Progress®



Pro2® Web User Interface

OpenEdge®

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Preface

Purpose

This manual explains how to navigate through the OpenEdge® Pro2 web user interface. The Pro2 Web Interface enables users to monitor replication statistics such as processed record counts per thread and table performance. It provides details about the dashboard, the manage replication tab, properties and actions windows. Additionally, this section also explains in detail the replication process in Pro2.

For the latest documentation updates see the OpenEdge Product Documentation Overview page on Progress Communities:
https://community.progress.com/technicalusers/w/openedgegeneral/1329.openedge-product-documentation-overview.aspx.

Audience

This book is intended for database administrators (DBA's) and consultants to help them to have an easy and simple way of configuring the replication process. It assumes a fundamental knowledge of both OpenEdge and DataServer for MS SQL and Oracle.

Organization

Dashboard

Describes the statistics such as processed record count per thread and thread load in visually informative charts and graphs.

Manage replication

Describes the process of creating a new replication process, managing the existing replication process and deleting replication process.

Properties

Describes the process to edit, create and delete properties in the replbasev4.ini file.

Actions

Discusses the idea of the modifications and the enhancements that can be done to the replication thread in detail.

Documentation conventions

See Documentation Conventions for an explanation of the terminology, format, and typographical conventions used throughout the OpenEdge content library, including information about the following:

- Using ABL documentation
- Examples of syntax descriptions
- OpenEdge messages

1

Pro2 web interface

The Pro2 web user interface simplifies replication setup, configuration, and monitoring and provides a you with the means to complete complex tasks such as bulk-loading. The Pro2 web user interface is browser independent and runs in an instance of PAS for OpenEdge. Use this interface to monitor replication statistics such as processed record counts per thread and table performance. The web user interface includes the following tabs:

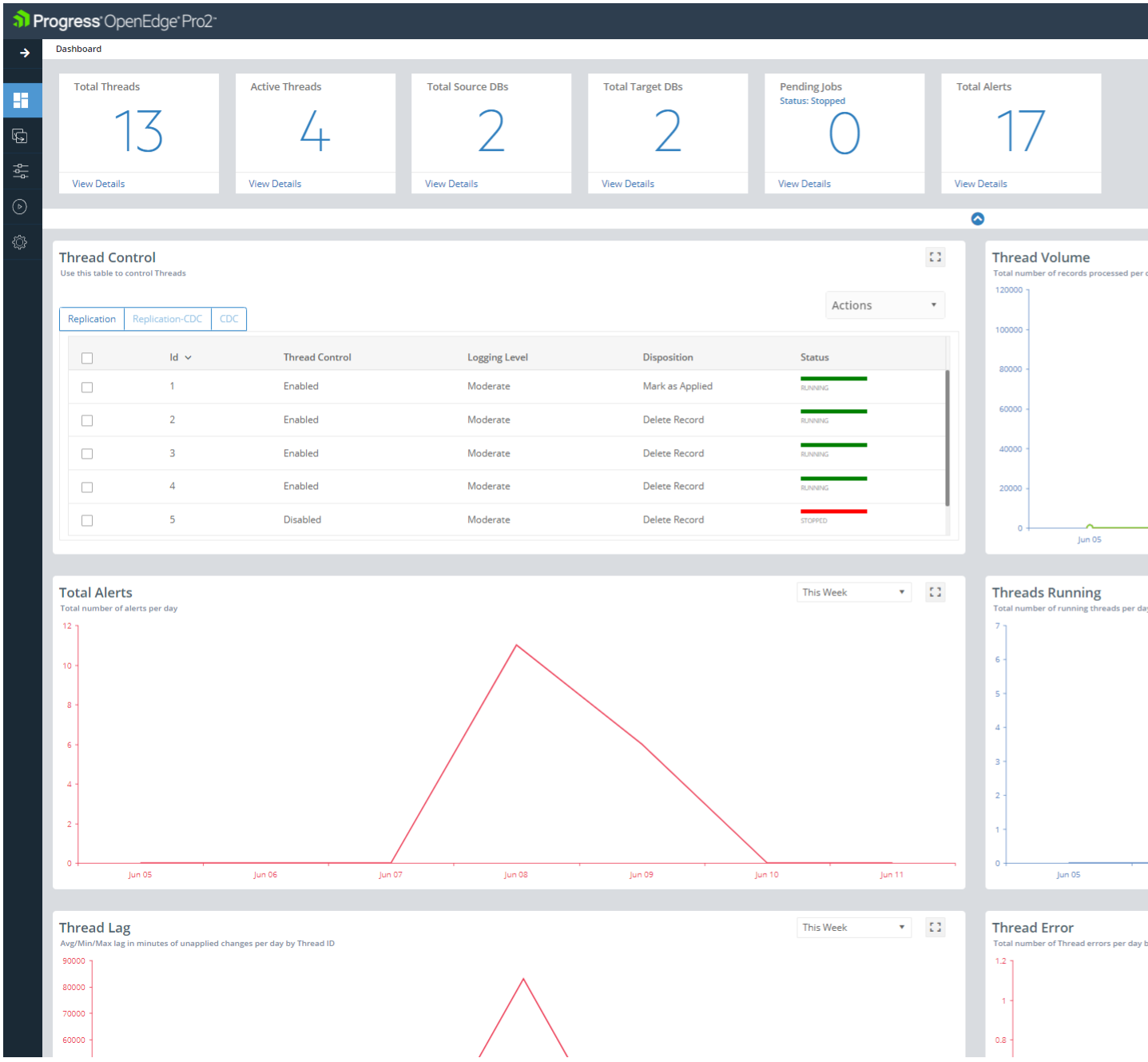
- Dashboard
- Manage Replication
- Properties
- Action
- Settings

For details, see the following topics:

- Dashboard
- Manage replication
- Properties
- Actions

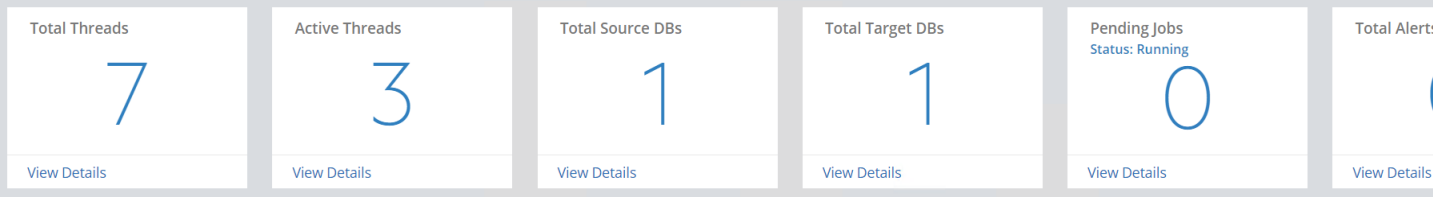
Dashboard

Dashboard displays statistics such as processed record count per thread, thread load, and others, in visually informative charts and graphs as well as thread managements options.



Watch boxes

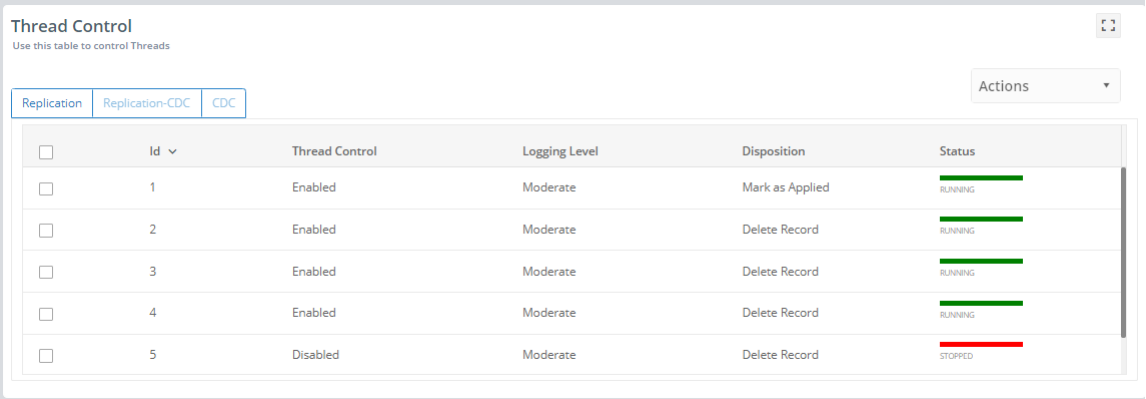
The Watch boxes on the dashboard offer information on the various moving parts in Pro2. They consist of tiles that display information on total replication threads, the threads that are active, the total number of source and target databases, pending jobs, and total alerts.



You can find more information, and options to delete or add, by selecting **View Details** on each Watch box. Additionally, you can find the **Thread Type**, **Thread ID**, **Replication Control**, **Logging Level**, **Disposition of the thread**, and **Status** on the Details screen.

Thread control

Thread Control displays Replication, Replication-CDC, or CDC threads that can be acted on and displays the status for those threads.



Thread Control

You can use Thread Control to enable or disable threads. This will enable them, or prevent them from replicating.

Logging levels

- **None**—No logging
- **Minimum**—Writes start and stop time of replication process and writes number of records processed per cycle
- **Moderate**—Minimum logging levels plus any errors
- **Extended**—Moderate logging level plus warnings
- **Verbose**—Extended logging level plus information for each individual replqueue record processed

Typically, logging level is set to verbose during initial implementation and testing. It is possible to for the Logs to become too large verbose mode. To avoid to avoid this, lower the logging level after your initial implementation.

Disposition

The Disposition box allows you to choose what happens to the replication record after it is processed. Typically, Queue Disposition is set to **Delete Record**. When **Delete Record** is selected, the Replication Processor deletes the replication record once it is processed. When **Mark Record Applied** is selected, the Replication Processor modifies the replication record by setting its “Applied” flag to true. No further action is taken on applied records with this setting and a separate `PurgeQueue.p` procedure needs to be run when the queue records are no longer needed and can be deleted.

Status

The Replication Status shows the status of the replication. The status shows as **RUNNING** when the Replication Processor is either actively cycling through the queue or is in a paused state between cycles. This is also indicated by a green status bar.

If the Processor is neither active nor sleeping, then the status is **STOPPED**, indicated by a red status bar.

Graphs

There are five graphs present on the dashboard Total Alerts, Thread Volume, Thread Running, Thread Lag, and Thread Error

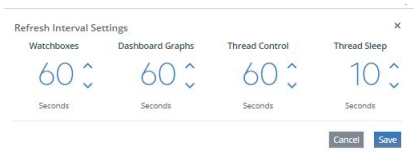
- **Total Alerts**—This graph specifies the alerts that are triggered when a replication thread stalls or stops. You can check the alerts for the current week or the week before.
- **Thread Volume**—This graph represents the volume of replication threads running at a point and time. You can have a consolidated data of the same for the current week and the week before.
- **Thread Running**—This graph represents the replication threads running at a point and time. You can have a consolidated data of the same for the current week and the week before.
- **Thread Lag**—This graph represents the replication records lag time between creation and processing, at a point and time per day, by thread number.
- **Thread Error**—This graph represents thread errors while processing records at a point and time per day by thread number.

Dashboard settings

Use the filter button  to customize the dashboard according to your needs.

You can modify the refresh interval settings for:

- Watch boxes
- Dashboard Graphs
- Thread Control
- Thread Sleep



The refresh interval is measured in seconds and automatically refreshes the queue browser at the desired interval. Click **Save** to apply changes.

Note: The minimum refresh time permitted is 10 seconds. However, you can turn off automatic refresh by setting the interval to 0 (Zero).

Manage replication

This tab is responsible for creating a new replication process, managing the existing replication process and deleting replication process.

Creating a new replication process consists of the following steps:

1. Select Source
2. Select Target
3. Generate Target Schema
4. Mapping
5. CDC Mapping
6. Advanced Configuration
7. Generate Code

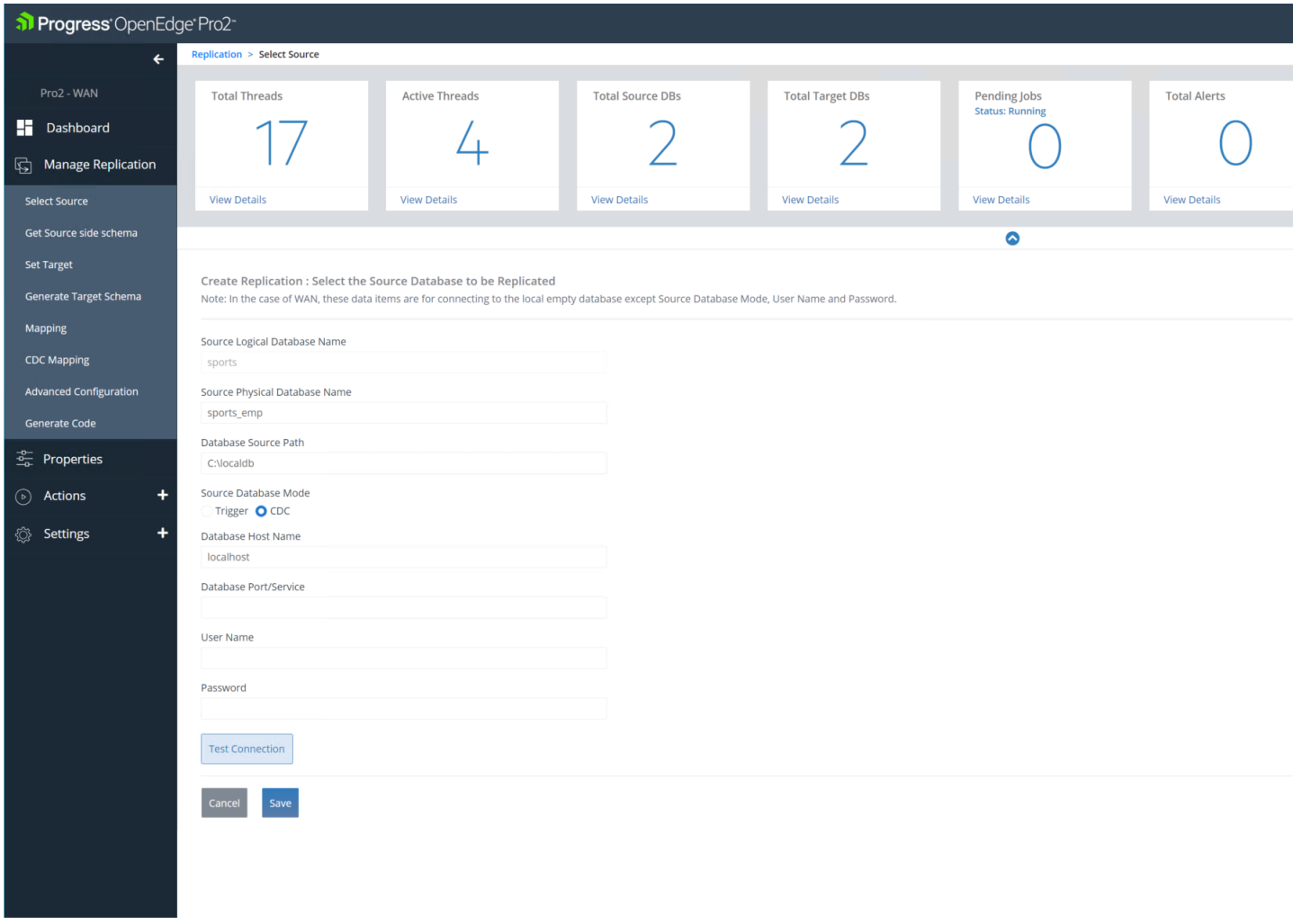
The **+New** tab begins the creation of new replication process. Clicking on this button opens the **Create Replication** window where you are required to do global setting for the replication instance being created. You can choose the setting and click **Next** to reach the **Select Source** window.

