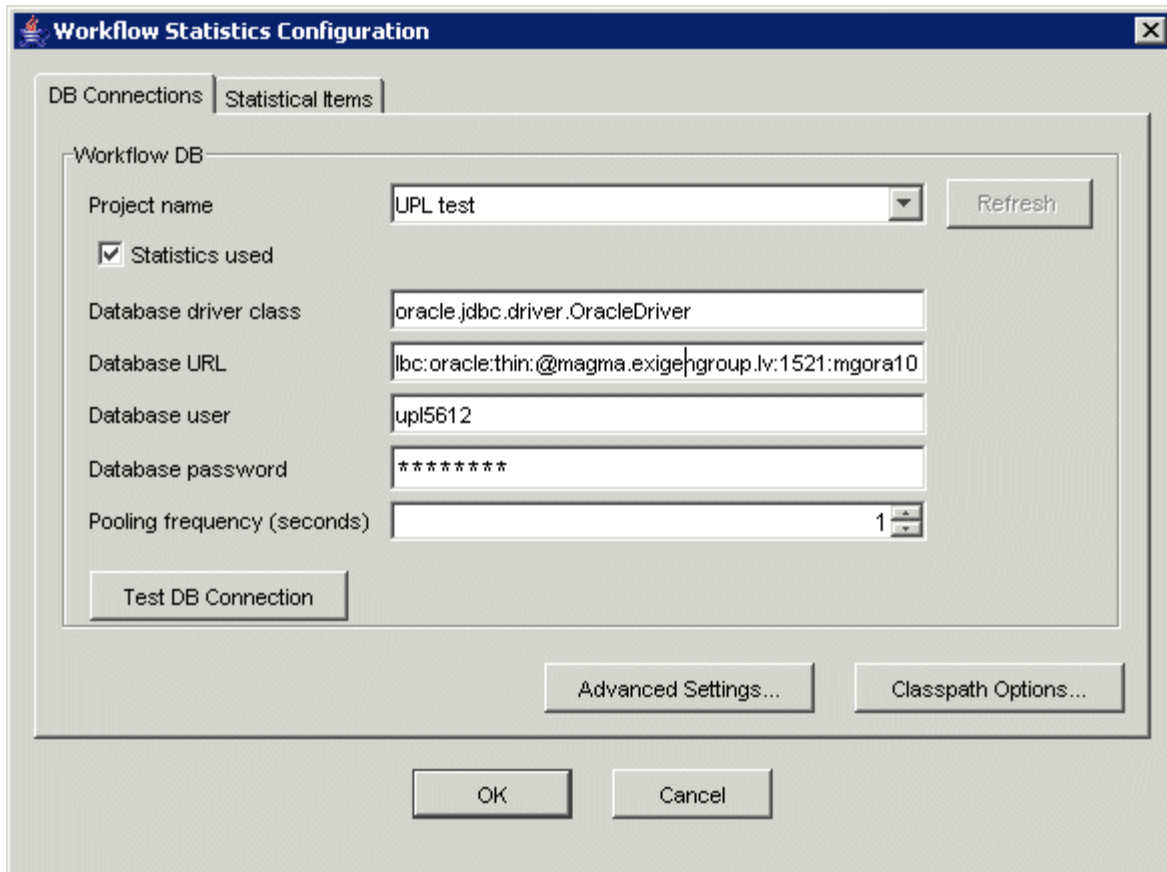
*Figure 30: Configuring the DB Connections tab*

7.  In the **DB Connections** tab, enter database connection parameters as described previously.

8.  To enable or disable gathering of workflow statistics for a project, proceed as follows:

    - To enable configuration settings for a particular project, select the **Statistics used** check box.

      Select the **Statistics used** check box only when an appropriate Exigen Workflow project is selected in the **Project name** list.

    - To disable configuration settings for a particular project, clear the **Statistics used** check box after all the statistical items are removed.

      For more information on how to remove the statistical items, see Configuring Statistical Items.

9.  To check the connection to the database, click **Test DB Connection.**

    The test result is displayed in a message box. If an error is displayed, follow the instructions as described in Handling Errors.

10. To configure advanced settings, click **Advanced Settings.**

    The **Advanced Settings** window appears.

    Advanced settings configure properties of the internal database connection pool maintained by workflow statistics run-time. Advanced settings must be changed only by experienced system administrators familiar with general principles of database connection pools.
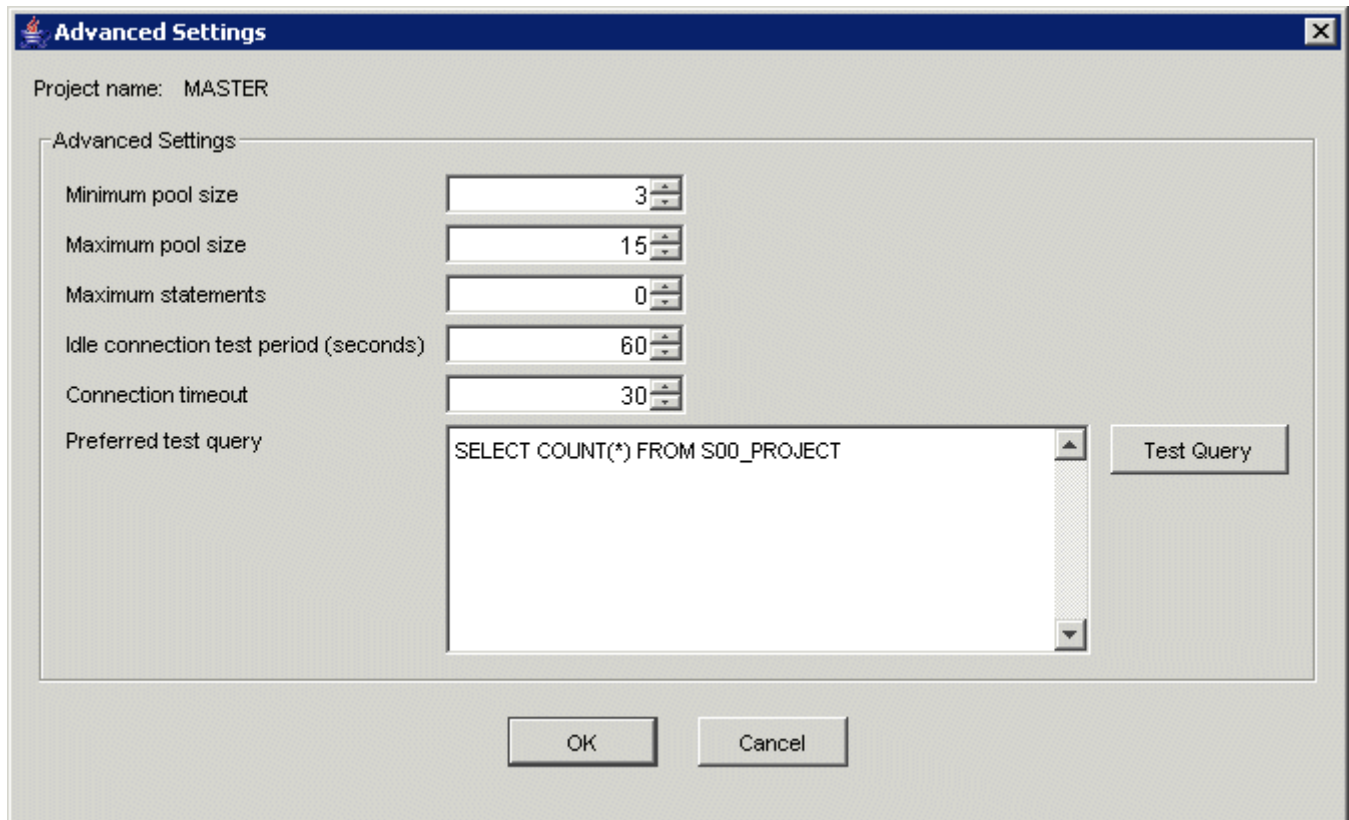
*Figure 31: Configuring the Advanced Settings window*