Note: These settings can be modified later.

Select source

This window allows you to select the Source Database to be replicated. You are required to fill the following fields:

- Source Logical Database Name
- Source Physical Database Name
- Database Source Path
- Source Database Mode
- Database Host Name
- Database Port/Service
- User Name
- Password

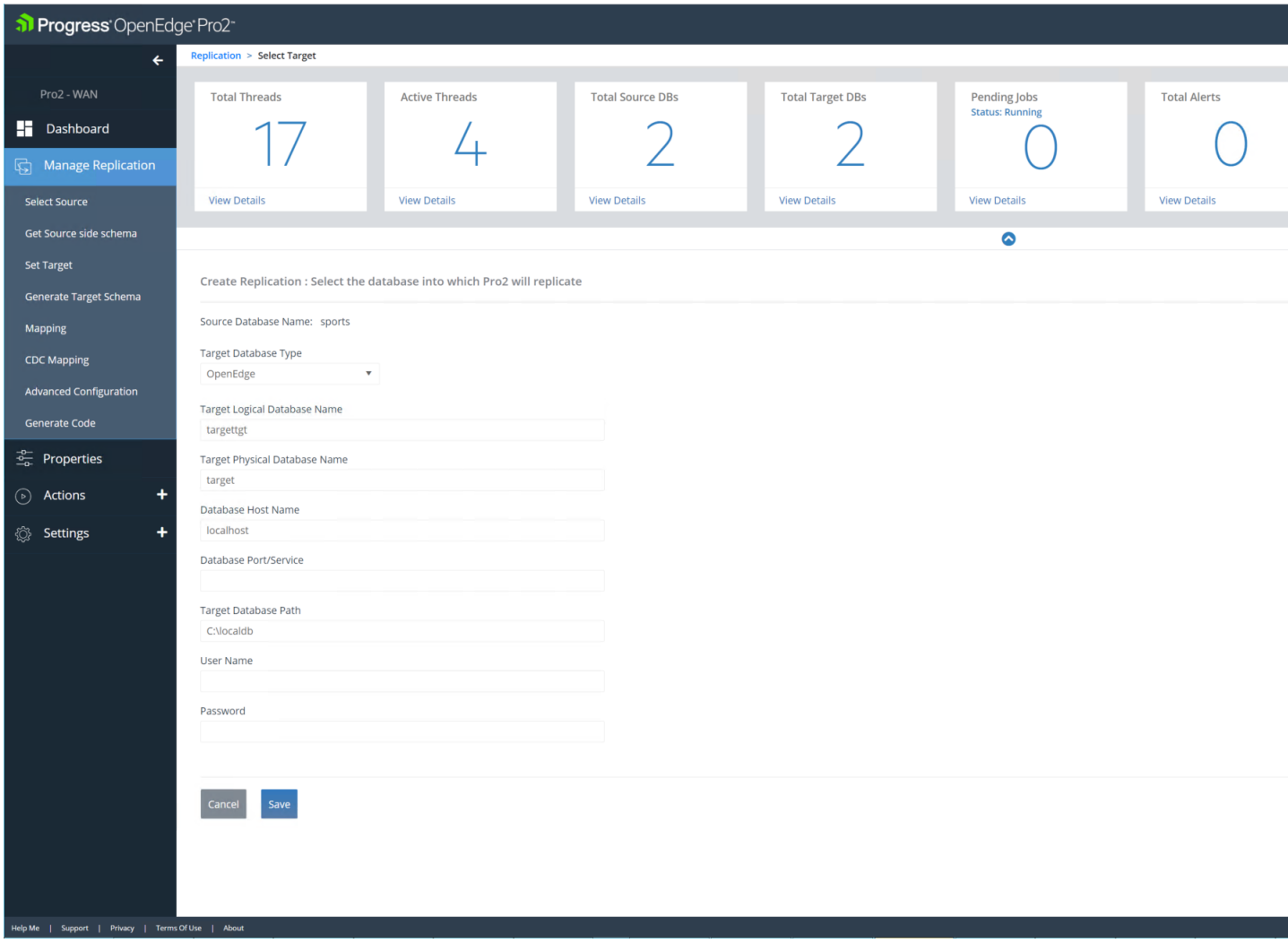


You can also test if you are successfully connected to the source DB by clicking the Test Connection button. If successful, you will receive a message. Once the test is successful, click **Next** to select the **Target DB**.

Select target

Use this window to select where the source database is replicated to. Because Pro2 replicates data to a database on your behalf, you must provide the user name, password, and other types of identifying information for the target database in the following fields.

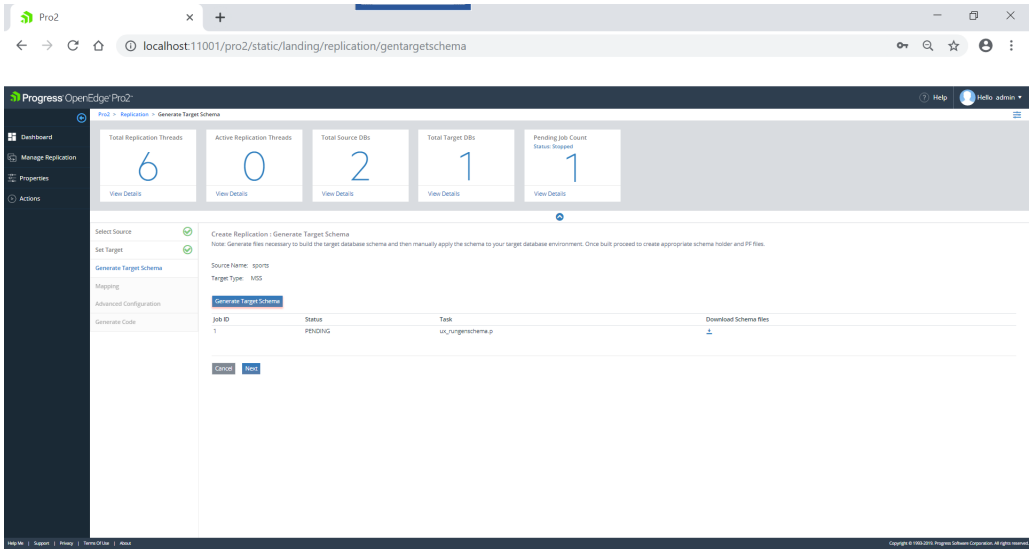
- Target Database Type
- Target Logical Database Name
- Target Physical Database Name
- Database Host Name
- Database Port/Service
- Target Database Path
- User Name
- Password



Click **Next** to move to the **Generate Target Schema** window.

Generate target schema

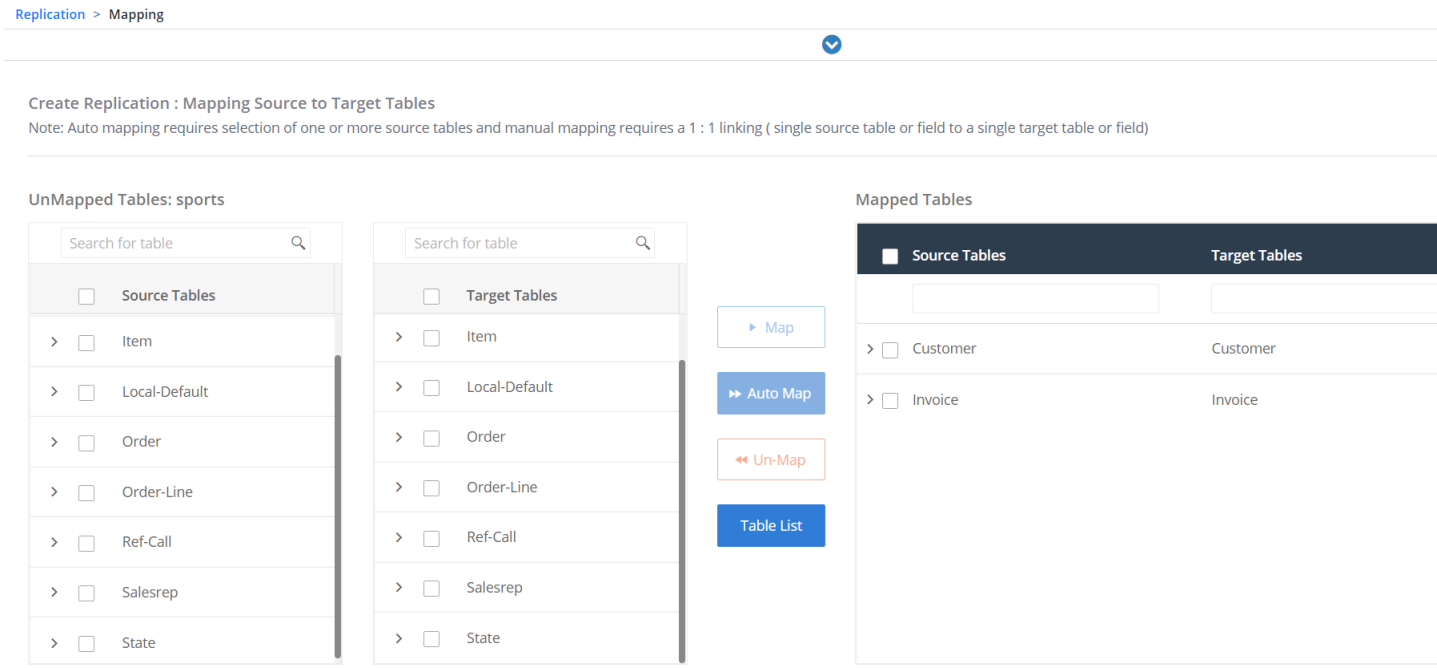
This window allows you to generate files necessary to build the target database schema and then manually apply the schema to your target database environment. Once built you need to proceed to create appropriate schema holder and PF files. Once you have generated the schema, click **Next** to reach the **Mapping** window.



Mapping

Before any tables can be mapped from source to target, the source and target database must be specified along with the DataServer schema holder database and the ODBC Data Source.

Note: Auto mapping requires selection of one or more source tables and manual mapping requires a 1:1 linking (single source table or field to a single target table or field).



The Source Table box is used to designate what data is to be mapped to the target database. It populates the Source Tables and Target Tables boxes with the appropriate unmapped tables.

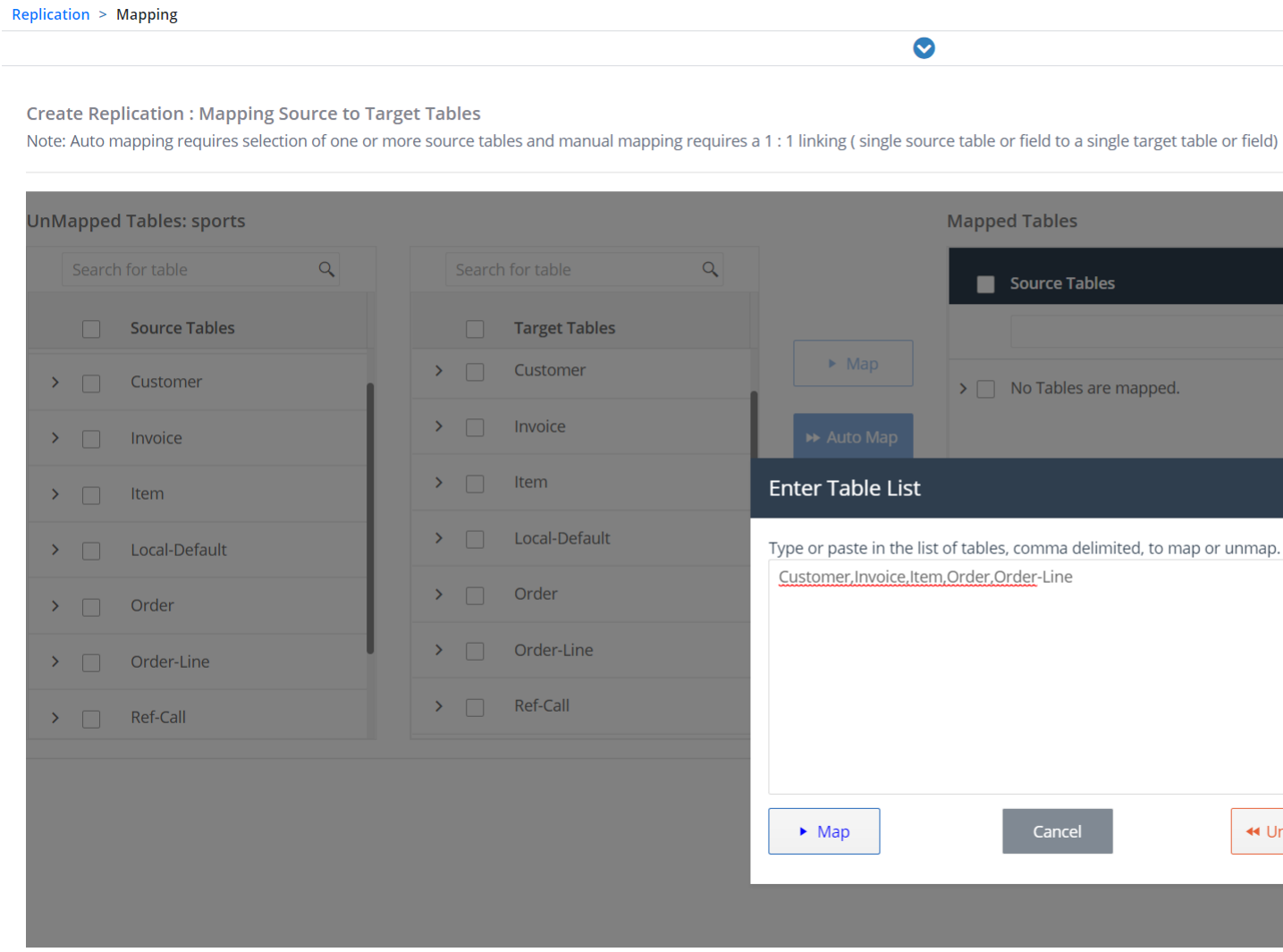
The **Source Table/Target Table Viewers** selection boxes contain the table names of tables in the selected databases that are not already included in the mapping table.

The **Map Tables** button takes the selected table from the Source Tables box and the selected table from the Target Tables box and creates a Table mapping record for them. Additionally, you are not required to map the entire table, only the fields that you want to replicate.

The **Unmap Tables** button takes the selected table from the Source Tables box and the selected table from the Target Tables box and creates a Table Cross-Reference record for them.

Use the **Automap** feature to auto-map source database tables to target database tables. You can select multiple tables within the Source Tables box and the application automatically maps those tables with matching target tables. Pro2 continues to create Field Cross-Reference records for any matching fields of those tables. This is possible for only tables and fields that have a direct matching table name or field name in the corresponding target.

If you have a large amount of tables to map or unmap from the source and target database, you can use the **Table List** function to map or unmap specific tables by entering the table names into the dialog box as a comma separated list. This function works by taking the table names as the input from the source database.



Once you have mapped the required tables, click **Next** to access the **Advanced Configuration** window.

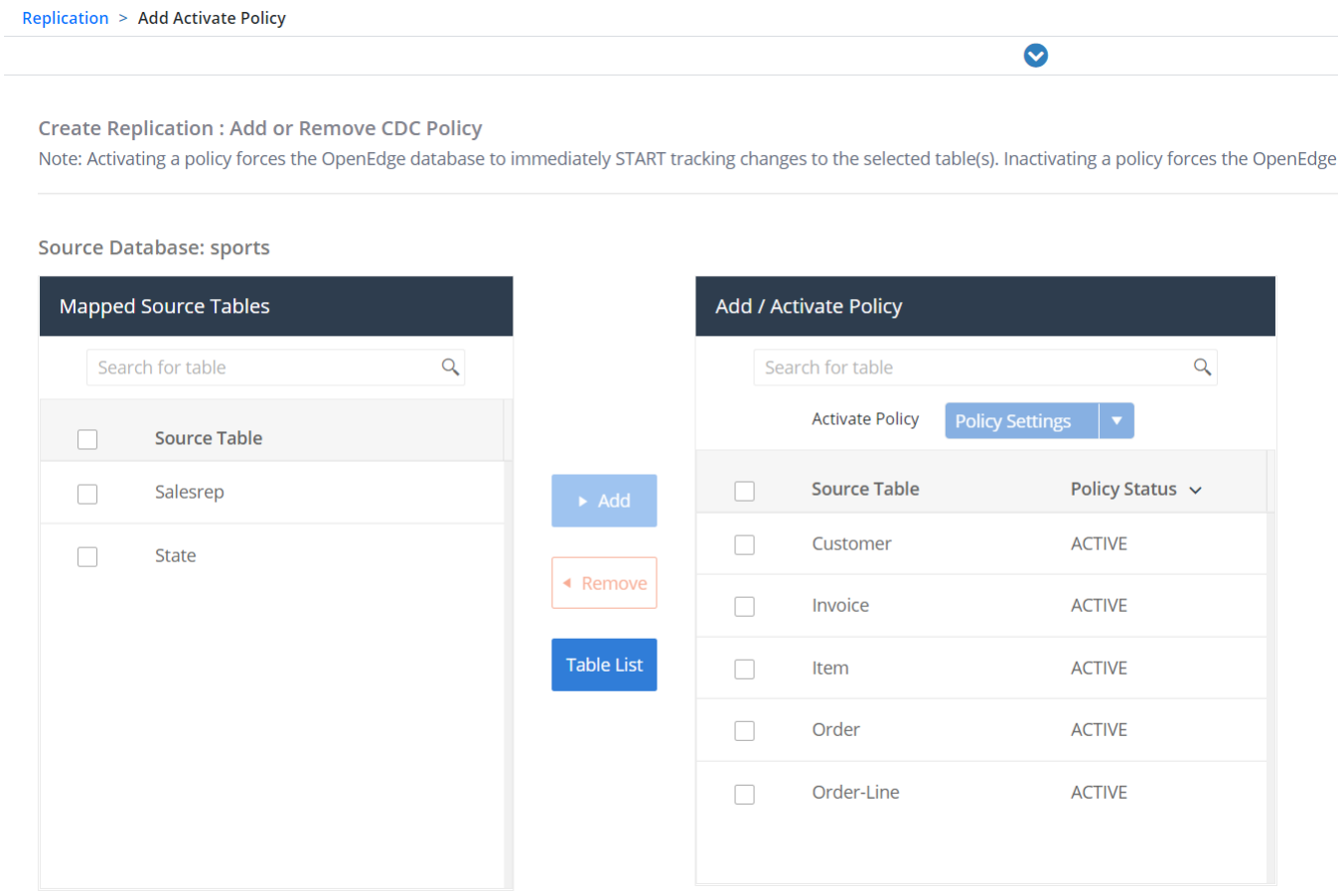
CDC mapping

After you have enabled CDC on source database, a **CDC Mapping** tab appears in the **Manage Replication** window.

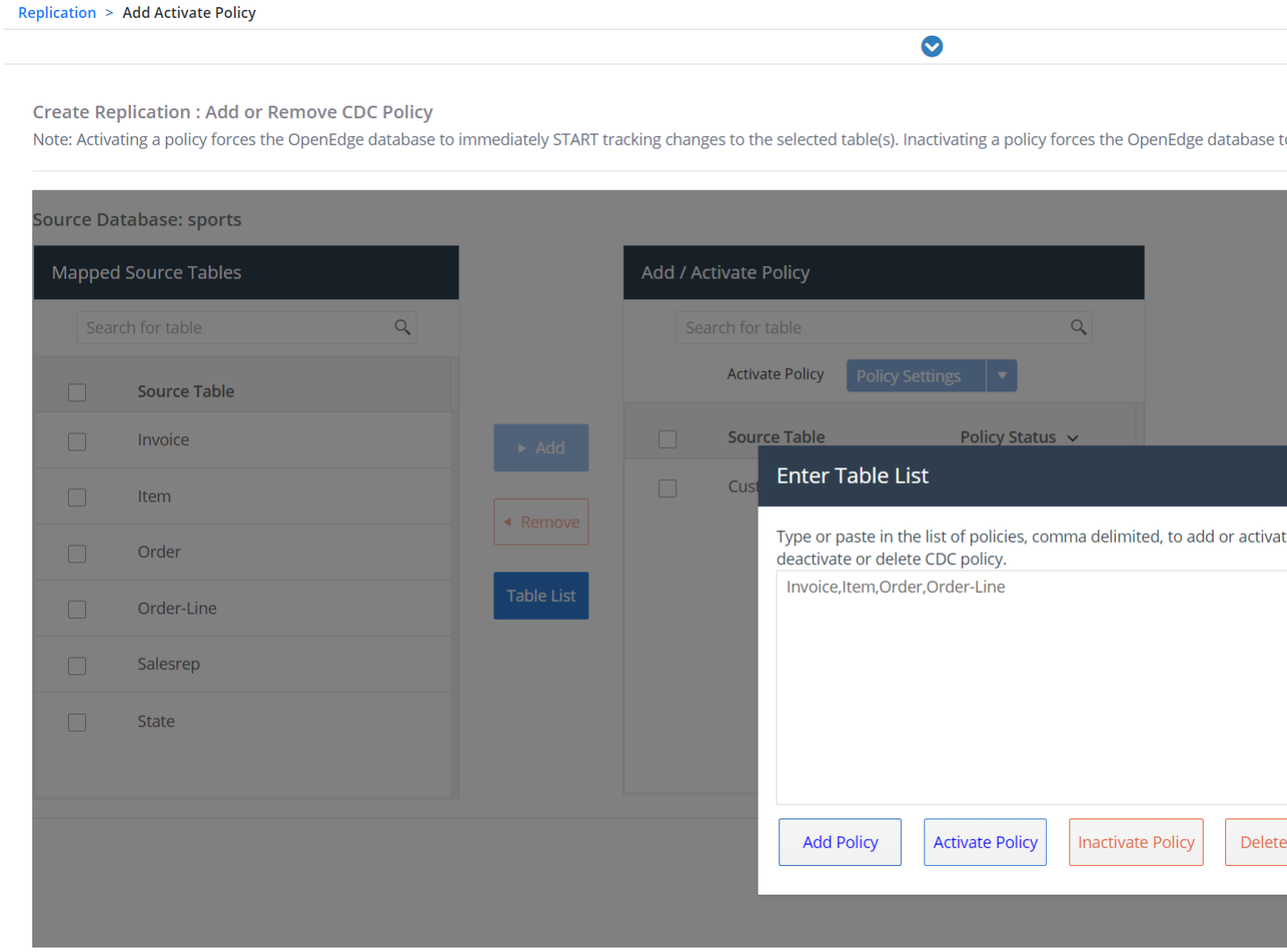
To enable CDC mapping:

1. From the **Manage Replication** window on the Pro2 web interface, select the **Source Database**.
2. Ensure that the **Source DB Mode** is **CDC**. Choose the **Test DB Connection** button. A message will indicate if CDC is enabled on the source database.
3. Click the **Mapping** option and ensure that all tables to be replicated have been mapped from source to target.
4. Select **CDC Mapping** .
5. Select the source tables to be mapped for CDC and click **Add**.
6. Select the **Policy Settings** for each of the **Source Tables** in the **Add / Activate Policy** column.

Note: Pro2 replication is currently designed to capture records the have changed. In CDC, this is known as a Policy. Activating a policy forces the OpenEdge database to immediately start tracking changes to the selected tables. Deactivating a policy forces the OpenEdge database to immediately stop tracking changes to the selected tables.

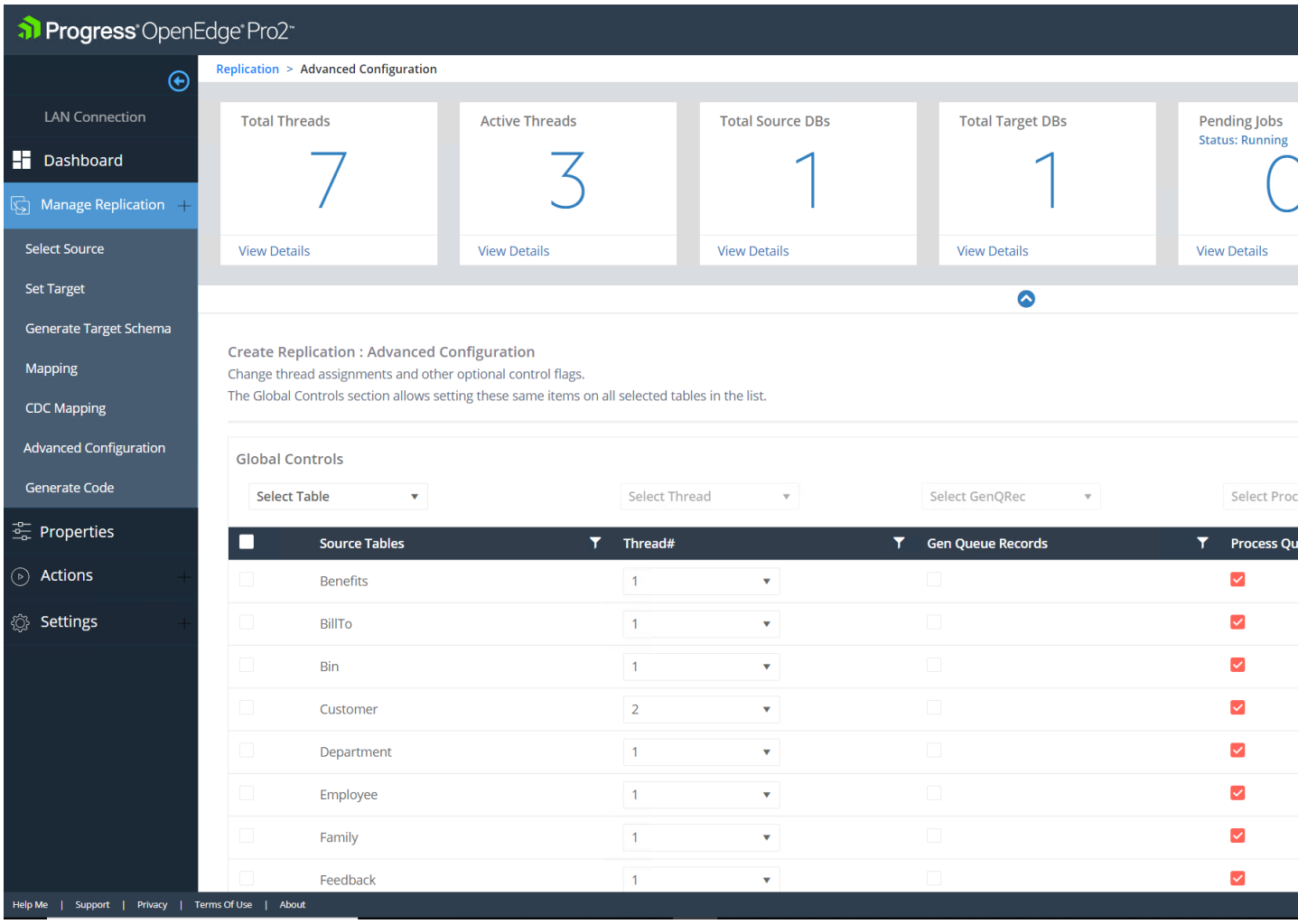


You can use the **Table List** functionality to specify specific tables to map by entering them as a comma separated list. This can be useful when you have many tables to sift through or a select few tables that you want to map. By entering in your list of tables, you can **Add**, **Activate**, **Inactivate** or **Delete** the CDC Policy.