11. Enter setting values as described in the following table:

| Advanced settings | |
|---|---|
| **Parameter** | **Description** |
| **Minimum pool size** | Minimum number of connections a pool maintains at any given time. |
| **Maximum pool size** | Maximum number of connections a pool maintains at any given time. |
| **Maximum statements** | Size of the connection pool prepared statements cache. |
| **Idle connection test period (seconds)** | If this number is greater than 0, the connection pool tests all idle pooled connections every number of seconds specified in this field. |
| **Connection timeout** | Number of milliseconds a connection pool waits for a connection to be checked in or acquired when the pool is exhausted. Zero means wait indefinitely. Setting any positive value causes the get connection call to time out and break with an exception after the specified number of milliseconds. |
| **Preferred test query** | Query executed to test all connections in the pool. The field must contain a valid SQL statement. |

12. To execute the SQL statement, click **Test Query.**

The test result is displayed in a message box. If an error is displayed, follow the instructions as described in Handling Errors.

13. Click **OK.**

14. In the **Advanced Settings** window, click **OK.**

---

15. To add third party JDBC drivers to the Exigen Universal Process Link Configuration Console class path and use them when working with the database, in the **DB Connections** tab, click **Classpath Options.**

   The **Classpath Entries** window appears.
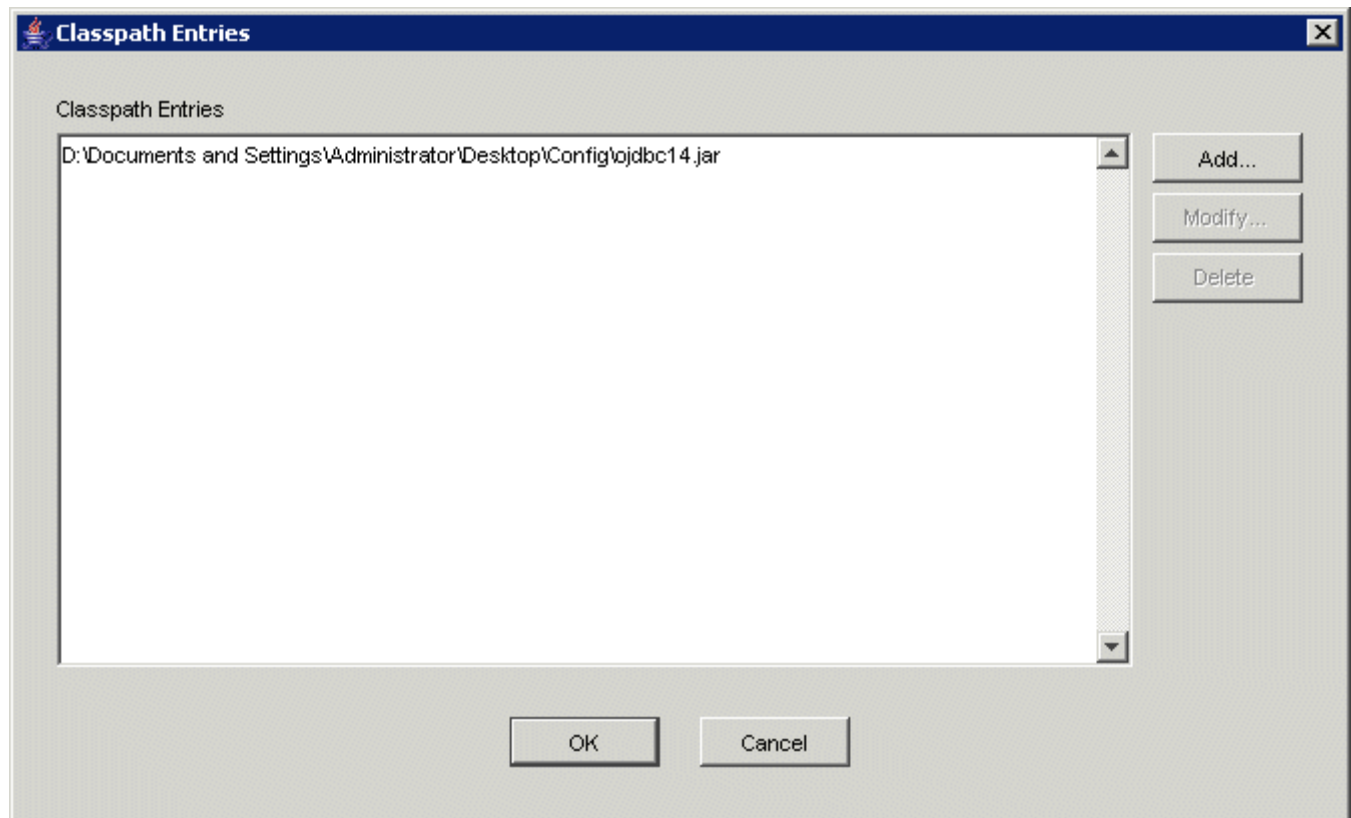


*Figure 32: Configuring the Classpath Entries window*

16. In the **Classpath Entries** window, add or modify JDBC drivers as required.

17. Click **OK.**

18. If any JDBC driver was modified or deleted, restart Exigen Universal Process Link Configuration Tool.

## Configuring Statistical Items

To configure statistical items, proceed as follows:

1. In the **UPL Configuration** window, click **Workflow Statistics Configuration.**

2. Select the **Statistical Items** tab.

3. In the **Statistical Items** tab, add or modify statistical items as required.

   The **Statistic Setting** window appears.