Advanced configuration

This window allows you to change thread assignments and other optional control flags.



Global Controls

You can use the **Global Controls** drop down menus to multi-select and configure **Source Tables**, **Thread #**, **Gen Queue Records**, **Process Queue Records**, and **Include/Exclude**. If you use the **Select All Source Tables** option, then all of the tables that are listed are selected and are affected by your following actions. This includes tables on multiple pages.

Source Tables

The **Source Tables** column consists of the mapped and cross-referenced tables that are mapped in the Mapping section.

Thread

The **Thread #** specifies which thread the table is in. Mapped tables can be shared with up to five separate threads. By default, all mapped tables are put in queue 1.

Gen Queue Records

The **Gen Queue Records** is used to stop/start generating **replqueue**records for the selected table (i.e., turn off replication but leave triggers in schema), as well as disable CDC policies or triggers depending on the method you are using. It sets **ReplTableXref.genqrec**to **FALSE** for this table. Default is checked. If it is desired do this for an entire database, the following ABL code can be run from the Progress Editor to stop generating queue records for all tables: `FOR EACH ReplTableXref: genqrec = FALSE. END.`

Note: If Generate Queue Record is off, replication queue records is skipped for that table even if Process Queue Records is on.

Process Queue Records

Process Queue Records is used to monitor on any replqueue records that are generated. If the checkbox is unchecked, the Replqueue records are not processed (i.e., replicated). Queue records stay in queue until **Process Queue Records**is selected. It is selected by default. **Process Queue Records** functions similarly to the option for **Generate Queue Record** but sets **ReplTableXref.procqrec** to **FALSE**.

Include/Exclude

Include/Exclude is selected by default. If this is unchecked, any changes to the schema for this table will not be included in the Differential Schema generated by the **Generate Schema** window.

Generate code

This window allows you to choose replication triggers, processor library and bulk-copy processor before generating the code. Code generation options are dependent on previous source and target database types and connection requirements.

Note: To ensure proper connectivity, restart your Tomcat instance.

After you click **Generate Code**, you are redirected to the dashboard with a newly created replication instance.

Properties

The initial settings for all properties are loaded from the `replbase`*`version#`*`.ini` file. The file can be found in the root Pro2 install folder. You can modify the properties manually or use the **Properties** tab in the user interface.

Use the following table as a reference for the configurable Pro2 properties and their default configurations.

Property	Default Value	Description
ADMIN_TITLE	Pro2	You can define the title of a particular Pro2 instance.

Property	Default Value	Description
ALERT_1_PER_DAY	YES	Sends 1 replication thread status email per-day. After sending one status alert email, Pro2 will not send another on the same day for the same thread unless the alarms are cleared. **Note:** This property overrides all other alert properties and settings.
Bulk_Max_Cache	25	Sets the maximum number of `rowids` that are cached per-table during bulk loads. This value is used during bulk load restarts.
CDC_MAX_PROCESSED	10	The number of rows a CDC Admin processes before it goes into sleep mode. If is value of 0 is set, then all rows are processed.
CDC_PURGE_DAYS	10	CDC records with create dates older than this value are be purged during the CDC purge process. This value is used in conjunction with a disposition of "mark as applied."
CDC_QUEUE_COMPRESSION	NO	Enables or disables queue compression for CDC threads.
DBDOWN_RETRIES	5	Sets the maximum number of attempts to reconnect database instance if it stops working.
DB_LOCATION	`db`	Contains the location of the Pro2 database instances (repl, Pro2, source and target database instances).
DELETE_TRIG_DIRECTORY	`bprepl/repl_d`	Contains the location of the REPLICATE-DELETE schema trigger procedures.
DEL_TRIG_TEMPLATE	`tplt_repltrig.p`	Contains the default information used in generating the REPLICATE-DELETE schema trigger procedures.
EXCEPT_TGT_FIELDS	`pro2created|pro2modified`	Contains a list of all the target side fields which are not to be included in the mapping process for replication.
EXTENT_DELIMITER	##	`GenSQLSchema.p` and `GenSQLDiff.p` use this value as the delimiter for definitions of Progress array fields.
HEARTBEAT_CHECK_MNUTES	15	Sets the time stamp to detect a replication threads most recent replication activity and to detect if a replication thread is stalling.
INCLUDE_DIRECTORY	`bprepl/repl_inc`	Contains the tables present in the source database.

Property	Default Value	Description
INCLUDE_LOB	NO	Enables or disables the inclusion of LOB fields in the replication process.
JAVA_TRIGGER_DIR	bprepl/repl_jtrig/	The folder name to where Java triggers are generated.
LOG_ALERT_DAILY_LIMIT	10	Sets the daily limit on replication log generation process.
LOGICAL_DELETE_TABLES	XXX_so_mstr,XXX_sod_det	A comma delimited list of table names that are logically deleted, as opposed to physically deleted, from the target database .
LOG_DIRECTORY	bprepl/repl_log	The folder location of Pro2 log files.
LOG_FILE_SUFFIX	.log	An extension used for Pro2 log file names.
LOG_RETENTION_DAYS	10	Sets the maximum number of days that a log file is stored before being purged from the disk.
MASS_LOAD_DIRECTORY	bprepl/repl_mproc	This property designates the folder that Pro2 Bulk Load procedures are generated.
MASS_LOAD_LOG_DIR	bprepl/repl_mproclog	Designates the Bulk Load log files storage folder location.
MASS_LOAD_TEMPLATE	tmpl_mreplproc_restart-auto-push.p	Sets the name of the template procedure that is used during the bulk-load generation.
MASS_LOAD_TEMPLATE_PRO2ORA	tmpl_mreplproc_oracle.p	Sets the name of the template procedure that is used during the bulk-load procedure for a target Oracle database.
MASS_LOAD_TEMPLATE_PRO2PRO	tmpl_mreplproc_pro2pro.p	Sets the name of the template procedure that is used during the bulk-load generation when the source as well as target databases belong to OpenEdge.
MASS_LOAD_TEMPLATE_PRO2SQL	tmpl_mreplproc_restart-auto-push.p	Sets the name of the template procedure that is used during the bulk-load generation for a target MS SQL database.
MAX_CHAR_WIDTH	250	Sets the maximum character width.
MAX_DEC_PREC	38	Maximum number of positions to the right of the decimal when generating a target schema for Microsoft SQL Server.

Property	Default Value	Description
MERGED_TRIGGER_TEMPLATE	`tmpl_mrgdtrig.i`	Contains the default information required to list tables that require merged triggers.
MERGED_TRIG_DIRECTORY	`bprepl/repl_mgtrig`	Contains the directory listing tables that require merged triggers.
MERGED_TRIG_TEMPLATE	`tmpl_mrgdtrig.i`	The name of the template that is used to generate merged triggers.
MSS_DB_PF	`MSS-DB-EXAMPLE.pf`	Example `.pf` file for MSS database connections for Pro2 user interface. **Note:** Actual `.pf` file should be named after the logical database name.
ORA_DB_PF	`ORA-DB-EXAMPLE.pf`	Example `.pf` file for Oracle database connections for Pro2 user interface. **Note:** Actual `.pf` file should be named after the logical database name.
Oracle_Native_Rowid	YES | NO	If the property exists and contains a value of "YES", the Pro2Oracle SQL/Differential generator changes the standard output to: **1.** Suppress output the `progress_recid` column **2.** Suppress output the `progress_recid` index **3.** Suppress output of the target table specific sequence definitions **4.** The `datatype` for `prrowid` changes from `varchar2(36)` to `number`
OUTPUT_BASENAME	`replproc`	Contains the replication processorlog file name. Queue thread number and log file suffix are appended to the basename.
PF_DIRECTORY	`bprepl\Scripts`	Directory containing the `.pf` files, scripts, and shortcuts to start the Pro2 web user interface, replication processors, and bulk-load procedures.
PROC_DIRECTORY	`bprepl/repl_proc`	Sets the operating system directory where the replication processor procedure library is located.
PROGRESS_DB_PF	PRO-DB-EXAMPLE.pf	The folder location of the Pro2 database PF files.

Property	Default Value	Description
PROC_TEMPLATE	tmpl_replproc.p	Sets the name of the template procedure used during the creation of the replication procedure library.
PROC_TEMPLATE_PRO2SQL	tmpl_replproc.p	The name of the template that is used to generate replication procedures for Microsoft SQL Server based targets.
PROC_TEMPLATE_PRO2ORA	tmpl_replproc.p	The name of the template that is used to generate replication procedures for Oracle based targets.
PROC_TEMPLATE_PRO2PRO	tmpl_replproc_pro2pro.p	The name of the template that is used to generate replication procedures for OpenEdge based targets.
PRROWID_ADD_DB	NO	When this property is set to YES Pro2 prefixes the source database name to the PRROWID column that is stored in the target database.
PURGE_DIRECTORY	bprepl/repl_export	Contains the data of change records in WAN bulk-load process.
REFRESH_DASHBOARD	60	Sets the refresh time interval for the Pro2 user interface dashboard.
REFRESH_REPLICATION_INTERVAL	60	Sets the refresh time interval for the replication threads on the Pro2 user interface dashboard.
REPL_RESTART_ON_SKIPPED	NO	Use this property to indicate if a thread should go through the replqueue before attempting to reprocess skipped events. Threads check for shutdown events every 1000 reads of the replqueue table. If set to “YES”, during the shutdown check the thread indicates in the thread log that REPL_RESTART_ON_SKIPPED is enabled and leaves the replqueue processing block. It then goes through the standard sleep interval and restarts processing from the top of the queue, oldest records first.
REFRESH_WATCHBOXES	60	Sets the refresh time interval for all the Watchboxes present on the Pro2 user interface dashboard.
REPL_LOG_BASENAME	repllog	Contains the name of file for logging replication of records during each replication cycle. Date, queue thread number, and log file suffix are appended to name.
SCHEMA_DEL_DIRECTORY	bprepl/repl_d	Contains the directory for the Pro2 generated database replication delete trigger procedures.
SCHEMA_WRI_DIRECTORY	bprepl/repl_w	Contains the directory for the Pro2 generated database replication write trigger procedures.

Property	Default Value	Description
SMTP_AUTH	*username*, *password*	Contains the username and password authentication details for email alerts. **Note:** The username and password details must be separated by a comma.
SMTP_DEBUG	NO	When this property is set to YES a debug log for troubleshooting email send issues is created.
STATUS_CHECK_DEBUG	NO	When this property is set to YES a debug log for troubleshooting the status check procedures is created.
SQL_DIRECTORY	`bprepl/repl_sql`	Directory for the direct MS SQL assign include files, bulk copy procedures and replication procedures.
SQL_EXCLUDE_LIST	`ReplControl`, `ReplCustAsgn`, `ReplCustDefs`, `ReplCustFlds`, `ReplDBXRef`, `ReplFieldXRef`, `ReplProperties`, `ReplQueue`, `ReplTableXRef`, and `ReplThreadControl`.	Contains the excluded list of tables in the MS SQL database.
TEMPLATE_DIRECTORY	`bprepl/repl_tmpl`	Directory containing the templates used for various code generation.
TRIGGER_FORCE_LOWERCASE	NO	When this property is set to YES the file names that are used for trigger generation are set to lower case and the case of the source table names is ignored.
TGT_USE_LITERAL_NAMES	NO	Property to use the same naming convention as the source database for tables and columns without modifying them to meet the requirements of the target database (SQL only).
TRIGGER_EXTENSION	`.t`	The extension that is used when Pro2 trigger files are generated.
USE_3RD_PARTY_EMAIL	NO	When this property is set to YES Pro2 calls `bprepl/Scripts/mail.bat` or `mail.sh`. These files contain third party specific email calls.

Property	Default Value	Description
USE_SQL_TRIGGERS	NO	This property is used for backwards compatibility with data servers that require SQL triggers for maintaining the `PROGRESS_RECID` column.
WRITE_TRIG_DIRECTORY	`bprepl/repl_w`	Sets the operating system directory where the REPLICATION-WRITE trigger procedures are located.
WRI_TRIG_TEMPLATE	`tplt_repltrig.p`	Contains the template file used by `GenReplTrigs.p` to create the replication triggers.

Table 1: WAN only properties

Property	Default Value	Description
APPSRV_GET_PROGS_DIR	`bprepl/AppSrv/as_mproc`	Stores the WAN process libraries.
APPSRV_LOG_DIRECTORY	`bprepl/repl_log`	Stores the Pro2 application server log file on the source database server.
APPSRV_LOG_FILE	`appsrv.log`	Sets the name of the Pro2 application server log file on the source DB server.
APPSRV_MASS_LOAD_DIRECTORY	`bprepl/AppSrv/as_mproc`	Stores the details of a bulk-load procedure on the Pro2 server.
APPSRV_MASS_LOAD_TEMPLATE	`tmpl_ASmproc.p`	Contains the default information used in generating WAN bulk-load procedures.
APPSRV_PROC_DIR_TGTDB	`bprepl/repl_as_tgt`	Contains details of WAN replication procedures on the Pro2 server.
APPSRV_PROC_TEMPLATE	`tmpl_asTgtDb.p`	Contains default information used in generating WAN replication procedures.
ASCII_BULK_EXP_DATA_FULL_PATH	/apps/Pro2/XXX/bprepl/repl_export/data	Contains the location on target database server of ASCII bulk export data files.
ASCII_BULK_EXP_DIR	/apps/Pro2/XXX/bprepl/repl_export	Sets the Bulk export root directory.
ASCII_BULK_LOAD_DATA_FULLPATH	C:\Pro2\XXX\bprepl\repl_export\data	Contains the location of the target database server for ASCII bulk export data files.

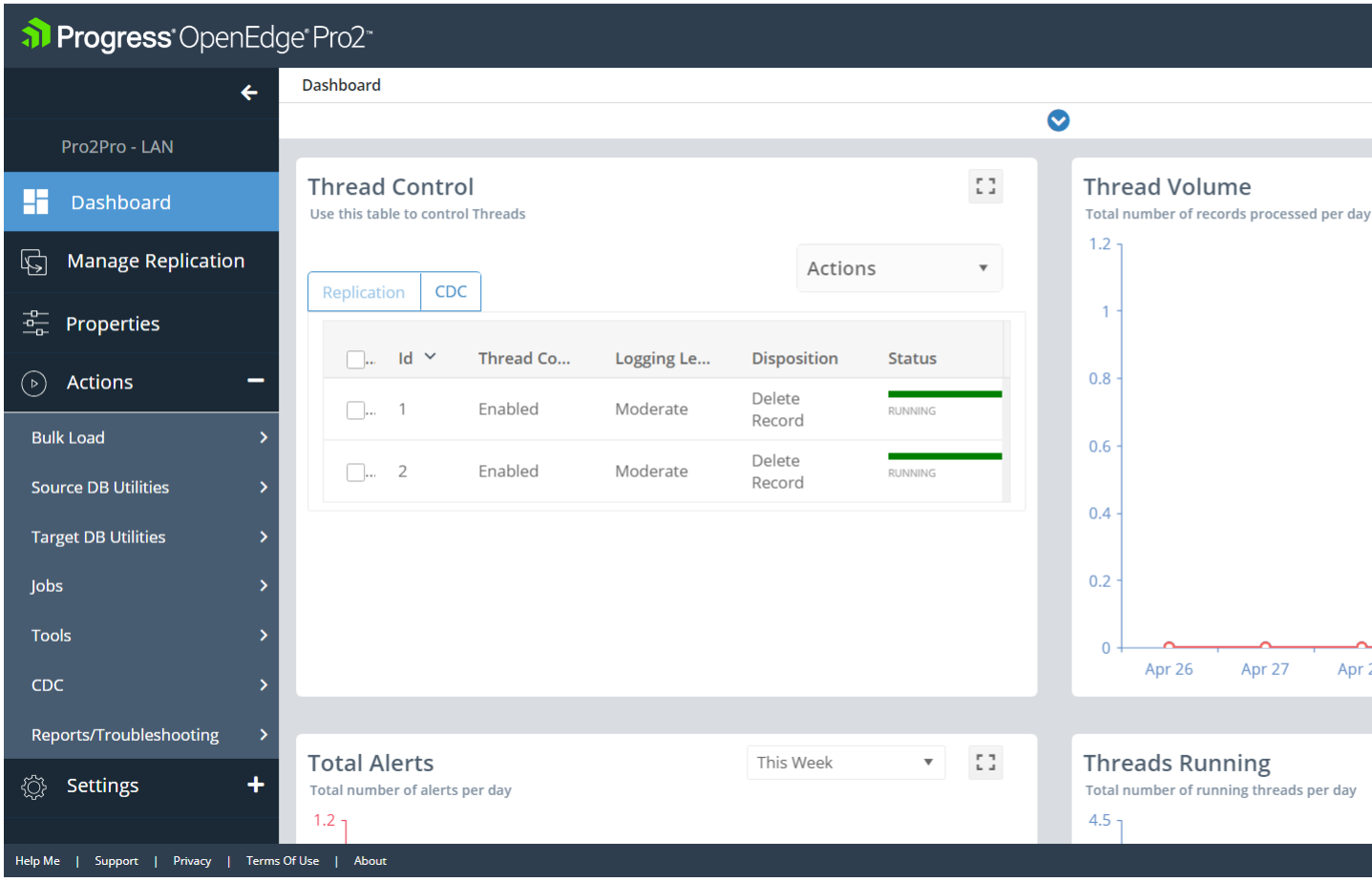
Property	Default Value	Description
ASCII_BULK_TGT_ROOT_DIR	C:\Pro2\XXX	Contains the location of the target database server for ASCII bulk load SQL scripts.
APPSRV_FETCH_COUNT	1000	Specifies how many records are sent across a WAN connection to the Pro2 server at each replqueue records request.
APPSRV_FETCH_COUNT_MASS_BULK	50000	Specifies the number of bulk-load replications that are sent across the WAN connection to the Pro2 server at each replqueue records request.
APPSRV_QUEUE_COMPRESSION	NO	Enables or disables queue compression for replication threads.

Actions

The **Actions** tab gives a detailed idea of the modifications and the enhancements that can be done to the replication thread. The tab consists of the following functionalities:

- Bulk Load
- Source DB Utilities
- Target DB Utilities
- Jobs
- Tools
- Reports/Troubleshooting

Note: Apart from these functionalities there are two other functionalities namely, WAN and CDC which are enabled only when the **Source DB Connection** is set to **WAN.** and the **Source DB Mode** is set to **CDC** respectively.



Bulk Load

Bulk loading is used when you need to import or export large amounts of data relatively quickly.

Run Bulk Loads: This menu item starts the Bulk Load Utility that performs a mass-record copy of the entire source database over to the DataServer target. You can also choose to bulk load only a few select tables based on the number of records they contain. For example, to begin with, you may want to bulk load only those tables that have over 100,000 records. Or, alternatively, you may want to bulk load only those tables that have less than 100,000 records. You can accomplish this by performing a database or table analysis using the DBANALYS or TABANALYS command in proutil and then using the output to create filters in the Bulk Load Utility.

Enter the appropriate information to begin a mass-record copy of source side table data to the appropriate target side table structure. The **Run** button begins the Bulk-load process.

Bulk Load Report: This menu item generates a Bulk Load report after the Run Bulk Loads command is executed. You can generate the report by clicking **Proceed**. This displays the Bulk-load report on the screen. You can also choose to export the report to PDF or Excel.

For more information about the bulk load process, see Bulk load with Pro2.

Source DB Utilities

Custom Retention Rules: This menu item allows you to maintain the custom data retention rules used on specific tables. These rules are applicable in Pro2 for tasks like Bulk-Load, Bulk-ASCII-Export, Verification, and Replication. An IF statement is used to exclude Data that satisfies the condition. To set custom retention rules, perform the following steps:

1. Click **Add** to open the **Add a new custom retention rule** window

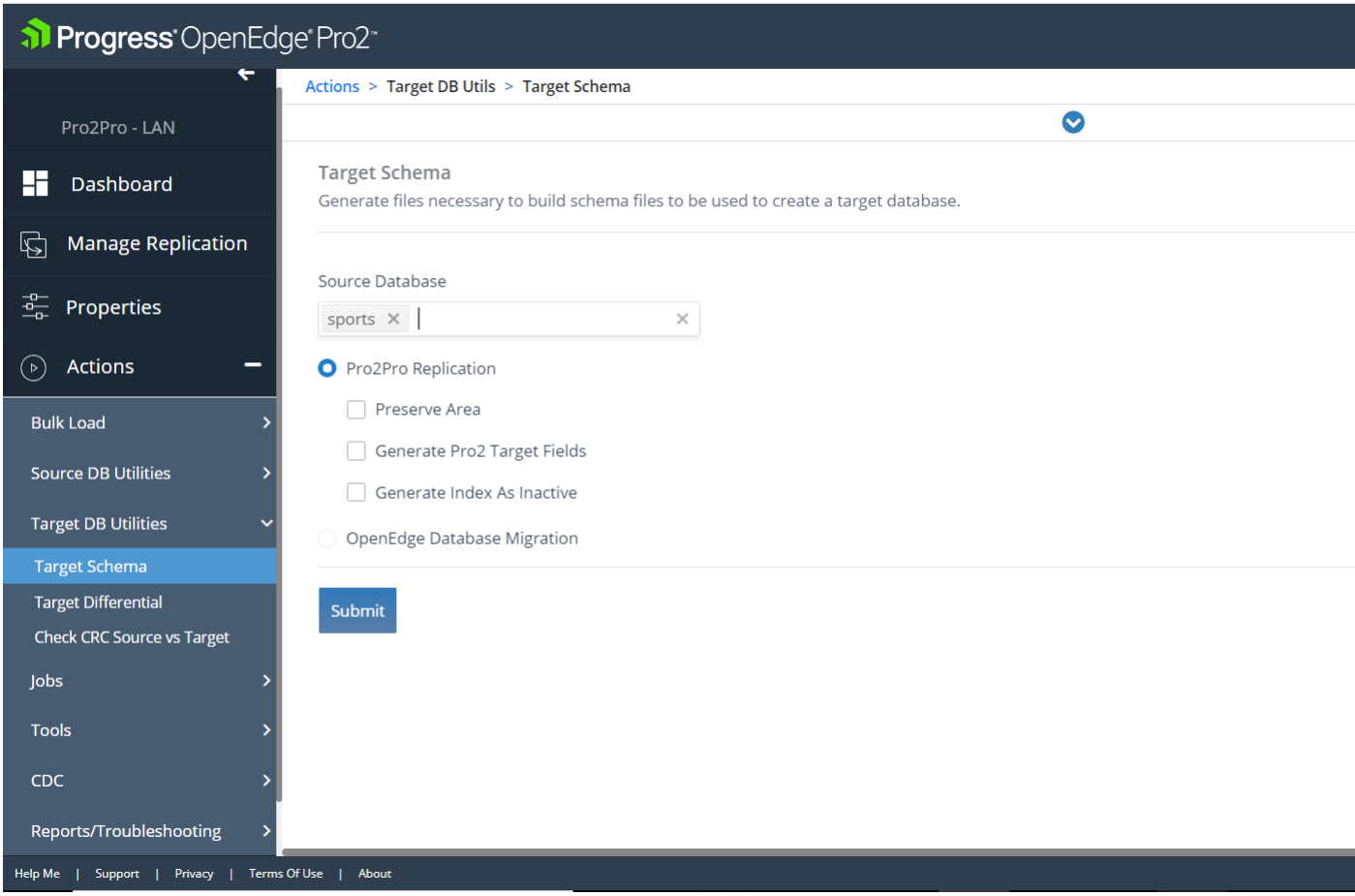
2. Select the **Source DB** and the respective **Source Table**
3. Choose the rule **Type** to specify a new **Custom Retention** rule
4. Add a condition statement
5. Click **Save**

Note: After a Custom Retention Rule is modified you need to regenerate the bulk-load and replication process library code to bring the change in to effect.

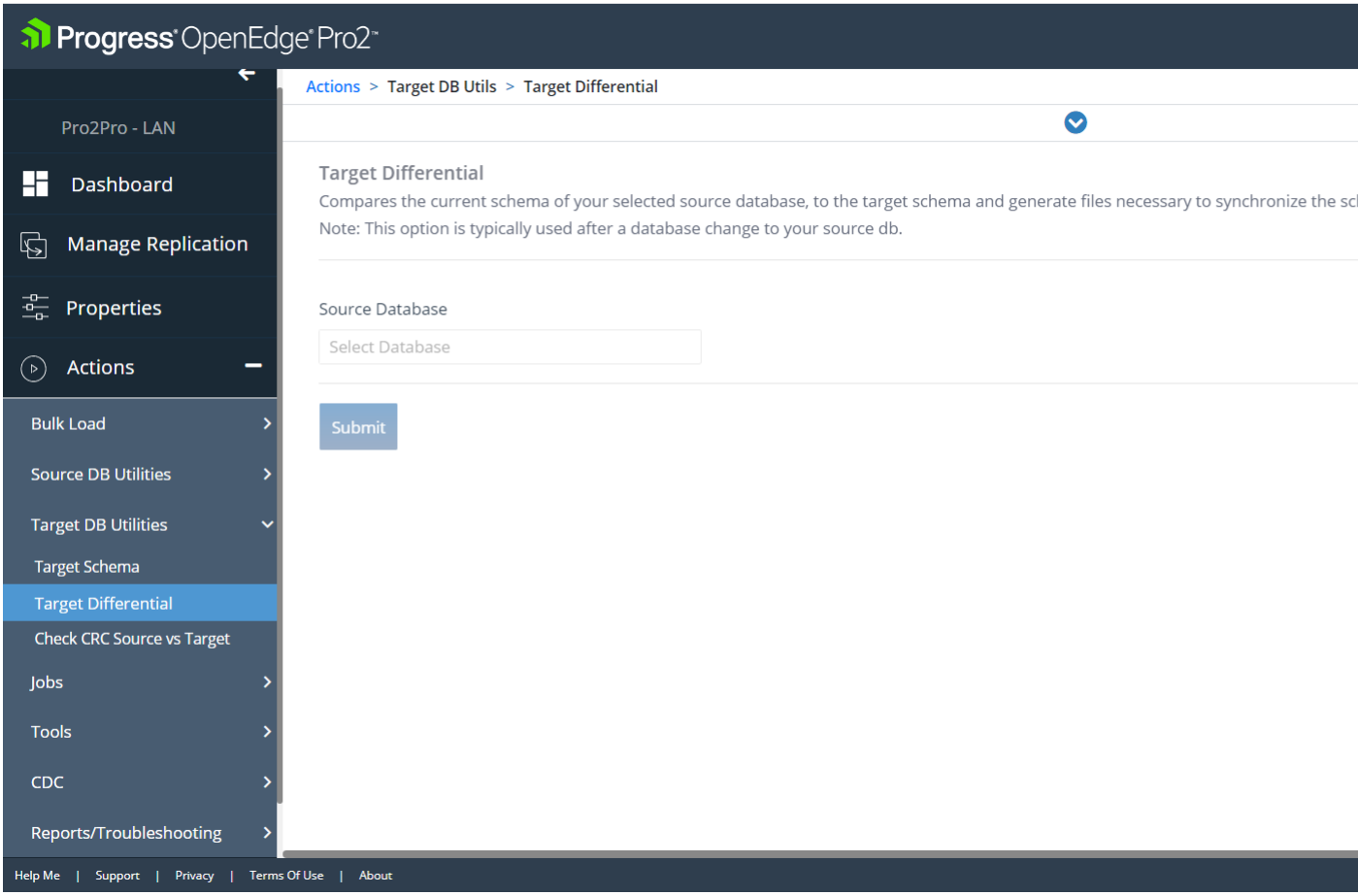
Target DB Utilities

The target database utilities are:

- **Target Schema:** The Target Schema menu item generates the necessary database script to build a copy of the Progress schema within the target database server. You are prompted for an output file name and then asked for the source database from which you wish to prepare a database Schema. The resulting DB file can then be executed within an empty database container to build a target database with the same schema as the source OpenEdge database.