*Figure 33: Adding a statistical item*

4. In the **Name** field, enter the name of the statistical item.

   The statistical item name must be unique for the Stat Server instance.

5. Create an SQL statement, using the following controls:

| SQL statement creation controls | |
|---|---|
| **Control** | **Description** |
| **Stat objects** | Types of Genesys objects for which statistical information is obtained. For more information on available Genesys objects, see Workflow Statistics and Collections of Genesys Objects. |
| **Metric data type** | Data type of the value returned by the statistical item. |

| SQL statement creation controls | |
|---|---|
| **Control** | **Description** |
| **Keywords** | List of predefined SQL commands that can be clicked to automatically add to the SQL statement. This control is optional. |
| **Tables** | List of tables in the appropriate Exigen Workflow project. |
| **Fields** | List of fields in the selected table. |
| **Add new keyword** | Set of controls used to add custom keywords to the **Keywords** list. To add a new SQL command to the **Keywords** list, in the **Add new keyword** field, enter the SQL command and click [+]. To delete, select from the **Keyword** list and click [-]. |

Depending on the selected values, the generated SQL statement appears in the **SQL statement** field.

The following table describes buttons available in the **SQL Statement Editor** box:

| SQL Statement Editor box buttons | |
|---|---|
| **Button** | **Description** |
| **Insert Selected** | Inserts the combination of the selected keyword, table and field into the current cursor position of the **SQL statement** field. |
| **Reset Selection** | Resets the selected values in the **Keyboards**, **Tables,** and **Fields** lists. |
| **Clear Statement** | Clears the **SQL statement** text box. |
| **Test Query** | Executes the SQL statement, specified in the **SQL statement** field. |

It is possible to enter the SQL statement manually in the **SQL statement** text box. The following types of SQL statements are allowed as statistical queries:

- SELECT
- CALL

The SQL statement CALL is used to invoke a stored procedure.

Other statement types must not be used for statistical queries as they can alter or damage data in the database.

6. To execute the SQL statement, specified in the **SQL statement** field, click **Test Query.**

If the SQL statement contains commands other than SELECT or CALL, to prevent database damage, the following warning is displayed:
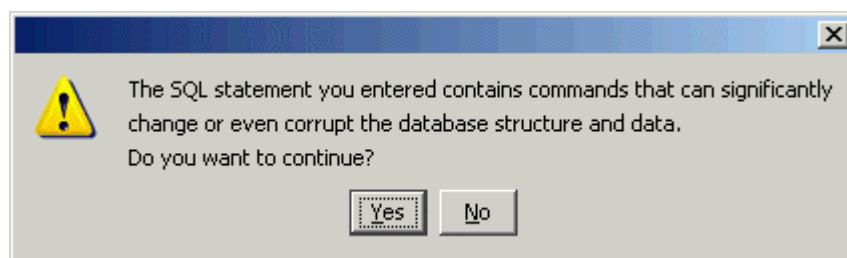


*Figure 34:Test Query warning message*

Only the first field of the first row in the record set returned by the SQL statement is used in the statistic value. If SQL query returns more than one row or field, the following warning message appears:
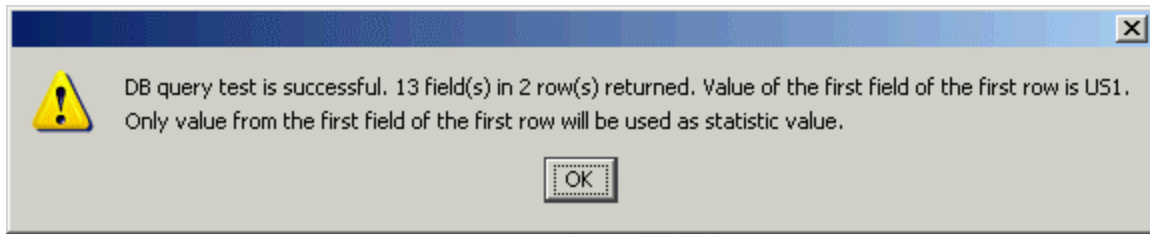


*Figure 35: Result window*

If the SQL statement has incorrect syntax, a database specific server error message similar to the following appears:
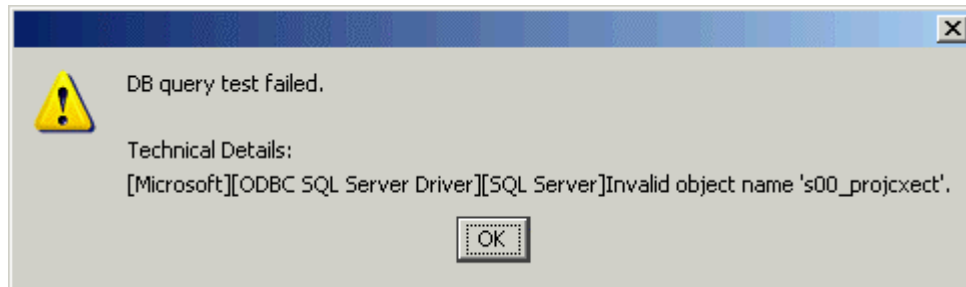


*Figure 36: Database query test error window*

If an error is displayed, follow the instructions as described in Handling Errors.

If everything is correct, the following message appears:



*Figure 37: Database test result message*

7.   Click **OK.**

If the **Statistic Settings** and **Advanced Settings** windows are closed by clicking **OK** and the query contains any SQL operators that can potentially damage the database, the following warning window appears:
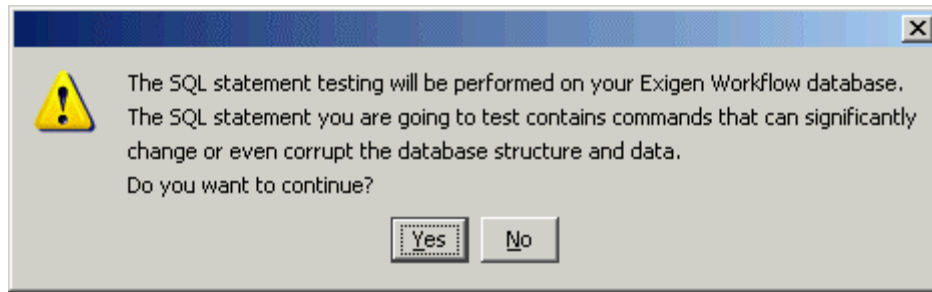
*Figure 38: Statistic Settings Configuration and Advanced Settings windows warning message*

8. Restart Genesys Stat Server and CCPulse+.

# Handling Errors

When an error occurs in Exigen Universal Process Link Configuration Console, an appropriate message box appears. It contains an error description and, if available, technical information. Detailed error information is recorded to the standard error stream. By default, the standard error stream is directed to the Windows console, but can be redirected to a file.