- **Target Differential:** The Target Differential menu item generates the necessary queries to upgrade the current target schema to match to current source schema. Typically, this utility is used after a schema change to the source database. The resulting database file can then be used to upgrade the target schema to match the source schema.



Note: When any change is made to the schema of the target database you must rebuild the schema holder database before Pro2 will see the changes to the target schema.

Oracle specialization: Use the following properties to generate Oracle specific output:

- `ORACLE_USE_LOGICAL`: To convert logical field to number (1)
- `ORACLE_USE_SCALE`: To add precision and scale for decimal fields.

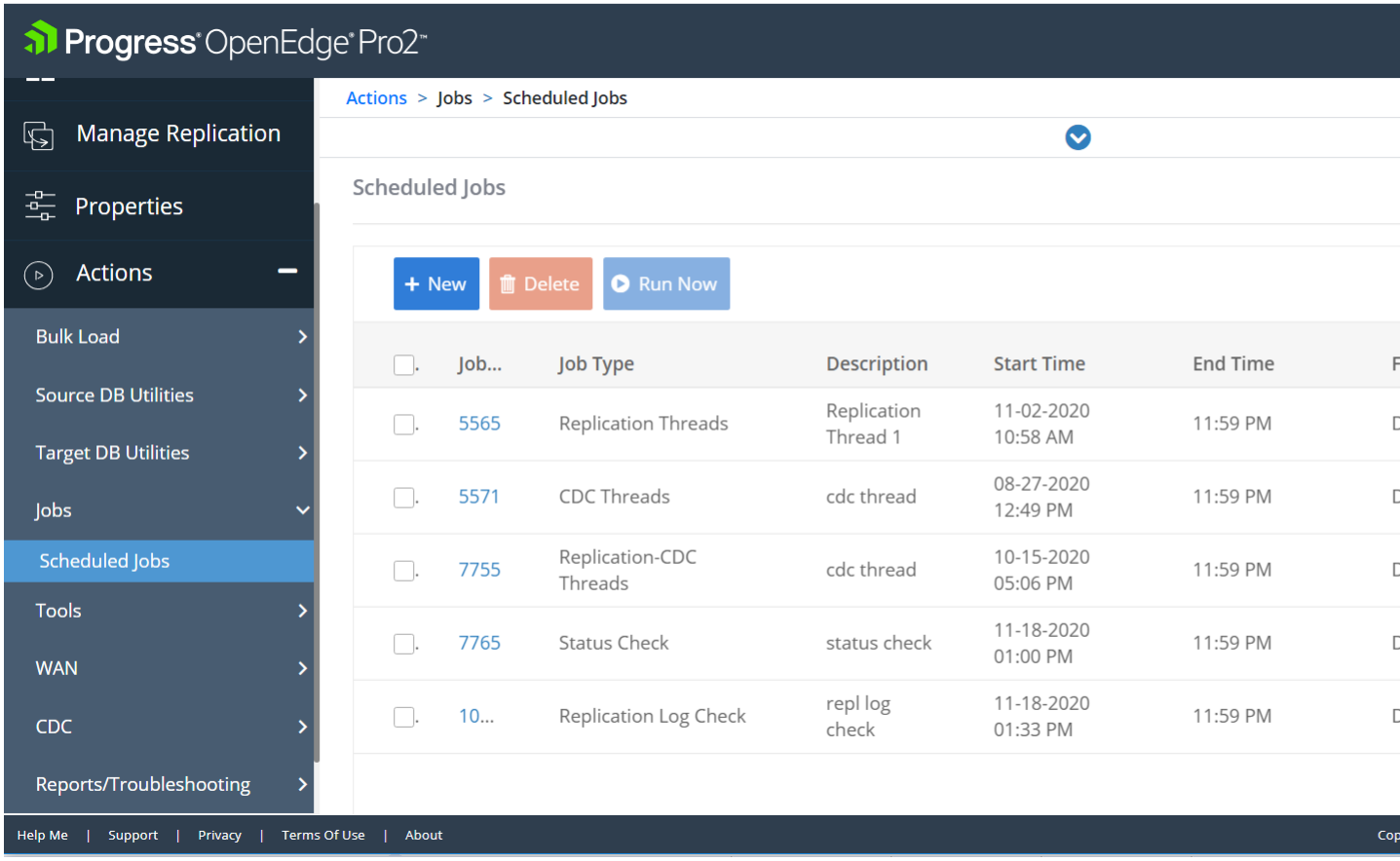
By default, the value of these properties is set to **NO**. To use these properties, set the value to **YES**. For Oracle specific targets, use the following properties. These properties are responsible for Add support for precision and scale.

- **Check CRC Source vs Target:** This option is used to validate that there are no differences between your two databases by generating a CRC report.

How to schedule jobs in Pro2

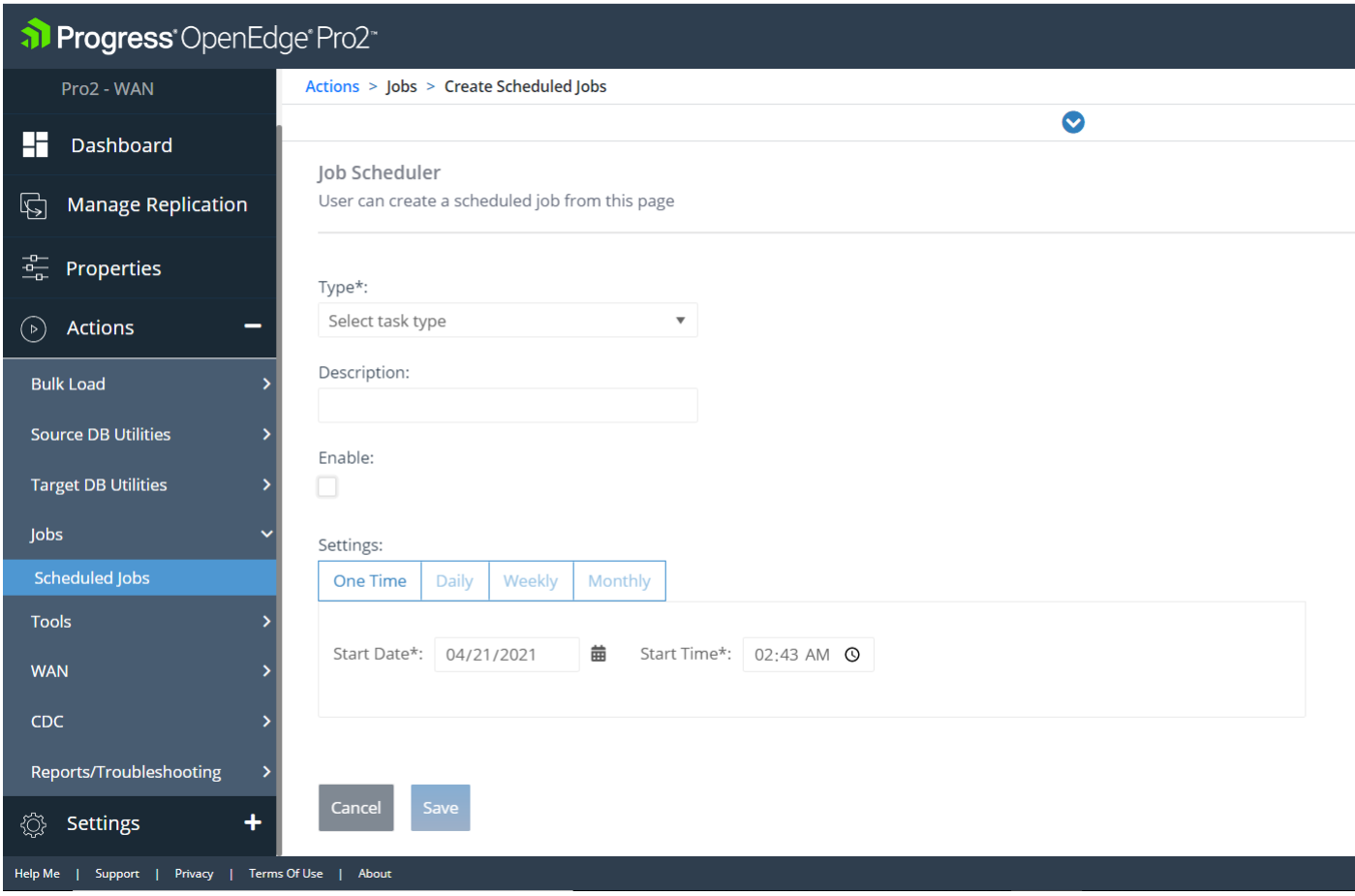
Pro2 is primarily used for replicating and synchronizing selected data and database objects from a source database to a target database. You can choose to manually perform your replications or schedule them to replicate automatically.

You can also schedule a variety of jobs by using the job scheduler. The job scheduler enables you to schedule recurring replications, CDC tasks, file purges, log checks, and more so that you no longer need to perform these tasks manually.



To schedule a job:

1. From the **Actions** tab of the side menu, click **Jobs** > **Scheduled jobs** > **New**.



2. Under the **Type** drop-down list, select the one of the following job types:
   - Applied Queue Record Purge
   - CDC Purge
   - CDC Threads
   - Enterprise Push
   - File Purge
   - Replication Log Check
   - Replication Threads
   - Replication-CDC Threads
   - Status Check
3. Enter a **Description** for the job. A description helps you differentiate between similarly scheduled jobs.
4. If you are creating a new job, then ensure that the **Enable** check-box is selected. If you want to disable a scheduled job, but not remove a scheduled job, then you can do so by using this check-box.
5. In the **Setting** section, choose the job's start and end date as well as the start and end time.

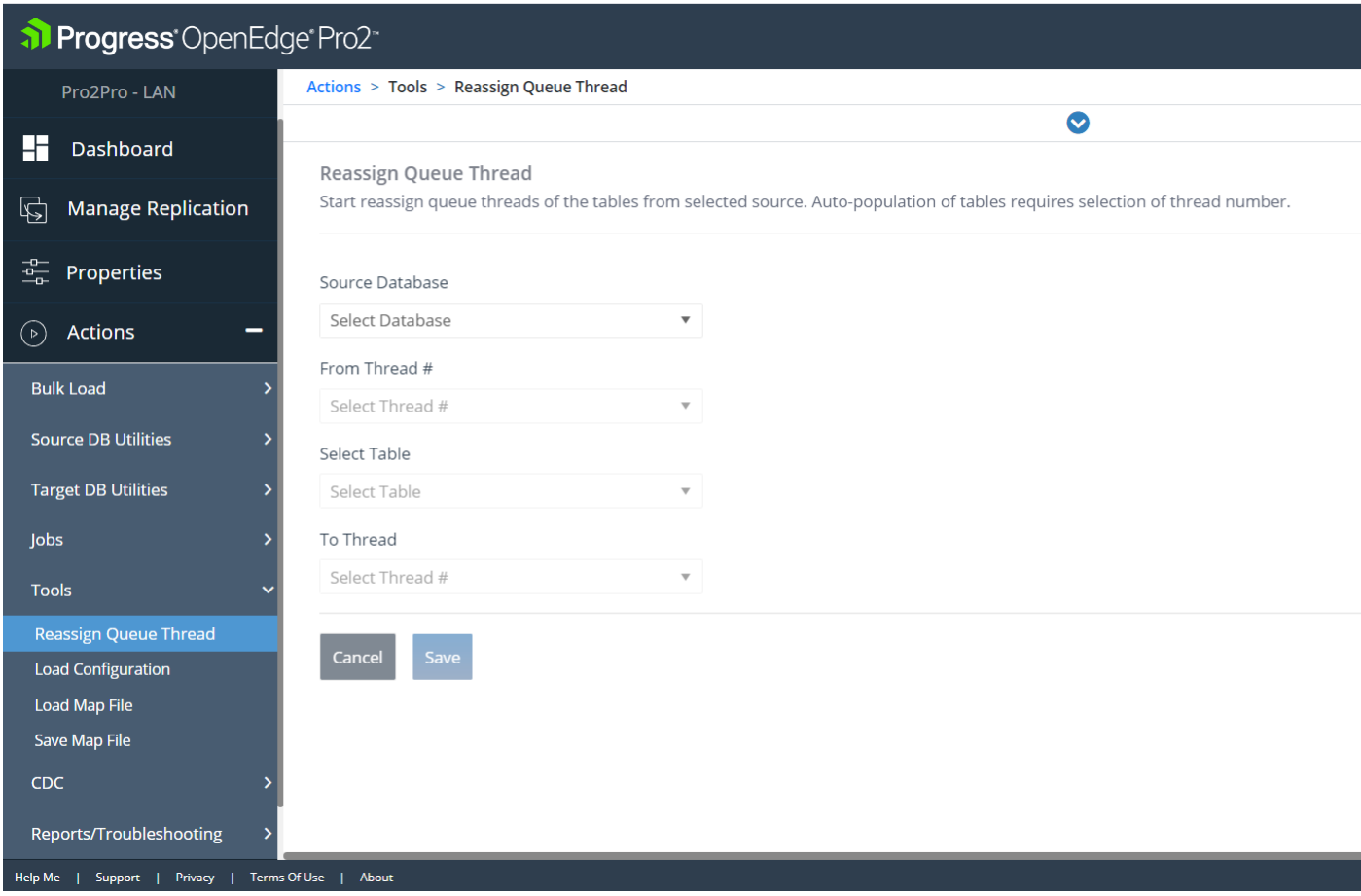
   You can schedule a job to occur once, daily, weekly, or monthly depending upon your business needs.
6. Click **Save**.