To redirect the error stream to a file, proceed as follows:

1. In the directory where UPL Interaction Layer is installed, open the `UplConfigConsole.bat` file.
2. Replace the following line:

```
start javaw -cp %UPL_CC_CP% com.exigen.upl.configuration.ui.impl.Application
```

with the following:

```
javaw -cp %UPL_CC_CP% com.exigen.upl.configuration.ui.impl.Application 2>
err.txt
```

3. Save the changes.

**Note:**      Workflow statistics run-time uses the Stat Server log file to record all errors and exceptions.

If an error occurs in run-time while calculating statistical values, for example, if Exigen Workflow database becomes unavailable, workflow statistics run-time returns -1 as a statistics value. The same value is returned even if a string type is used for the statistic. Detailed technical information about run-time errors is routed to the standard Stat Server log file.

For information on how to locate the Stat Server log file, see *Framework 7.2 Stat Server Deployment Guide*, Common Log Options.

# Starting and Stopping UPL Interaction Layer

To start UPL Interaction Layer, perform the following steps:

1. Select **Start > Settings > Control Panel > Administrative Tools > Services.**
2. In the **Services** window, locate and select the Exigen UPL Interaction Layer service.

3. Click **Start Service.**

To stop UPL Interaction Layer, perform the following steps:

1. Select **Start > Settings > Control Panel > Administrative Tools > Services.**
2. In the **Services** window, locate and select the Exigen UPL Interaction Layer service.
3. Click **Stop Service.**

# Configuring the Interaction Submitter Job

This section describes how to configure the Interaction Submitter job and start Automatic Queue Server.

The **Interaction Submitter job** is an Automatic Queue Server job that uses the following Exigen Universal Process Link handlers:

- Interaction Submitter
- Interaction Submitter Filter

To configure the Interaction Submitter job, proceed as follows:

1. Ensure the **Exigen Workflow Queue Server** service is started.
2. Select **Start > Programs > Exigen Solution > Exigen Workflow > Queue Server Console.**

   The **Queue Server Console** window appears.
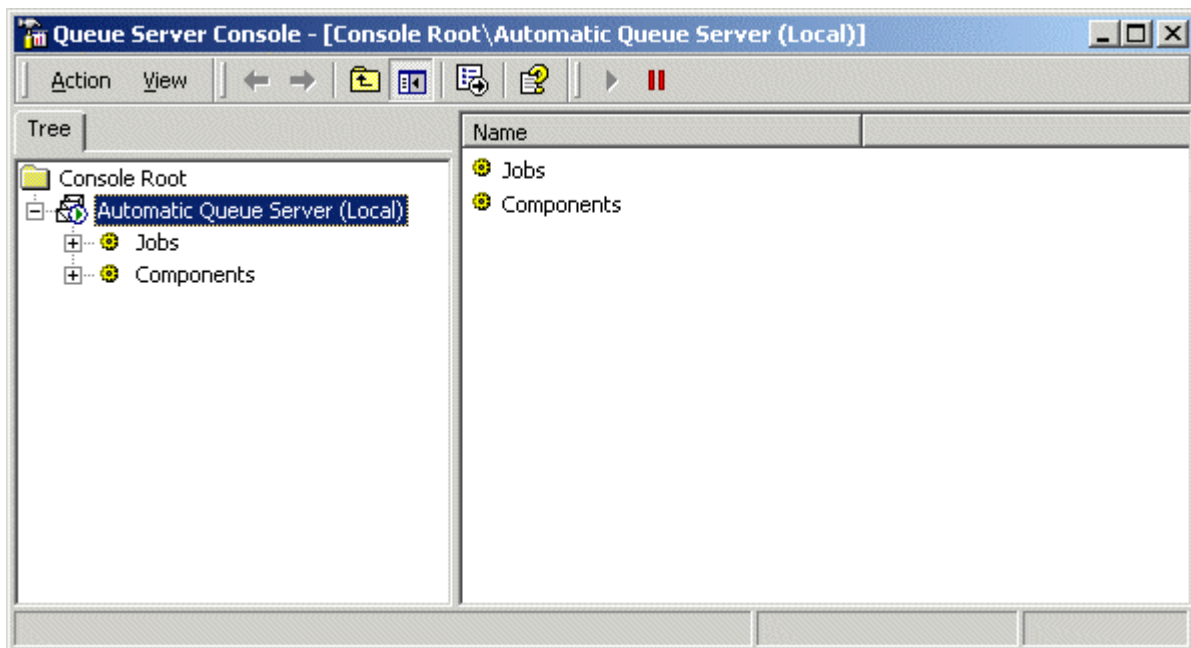


*Figure 39: Automatic Queue Server console*

3. Right click **Jobs** and select **New > Queue Server Job.**

   The **New Queue Server Job** window appears.

*Figure 40: Creating a new job*

4. In the **Workflow** field, enter the source workflow ID.

5. In the **Node** field, enter the source node ID.

6. In the **Mailbox** field, enter the source common user ID.

7. In the **Category** field, enter the job category.

   The Automatic Queue Server console groups jobs of the same category. This property affects only how jobs are displayed in the Automatic Queue Server console.

8. In the **Batch Size** field, enter the number of work items processed during a single Automatic Queue Server iteration.

   A recommended value is from 1 to 25.

9. In the **Filter ID** list box, select *VisiFLOW.ProcHandler.QS.UPLSubmitter.Filter.*

10. In the **Component ID** list box, select *VisiFLOW.ProcHandler.QS.UPLSubmitter.*

11. Leave default values in other fields.

*Figure 41: Configured Interaction Submitter job*

12. Select the **Additional Parameters** tab.

The **Additional Parameters** displays a list of Interaction Submitter handler parameters.