Tools

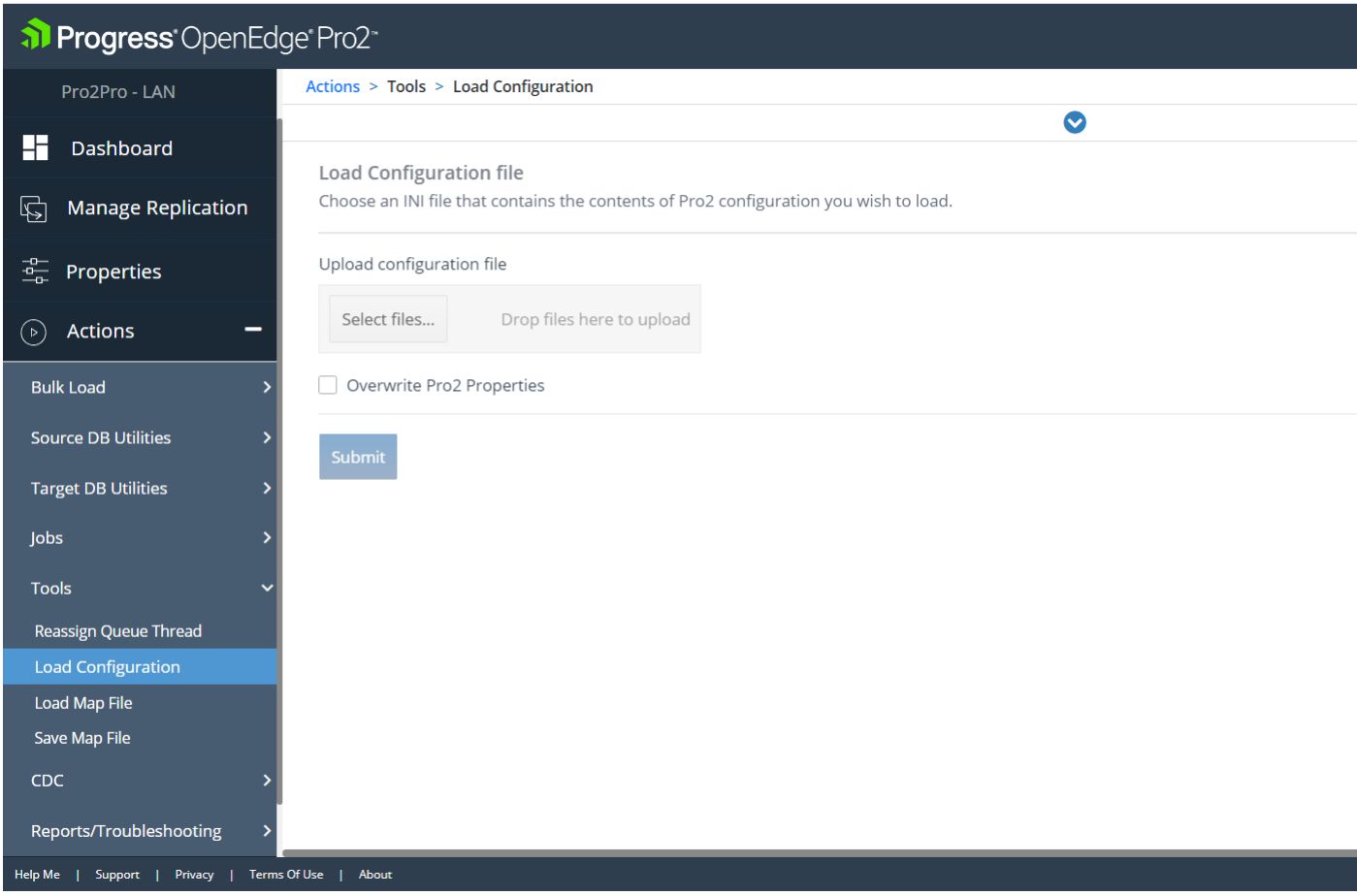
The tools tab consists of:

- **Reassign Queue Thread #:** The Reassign Queue Thread # menu item enables you to reassign the queue records from one thread to another. The Reassign Queue Thread # functionality also allows you to choose the database and the table name as well.

Note: The Reassign Queue Thread # is not complete until all the input items are selected.



- **Load Configuration:** This menu item loads list of replication control properties and values from a text file.
- **Load Map File:** Loads table and field mapping cross-reference information from a text file.



- **Save Map File** : Saves current table and field mapping cross-reference information to a text file.

WAN

Note: This tab is enabled only when the **Source DB Connection** is set to **WAN.**

When the target database is across a wide area network (WAN) from the source database, the Pro2 Server must reside on the same local-area-network as the target database server.

When the target database is in a different geographic location than the source Progress database, implementation of Pro2 must include a Progress application server on the source database server in addition to the standard configuration on the Pro2 server. Instead of running the replication procedures via typical client/server mode connections to the source and repl databases, Pro2 will send requests to the application server which returns data to the calling procedure on the Pro2 server. The Pro2 server must be on the same local-area-network as the target database server.

If Pro2 is set up in a WAN environment, you need to check application server connection, synchronize repl table data, build application server processor libraries, transfer files to and from WAN server. Apart from this, you also need to get source side schema, delta DF file and check CRC local vs source.

Check application server connection

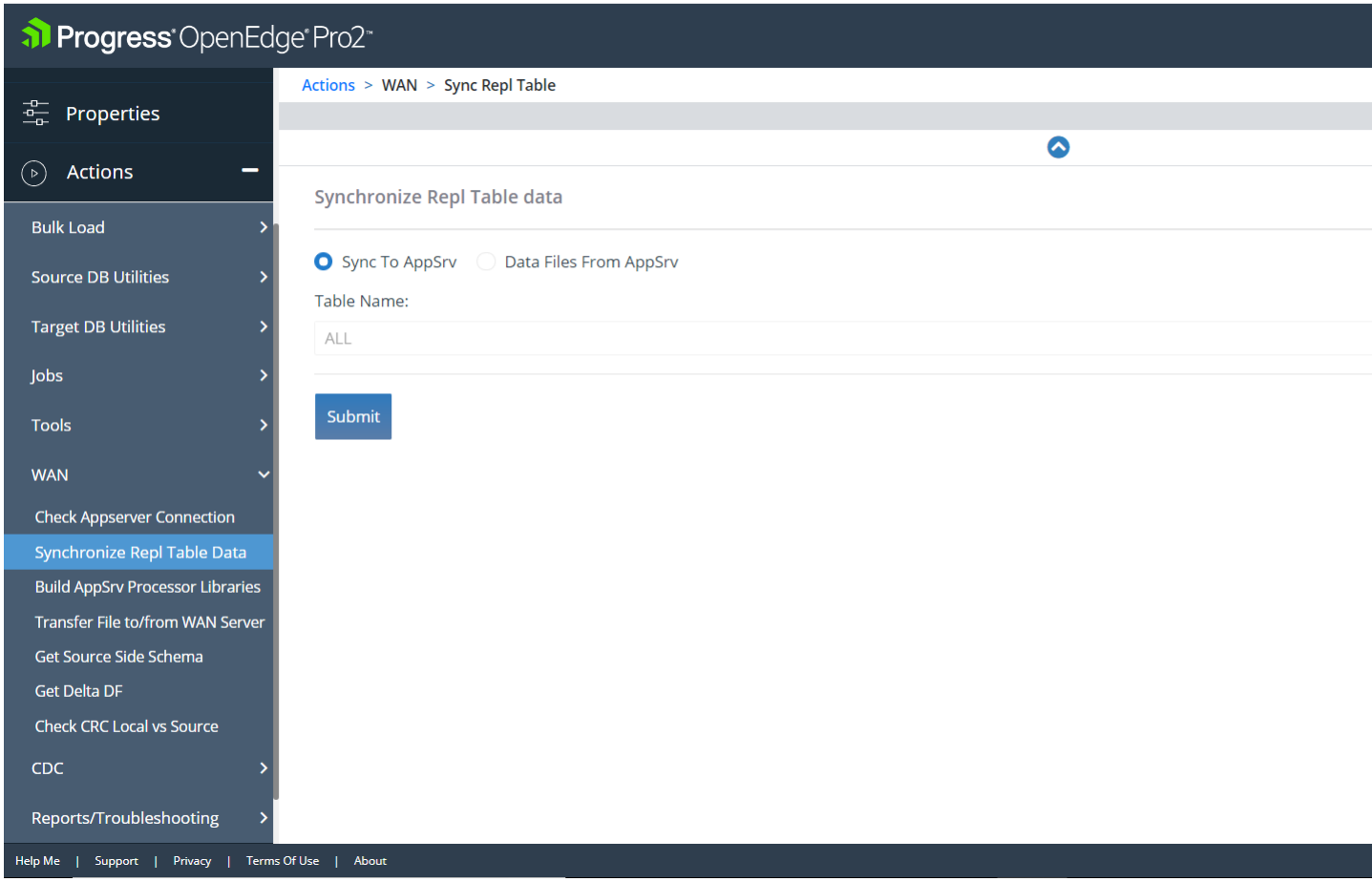
Once the AS_Src environments have been configured, the application server connection and communication should be tested and verified before attempting to start replication. You can do that by selecting **Submit**. Pro2 notifies you if the test was successful or if it failed.

Synchronize Repl Table Data

The **Synchronize Repl Table Data** functionality enables you to synchronize the repl tables data to application server and download the repl table data files from application server.

To synchronize repl table data, Click **Tools** **WAN** **Synchronize Repl Table Data** in the web UI. The Sync Repl Tables window will open. Here you can choose whether to sync the repl tables to application server by selecting **Sync to AppSrv** radio button, or you can choose to download the repl table data files from the application server using the **Data Files From AppSrv** radio button.

The **Sync to AppSrv** button enables you to synchronize the WAN repl database table values while excluding replqueue from your local copy. After performing a sync of WAN replication table data, Pro2 displays all the repl tables that are updated. It also shows the number of records that are updated, deleted, or locked per repl table. The Data Files From AppSrv button enables you to download the WAN repl database table contents while excluding replqueue to your local copy.



Note: If you choose ALL from the drop-down list (Table Name field), then the data files for all table files are created except for replqueue table.

Build AppSrv Processor Libraries

This menu item enables you to build application server process libraries for the selected databases. To build application server process libraries, select the **Build AppServ Processor Libraries** from the WAN menu and select the databases that you want and click **Submit**.

Transfer File to/from WAN Server

You can send, receive or delete files from the WAN server using the **Transfer File to/from WAN Server** menu item. To perform these actions, select Transfer Files to/from WAN Server menu item. Choose the file that you want to perform the action for and click **Copy to WAN** or **Copy to Local** depending upon your choice. You can also choose to delete the files from WAN by clicking the **Delete** button in the WAN Directory section.

Get Source Side Schema

To get the schema of the source side databases, select Get Source Side Schema and select the databases that you want to include and click **Submit**.

Get Delta DF

You can use the **Get Delta DF** menu item to retrieve the Delta DF for a source database. To do this, Pro2 connects to a local empty copy of the source DB and generates a Delta DF from the DF of the source DB by removing all area information from the source DF and downloading it through PAS for OpenEdge.

To retrieve the Delta DF, from the WAN menu, click **Get Delta DF** and select the databases for which you want to retrieve the Delta DF and click **Submit**.

Check CRC Local vs Source

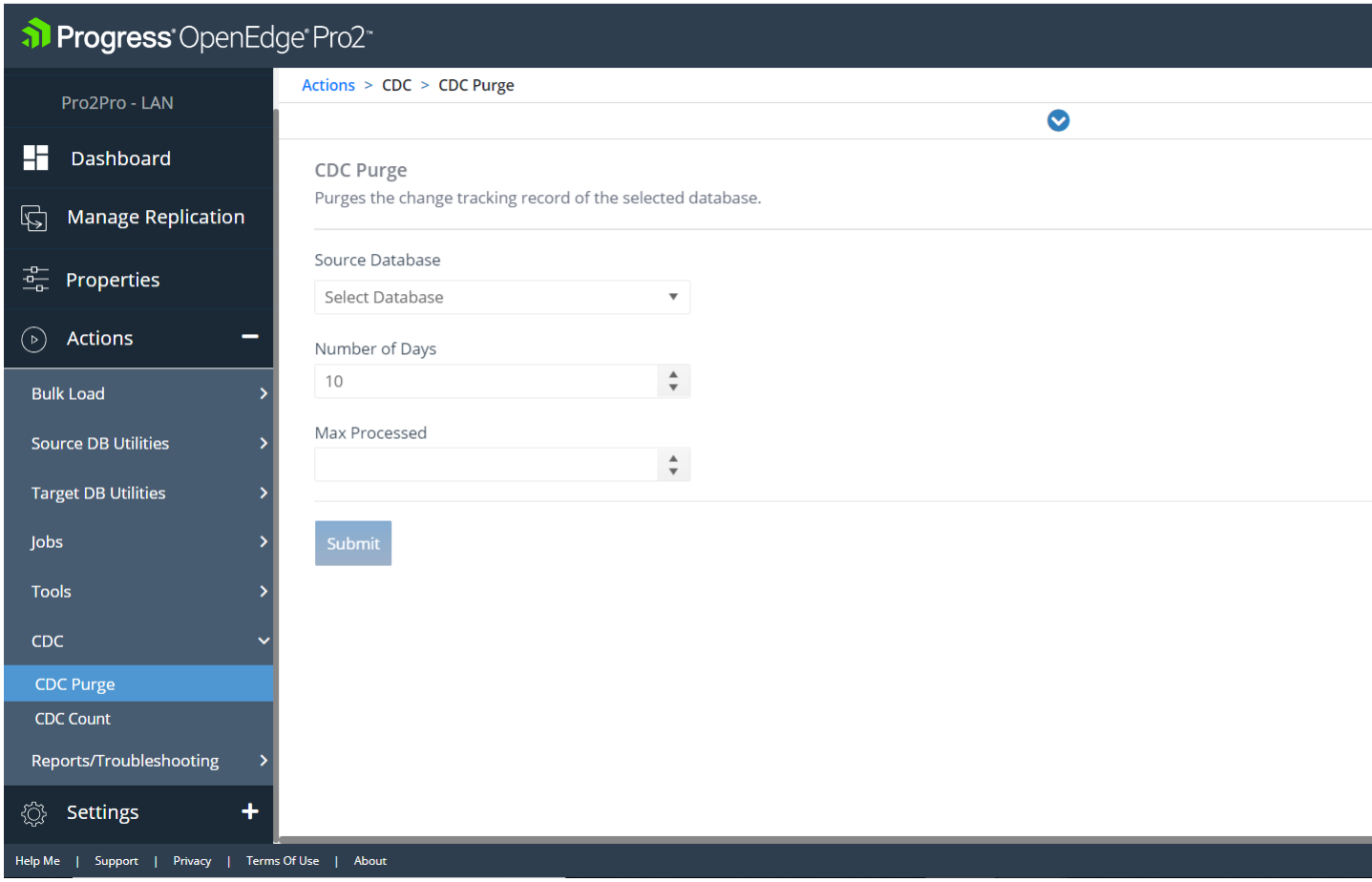
You can use the Check CRC Local vs. Source menu item to check whether the CRC for Mapped tables in the source databases and the local databases match. To do this, from the WAN menu, select **Check CRC Local vs. Source**.