*Figure 42: Configuring additional job parameters*

13. For each parameter, perform the following steps:
   - Select a parameter.
   - Press **F2.**
   - Enter the value as described in the following table:

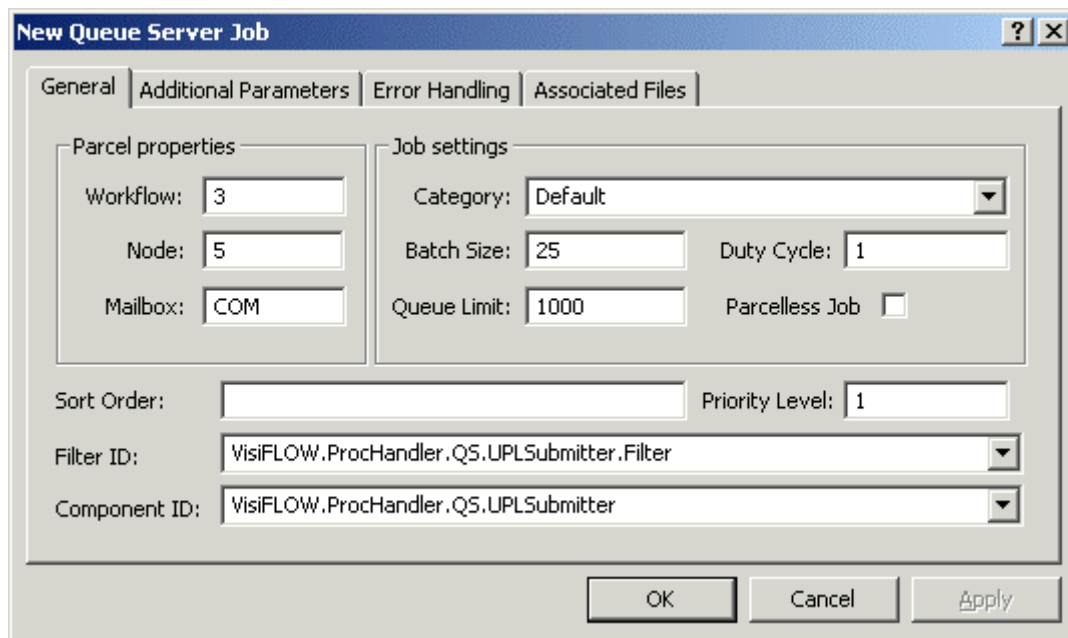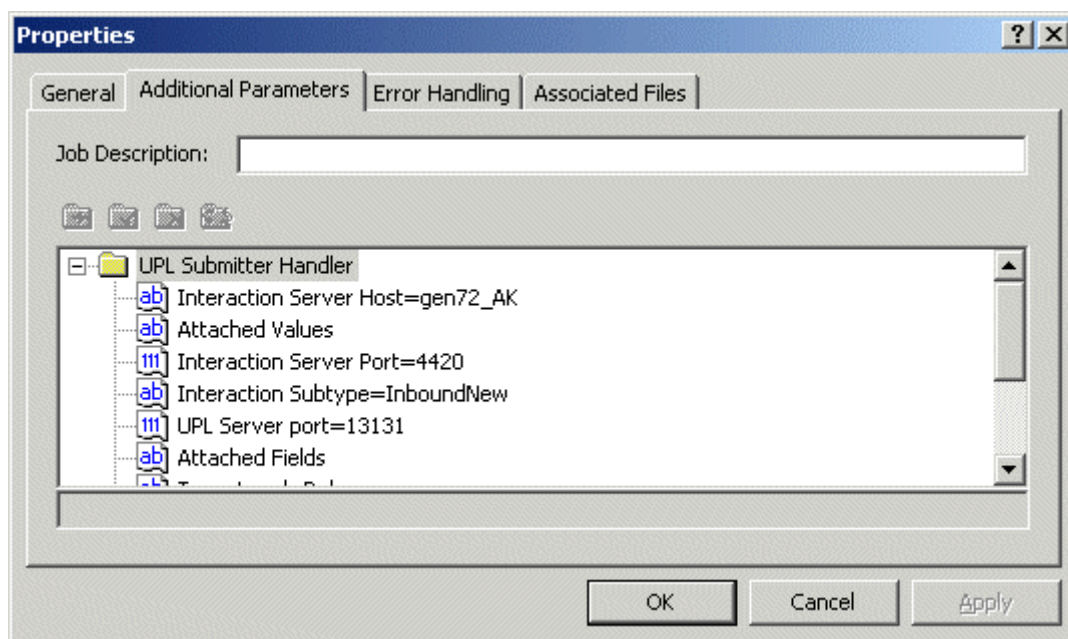| Interaction Submitter parameters | |
|---|---|
| **Parameter** | **Description** |
| **Media Type** | Value of the enumerator Media Type as defined in the Genesys configuration.<br><br>The default value is **workitem.** |
| **Queue Name** | Name of the target interaction queue in Genesys. |
| **Interaction Type** | Value of the enumerator Interaction Type as defined in the Genesys configuration.<br><br>The default value is **Inbound.** |
| **Interaction Subtype** | Value of the enumerator Interaction Subtype as defined in the Genesys configuration.<br><br>The default value is **InboundNew.** |
| **Attached Values** | List of key and value pairs that are attached to the interaction using the following syntax:<br><br>`<key 1>=<value 1>,<key 2>=<value 2>,…,<key n>=<value n>`<br><br>This parameter is optional. |
| **Attached Fields** | List of comma-separated work item field names whose values are attached to the interaction.<br><br>The following tables can be used as a source for attached data:<br>• BATCHPARCEL<br>• DOCUMENT<br>• FOLDER<br>• SUBFOLDER<br>The list format is as follows:<br>`<table name>$<field name>, <table name>$<field name>, …`<br>When a table name is omitted, it is assumed that the source table is BATCHPARCEL.<br><br>The following is an example of the **Attached Fields** parameter value:<br>`IDENTITY, MAILBOX, USER_ID_FROM, BATCHPARCEL$NODE_ID_FROM, DOCUMENT$DOC_RSN`<br><br>**Warning:** The PARCEL_USER_ID field must be referenced as **MAILBOX** and the PARCEL_ID field must be referenced as **IDENTITY.**<br><br>Field values are attached to the interaction according to the following rules:<br>• When a parcel contains multiple documents, the value from the first document is attached.<br>• When a specified table and field name pair does not exist, the Interaction Submitter job issues an exception and does not submit the parcel.<br>This parameter is optional. |

| Interaction Submitter parameters | |
|---|---|
| **Parameter** | **Description** |
| **Trace Level** | Level of trace information details.<br><br>The following table describes possible trace level values: |

| Level | Numeric equivalent | Description |
|---|---|---|
| Fatal | 1 | Only permanent failures are logged in the trace output. |
| Error | 2 | Errors are logged in the trace output. |
| Warning | 3 | Warnings are logged in the trace output. |
| Info | 4 | Trace information is logged in the trace output. |
| Debug | 5 | Debug information is logged in the trace output. |

All trace messages whose value is less than the specified value are also logged in the trace output.

| Parameter | Description |
|---|---|
| **Interaction Server Host** | Host name of the computer on which Interaction Server is running. |
| **Interaction Server Port** | Interaction Server port. |
| **UPL Server Port** | UPL Interaction Layer port. This port number is also specified when configuring UPL Interaction Layer application in Genesys CME. |
| **UPL Server Host** | Host name of the computer on which UPL Interaction Layer is running. |

The Interaction Submitter job passes **Interaction Server Host** and **Interaction Server Port** to UPL Interaction Layer. UPL Interaction Layer uses these parameters to ensure it has a corresponding Interaction Server in the connections list of the UPL Interaction Layer application.

14. In the **New Queue Server Job** window, click **OK.**

15. Close the Automatic Queue Server console.

The Interaction Submitter job is configured and can be started. For information on starting and stopping an Automatic Queue Server job, see *Exigen Workflow Administrator's Guide, Part 2: Business Component Reference.*

# Configuring Genesys Management Layer

Exigen Universal Process Link is not directly integrated with Genesys Management Layer but can be designated in the Genesys Management Layer as a third party application. For information on setting up third party applications in Genesys Management Layer, see Genesys CIM Platform documentation.

# Chapter 4: Best Practices and Recommendations

This section describes recommendations for solution implementation teams on using workflow statistics. Although every effort has been made to align workflow statistics with Genesys built-in statistics and make them transparent to use, some subtle differences must be considered when implementing workflow statistics.

The following topics are described in this section:

- Configuring Statistics in CCPulse+
- Workflow Statistics and Collections of Genesys Objects
- Caching Statistical Values

## Configuring Statistics in CCPulse+

Genesys CCPulse+ is a Stat Server client application. It is the standard tool used by system administrators to obtain real time and historical metrics on operation of the call or processing center. Workflow statistics are available in CCPulse+ as are any other Genesys native statistics. When defining workflow statistics in the Exigen Universal Process Link Configuration Console, the administrator configures its name and associates it with one or more Genesys object types. This configuration is reflected in CCPulse+ and workflow statistics become available only for a configured set of object types.

Workflow statistics are not parameterized, which means that a particular object requesting statistics cannot be specified. If the same statistic is requested for agents A1, A2, and A3 then it returns the same value for every agent. To create statistics for specific objects, hard coded parameters in the SQL statistic query must be used. If it is required to create statistical items for individual agents then it is recommended to use the `WHERE` clause, for example as follows:

```
WHERE USER_ID = "A1"
```

Genesys Stat Server supports a flexible mechanism to control the frequency of updates of statistical values sent back to its clients. Workflow statistics run-time can slightly alter this mechanism, as it performs internal caching of statistical values for better database load control. For more information on implications on the frequency of updates when using the caching mechanism, see Caching Statistical Values.

The following table describes notification modes supported by Genesys CCPulse+:

| Notification mode types | |
|---|---|
| **Mode** | **Description** |
| Time based | Instructs Stat Server to recalculate statistics on the frequency displayed in the **Notification Frequency** field. |
| Change based | Instructs Stat Server to immediately notify CCPulse+ about statistical changes.<br><br>**Note:** The actual calculation for insensitivity depends on the version of Stat Server used. |
| No notification | Instructs Stat Server to turn off automatic notification for the statistic. |
| Reset based | Instructs Stat Server to notify CCPulse+ immediately before a statistic is reset to zero. |

Workflow statistics can support aggregation, but only if the statistical query returns aggregated values. This can be implemented, for example, by using stored procedures that aggregate data in a database table.

For historical Exigen Workflow reporting, it is recommended to define statistical queries against Exigen Workflow audit tables.

For more information on statistics configuration, see the following documentation:

- *CCPulse+ Help*
- *Genesys Reporting Technical Reference Guide 7.2*
- *Framework 7.2 Stat Server User's Guide*

# Workflow Statistics and Collections of Genesys Objects

Workflow statistics can be defined for all valid Stat Server object types. Stat Server Genesys objects are the following:

- Agent
- Place
- GroupAgents
- GroupPlaces
- RegDN
- RoutePoint
- Queue
- GroupQueues
- Campaign
- CampaignGroup
- CallingList
- CampaignCallingList

If a workflow statistic is requested for a specific object, data is collected only for that object. When a statistic is requested for an object that represents a group, data is collected for the object of the group. For example, if statistics are created for an AgentGroup object, data is collected for the AgentGroup object, but not for every Agent in the group represented by this object.

# Caching Statistical Values

Properties of workflow statistics are defined in client applications, such as CCPulse+. It is possible to define time based notifications with frequent updates, such as once every two seconds. Given the substantial number of statistics typically configured in production environments, workflow statistics run-time implements a caching mechanism to limit the number of queries sent to database. The caching mechanism ensures that the Exigen Workflow database is not overloaded by excessive queries.

Caching mechanism of the workflow statistics run-time relies on the following parameters:

| Caching mechanism parameters | |
| --- | --- |
| **Parameter** | **Description** |
| Pooling frequency | Defines the maximum frequency that the statistical value is recalculated by executing the statistic SQL query. For more information on configuring this parameter, see Configuring Exigen Workflow Database Connection Properties for an Individual Project. |
| Notification frequency | Defines the frequency Stat Server requests statistical values from workflow statistics runtime. For more information on configuring this parameter, see Genesys CCPulse+ documentation. |

The caching mechanism selects either pooling frequency or notification frequency as the actual database query frequency whichever is greater. If pooling frequency is greater than notification frequency, database queries are performed according to the pooling frequency parameter, and the CCPulse+ operator can be presented with outdated statistical values. Otherwise, if notification frequency is greater than pooling frequency, the frequency of database queries is the same as notification frequency. This way caching allows the administrator to balance between database load and actuality of statistical values.

The additional notes on statistical values caching are as follows:

- Change based and time based statistics are always cached.
- Reset based statistics are not cached, as their notification frequency depends on time profiles.
- For non-cached statistics, Exigen Workflow Stat Server Java Extensions (Exigen Workflow SSJE), which is an internal name for workflow statistics run-time, executes the SQL statement immediately and returns the value to Stat Server.
- Configuration of interval types does not affect the caching strategy.

# Appendix A: Workflow Statistics Architecture

This section describes the structure of workflow statistics.

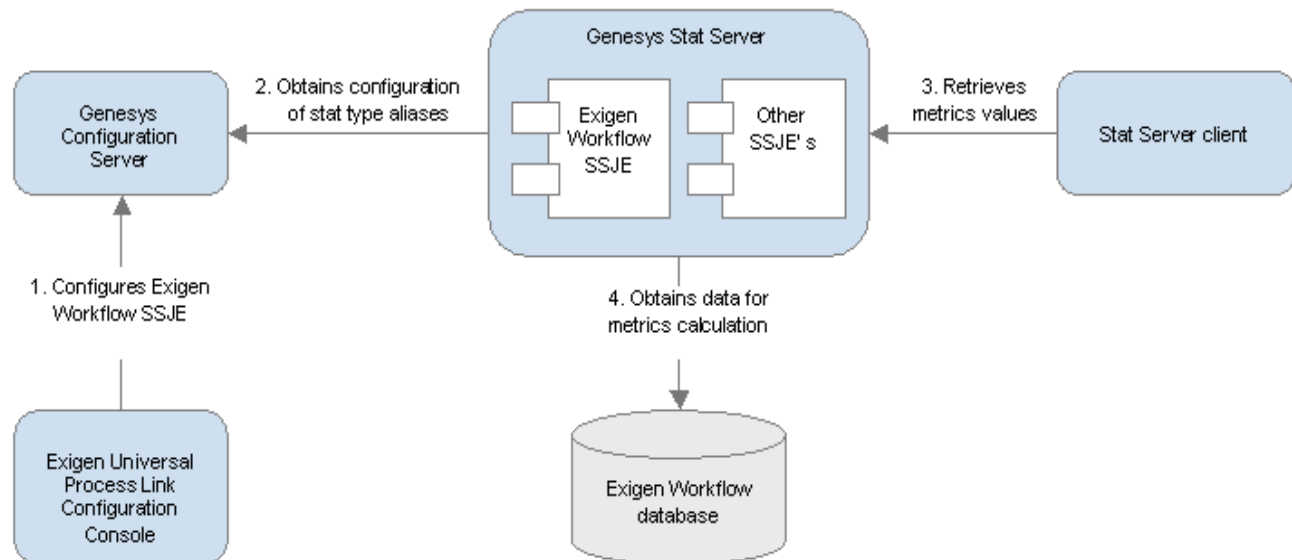The following figure displays the relationship among the involved components.



*Figure 43: Exigen Workflow statistical extensions architecture*

The following table defines components that enable workflow statistics run-time to provide workflow statistical metrics:

| Component definitions | |
|---|---|
| **Component** | **Definition** |
| Genesys Stat Server | Component supplying statistical information on request about customer interaction networks to client applications such as CCPulse+. |
| Genesys Configuration Server | Component serving as a central configuration repository for workflow statistics run-time. It holds configurations for the extensions and individual metrics configured by the administrator. |
| Stat Server Client | Application retrieving statistics provided by Genesys Stat Server. The client application defines the applicable set of objects and for each object, it defines the set of metrics to retrieve. It can also define retrieval properties, such as frequency of polling, filtering, and other activities. |
| Exigen Universal Process Link Configuration Console | Exigen Universal Process Link Configuration Console is a central point of Exigen Universal Process Link configuration, including workflow statistics run-time. In regards to SSJEs, Exigen Universal Process Link configuration console enables defining and associating metrics with certain types of Genesys objects. |
| Exigen Workflow database | Storage place for work items and other workflow data. |

For more information on the preceding components, see Exigen Universal Process Link Architecture.

# Appendix B: Internal Configuration of Workflow Statistics

This section describes the internal structure of workflow statistics configuration.

**Warning:** This information must be used for educational purposes only. The configuration values must not be modified manually.

Configuration of workflow statistics is kept in the Genesys Configuration Server database. Configuration values are available in the Stat Server configuration part of Genesys Configuration Manager.
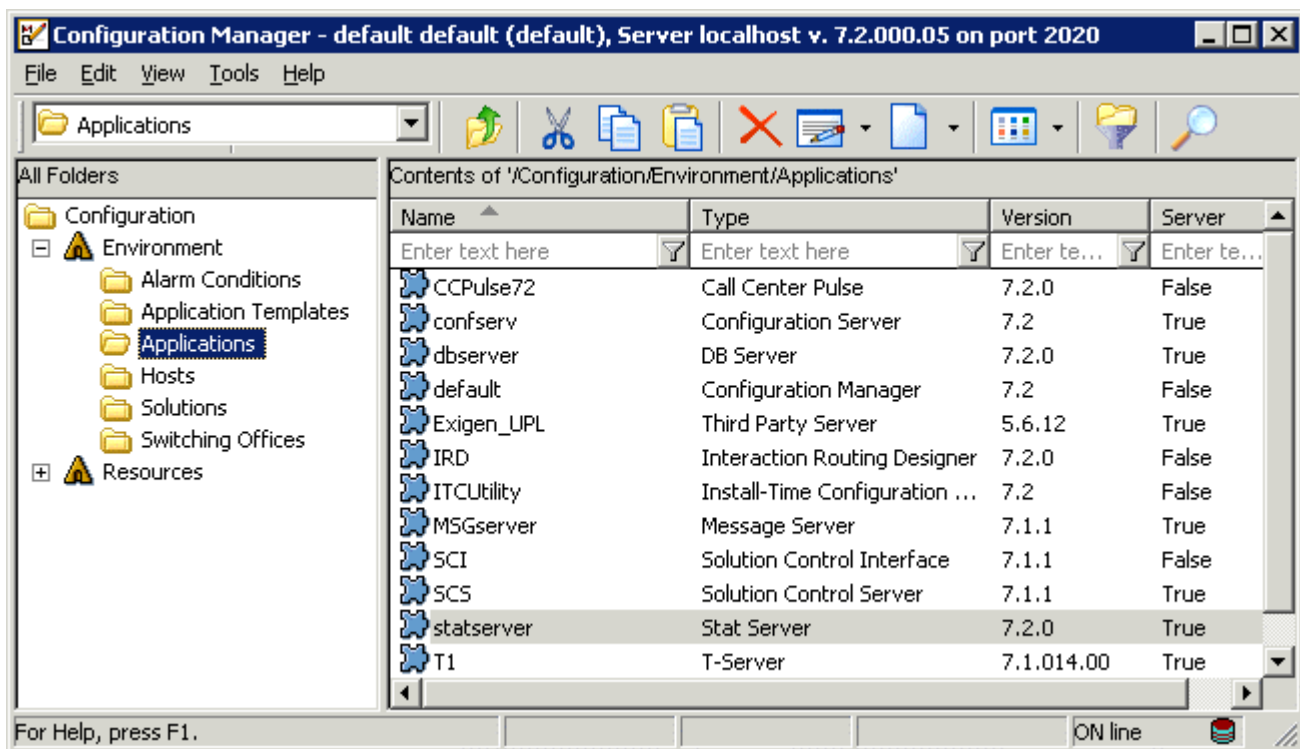


*Figure 44: Genesys Configuration Manager window*

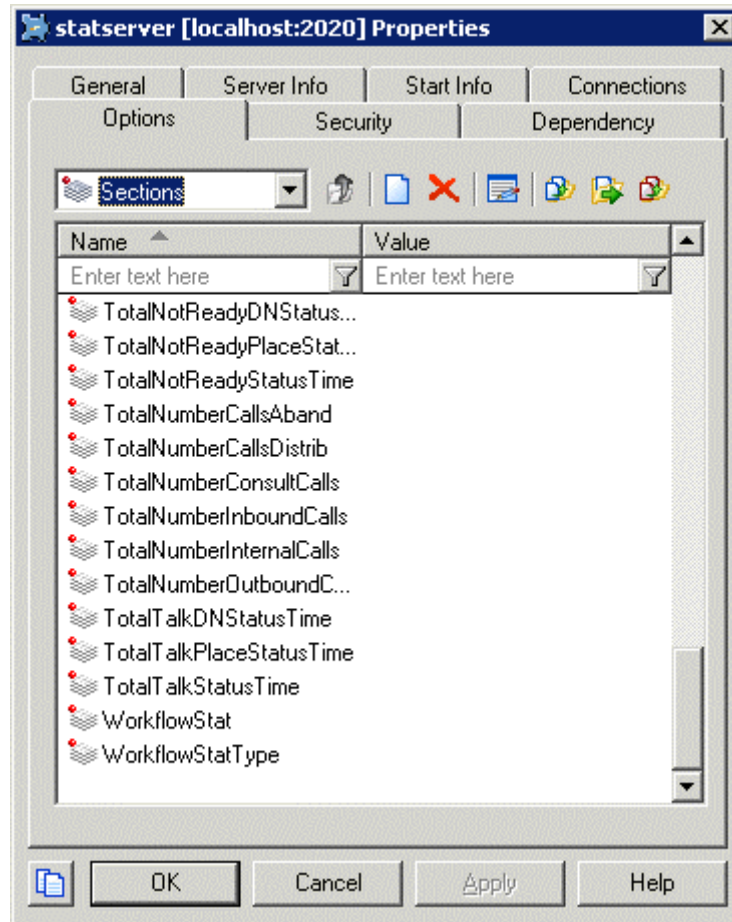The Stat Server configuration window resembles the following:

*Figure 45: Stat Server configuration window*

The main configuration parts are as the following:

- configuration of SSJEs
- configuration of workflow statistics run-time
- configuration of specific statistics

The following table lists **java-extensions** section options:

| java-extension section options | | |
|---|---|---|
| **Option** | **Value** | **Description** |
| WorkflowStat.jar | yes | Instructs Stat Server to load and use workflow statistics run-time from the package WorkflowStat.jar. |

The **WorkflowStat** section defines extension parameters. Some parameters are defined individually for each project. They are preceded by the <prj_id> prefix, where <prj_id> is the project ID defined in the **projects-list** option. The following table lists the **WorkflowStat** section options:

| WorkflowStat section options | | |
| --- | --- | --- |
| **Option** | **Value** | **Description** |
| java-extension-jar | `WorkflowStat.jar` | Associates this set of parameters with workflow statistics run-time. |
| projects-list | <comma separated list of project IDs> | Comma separated list of project IDs from the S00_PROJECTS table. |
| <prj_id>-db-driver-class | <JDBC driver class name> | Fully qualified JDBC driver class name, such as the following:<br>`oracle.jdbc.driver.OracleDriver` |
| <prj_id>-db-driver-url | <connection URL> | Set of connection parameters specific to the particular `JDBC` driver. |
| <prj_id>-db-driver-user | <database user name> | User name used to connect to the Exigen Workflow database. |
| <prj_id>-db-driver-password | <database user password> | Password used to connect to the Exigen Workflow database. This parameter must be encrypted with a simple symmetric cipher. |
| <prj_id>-polling-frequency | <frequency in seconds> | Minimal time interval for database polling to retrieve updated metric values. The default value is 60 seconds. |
| <prj_id>-checkout-timeout | <timeout in seconds> | Time waiting for a connection to be available. The default value is 30 seconds. |
| <prj_id>-db-min-pool-size | <pool size> | Minimum number of connections kept in a pool. |
| <prj_id>-db-max-pool-size | <pool size> | Maximum number of connections kept in a pool. If the pool size reaches this value, the connection pool waits for the number of seconds specified in the <prj_id>-checkout-timeout option for another connection to be returned to the pool. |
| <prj_id>-db-max-statements | <cache size> | Size of the prepared statements cache. |
| <prj_id>-db-idle-connection-test-period | <test period in seconds> | Frequency of checking idle pool connections for validity. |
| <prj_id>-db-preffered-test-query | <SQL statement> | SQL statement used to test a connection for validity. This statement must be correct and must not affect any data in the Exigen Workflow database. The length of the statement is limited to 254 symbols. For the master database, the default test statement is the following:<br>`SELECT COUNT(*) FROM S00_PROJECT`<br>For project databases, the default test statement is the following:<br>`SELECT COUNT(*) FROM <PRJ_ID>_PRJSETUP` |

The **Stat type alias** section configures aliases for particular statistic types. The number of configured sections depends on the number of statistics defined in Exigen Universal Process Link Configuration Console. The following table lists stat type alias options:

| Stat type alias section | | |
|---|---|---|
| **Option** | **Value** | **Description** |
| Category | JavaCategory | Defines the stat type alias as a statistics category implemented as SSJE. |
| JavaSubCategory | `WorkflowStat.jar:Workf lowDoubleStatType` or `WorkflowStat.jar:Workf lowStringStatType` | Specifies the JAR file containing stat type implementation and the main StatType class. Double or string StatTypes are automatically selected depending of the return type of the metric. |
| Objects | Any set of standard Genesys object types, such as Agent, Place, GroupAgents, and other | Defines the set of Genesys object types applicable to particular statistics. |
| alias-id | Any identifier | Defines a unique ID for the stat type alias. |
| sql<N> | Part of SQL statement | Defines a set of parameters, such as sql1, sql2, sql3, and so on, containing segments of the actual SQL statement. All segments are merged together before execution. There are no spaces or any other characters between segments. |
| data-type | *double* or *string* | Defines the type of the metric value. |
| project-id | <project ID> | Defines the project ID for which the metric must be retrieved. |