CDC

Note: This tab is enabled only when the Source DB Mode is set to CDC.

CDC Purge

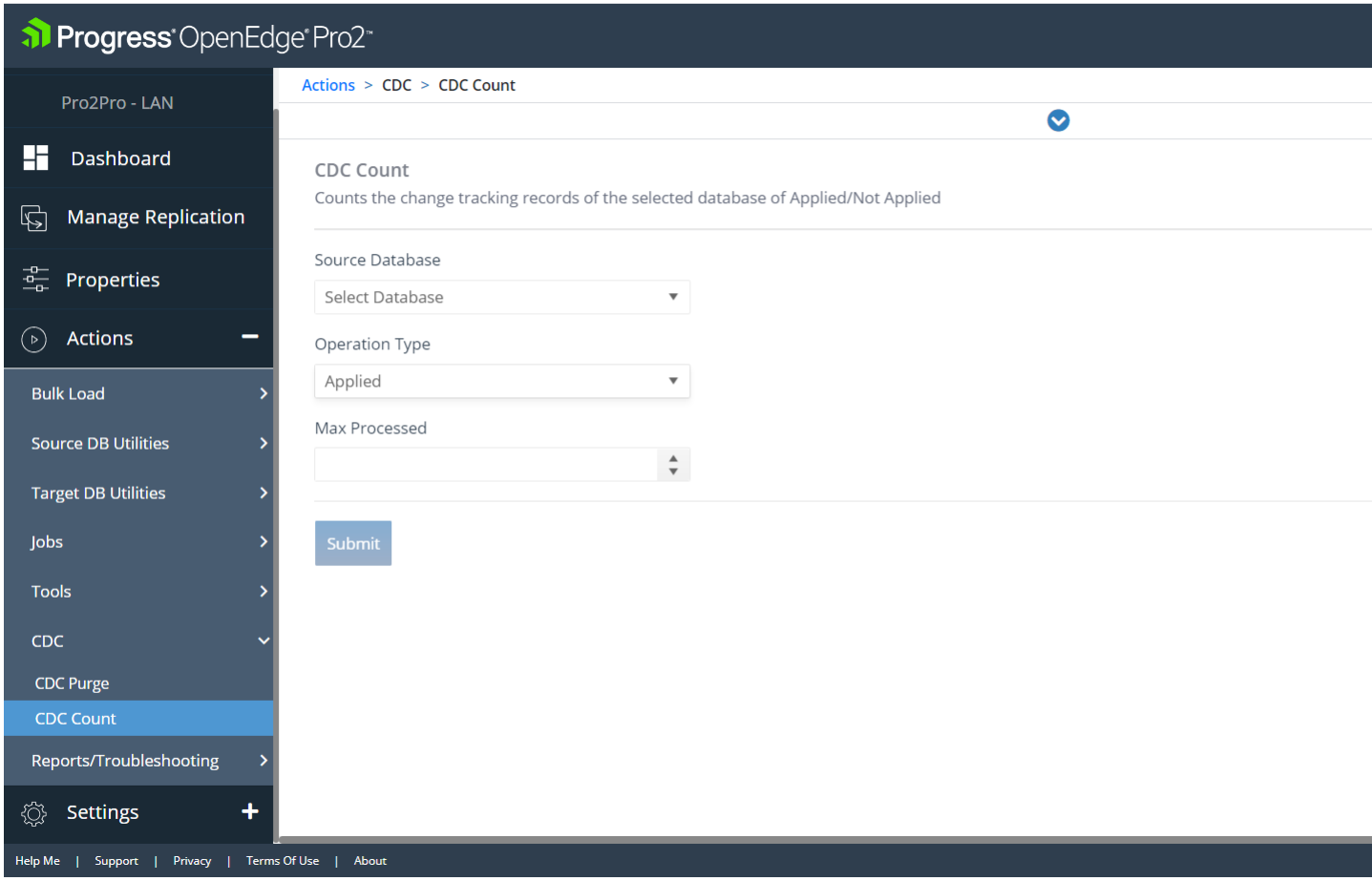
The CDC Purge menu item can be used to delete the data of change records other than the old data based on user input about the number of days of data that should be deleted and the maximum number of records that should be deleted per batch. To delete change data records, from **CDC CDC Purge**, select the source database and the number of days of data that you want to retain. Specify the number of records to be processed per batch and click Submit. If you set the Number of days to 0, all records are purged regardless of the date. If you set the Max Processed field to 0, all records are purged in one batch.



CDC Count

The CDC Count menu item can be used to get the actual record count of the CDC change tracking table based on whether the records are processed or not processed. This can be done by selecting the database from **Select Database** and then selecting **Operation Type** as **Applied/Not Applied** from **CDC CDC Count**.

Users can get the processed records by selecting **Applied** from the Operation Type drop down. To get the list of records that are not processed, used should select **Not Applied** from the Operation Type drop down. By setting the Max Processed field, you can control the maximum number of records that are processed by the CDC Count function. If you set the Max Processed to 0, all records are counted in one batch.



Reports/Troubleshooting

This tab consists of:

Get Replqueue count: The Get ReplQueue Count menu item enables you to get the replqueue count for a specific thread number or all threads. Along with the thread number, you can specify the maximum number of replqueue records of the thread that you want to count.

You can choose to count Applied, Not Applied, Audited, or Not Audited replqueue records. To get the count for all the threads, enter Zero(0) for Thread Number. To get the count of all replqueue records, enter Zero(0) for Max Record Count.

Upon choosing your options, click the Submit button. This will create "Get ReplQueue Count" job record which is processed by jobrunner to get replqueue count result. To view the result, download the file (rqcounts.txt) from the job record.

2

Settings

Use the **Settings** tab of the modifications and the enhancements that can be done to the replication thread. The tab consists of the following functionalities: Pro2 Enterprise View and LAN/WAN.

For details, see the following topics:

- Pro2 Enterprise View
- LAN/WAN

Pro2 Enterprise View

The Pro2 Enterprise View is a centralized dashboard that aggregates mission-critical data, reports, and metrics across all of your Pro2 instances. From the Enterprise View dashboard, you can quickly access each of your Pro2 instances to manage and act on any reports or replications from the instance.

For example, an e-commerce enterprise has three instances of OpenEdge Pro2 running on three separate data centers: one in the USA, one in India, and one in the UK. Managing data and replications across these three instances can be a hassle. With the Enterprise View, you can observe and navigate to each Pro2 instance with ease and efficiency.

The Pro2 Enterprise View dashboard is included with the latest release of Pro2, but it can also be installed as an add-on to your existing instances. If you are interested in the Pro2 Enterprise View Dashboard, contact your Progress OpenEdge representative, and ask about upgrading to the latest version, or about adding the Pro2 Enterprise View Dashboard to your existing instances.

Main steps to set up Pro2 Enterprise View

The Pro2 Enterprise View is designed for easy installation, set up, and integration with your existing Pro2 instances.

To set up Pro2 Enterprise View:

1. Install Enterprise View.
2. Create a Pro2 Enterprise View database.
3. Update the `replProc.pf` file.
4. Start a PAS for OpenEdge instance.
5. Set up your Pro2 Enterprise environment.
6. Join your Pro2 instances to Enterprise View
7. Schedule an Enterprise View push job.
8. Start the job runner.

Install Enterprise View

To install Enterprise View:

1. Locate and execute the `Pro2-6.1-ent.exe` file. All installation files are provided to you by your Progress representative.
2. In the **Pro2** installation wizard, click **Next**.
3. Specify the installation folder path as `C:\Progress\Pro2ent`.
4. In the **Choose OpenEdge** window, specify the path, or select **Choose** to browse and set the OpenEdge home directory.

   The directory is based on the version of OpenEdge that is installed on your machine, for example, `C:\120\`.
5. On the **PAS Ports** window, enter the port information for your PAS for OpenEdge instance, and designate the instance name.
6. Click **Next** and review the options you chose for this installation in the **Pre-Installation Summary** page.
7. Click **Install** to continue with the installation process.
8. Click **Done**.

Create a Pro2 Enterprise View database

Similar to a standard Pro2 replication (repl) database, the Pro2 Enterprise View, or `pro2ent`, database is an internal database that exists on the machine where Enterprise View is installed. All reports and metrics from the Pro2 instances that you joined to Enterprise View are aggregated to this database, where it is then pushed to the Pro2 web user interface.

To Create a pro2ent database:

1. Start a Proenv session.
2. Navigate to the `Pro2` folder from the Proenv window. Type `cd` followed by name of the folder where you installed Pro2 Enterprise View, for example, `cd Pro2ent`.
3. Type `cd db` to navigate to the database folder of Pro2.

Note: Check the directory of the `db` folder to view the database instances. Type `dir` after navigating to the database folder.

---

4. Create an empty `pro2ent` database instance by typing `prodb pro2ent empty`.
5. Load the required table definitions in the `pro2ent` database by typing `prowin pro2ent -1`.

   The **Procedure Editor** window appears.
6. Navigate to **Tools** > **Data Administration**.
7. In the **Data Administration** window, navigate to **Admin** > **Load Data and Definitions** > **Data Definitions (.df file)**.
8. In the **Load Data Definitions** window, load the `pro2ent.df` file and click **OK**.

   Note: The `pro2ent.df` file is located in *`Pro2ent folder`*`/db`.
9. Start the `pro2ent` database by typing: `Proserve pro2ent`

Update replProc.pf

In the `pro2ent` database, you must add the connection details to the `replProc.pf` file. This connects the database to your PAS for OpenEdge instance, and by extension, makes it available to be connected to your other Pro2 instances.

1. Navigate to the `Pro2ent` folder.
2. Add the `pro2ent` database connection details to the `Pro2_HOME\bprepl_ent\Scripts\replProc.pf` file to connect the replication threads and PAS for OpenEdge instance to the `Pro2ent` database.
3. Navigate to the `bprepl_ent\Scripts` folder, and open the `replProc.pf` file. Add the complete path of the database in the file and click **Save**.
4. To test the `Pro2ent` database connections, open the **Procedure Editor** from the `bprepl_ent\Scripts` folder and navigate to **Tools** > **Data Dictionary**. If the connection is successful, the **Tables** section displays tables.

Start a PAS for OpenEdge instance

Now that the `pro2ent` database is set up, start the PAS for OpenEdge instance and log in to the Pro2 web application:

1. Start a Proenv session.
2. Navigate to the Pro2 folder by entering `cd` followed by name of the folder where you installed Pro2, for example, `cd Pro2ent`.
3. Type `Pro2ent\bin\tcman.bat env`.
4. Type `Pro2ent\bin\tcman.bat start`.
5. To verify that the instance started successfully, type `Pro2ent\bin\tcman.bat env`. The **Server Running** section shows a number if the instance started.
6. Open any browser and log in at `localhost:9991/pro2/static/` with he default credentials.

Set up the Pro2 Enterprise environment

Before you connect your Pro2 instances with your Enterprise View instance, you must set up a basic environment by loading the configuration file. The configuration file consists of all the properties and records that are necessary to set up the Pro2 Enterprise environment.

To load the configuration file:

1. In the Pro2 web interface, navigate to **Settings** > **Tools** > **Load Configuration**.
2. Click **Select Files** and load the `replentbasev610.ini` file from the Pro2 folder. The `replentbasev610.ini` file is the Pro2 configuration file.
3. Click **Submit**.

Join your Pro2 instances to Pro2 Enterprise View

After the configuration file is successfully uploaded, your instance of the Pro2 Enterprise View is ready to be joined with your other instances of Pro2. In this phase of the set-up process, you transform Enterprise View from an empty dashboard to one that is full of meaningful data from across all of your Pro2 instances.

Note: A Pro2 instance cannot be joined to more than one Enterprise View instance.

To join your Pro2 instances:

1. From an instance of Pro2 that is not joined with Enterprise View, navigate to the side menu and select **Settings** > **Enterprise** > **Join**.
2. On the **Join Enterprise** window, enter:
   a. **Instance name**

      The instance name is designated at the time of installation and setup of that instance.

   b. **Instance Abbreviation**

      The instance abbreviation is determined at the time of installation and setup of that instance. The abbreviation is limited to two characters.

   c. **Enterprise Application Server Name**

      This is the same application server that is associated with your Enterprise View instance, for example, `ent`.

   d. **Enterprise Host Name**

      This is the same host name that is associated with your Enterprise View instance, for example, `localhost`.

   e. **Enterprise Application Server Port Number**

      The port number associated with your enterprise application server.

3. (Optional) To test your connection to the application server, click the **Application Server Test Connection** button. If the test is unsuccessful, ensure that the instance information is correct and try again.
4. Select **Join** to connect the Pro2 and Enterprise View instances. You can save your work and come back to it later by clicking the **Save** button.

Note: It takes a few minutes for the instances to connect.

Schedule an Enterprise Push job

After the connection between your Enterprise View instance and your other Pro2 instances are established, data is not automatically transferred between them. You must schedule an Enterprise push job. Your Pro2 instance to push data, metrics, and reports from an instance to the Enterprise View instance. This is how the Enterprise View instance stays up to date with all of your mission-critical replications.

To Schedule an Enterprise Push job:

1. From an instance of Pro2 that is joined with Enterprise View, navigate to the side menu, and select **Actions** > **Jobs** > **Scheduled Jobs**.
2. On the **Scheduled jobs** window, select **New**.
3. On the **Create Scheduled Jobs** window, click on the **Type** drop-down list and select **Enterprise Push**.
4. (Optional) Enter a description for the job. Entering a description can help you differentiate various jobs of the same type from one another.
5. Under the **Settings** section, set how frequently the data is to be pushed to your Enterprise View instance. It is a best practice to schedule the pushes to occur frequently. To support this:
   a. Select **Daily**.
   b. Enter the **Start Date** and **Start Time** for when you want the job to begin, such as the current date and time.
   c. You can set the **End Date** and **End Time** for the job. This, however, stops the flow of data from your Pro2 instance to your Enterprise View instance and is not recommended. To run the job indefinitely, **do not enter** an **End Date** or an **End Time**.
   d. Set the **Repeat task every** to **1 minute**.
6. Click **Save**.

Start the job runner

For the last step of the Enterprise View setup process, you must start the job runner.

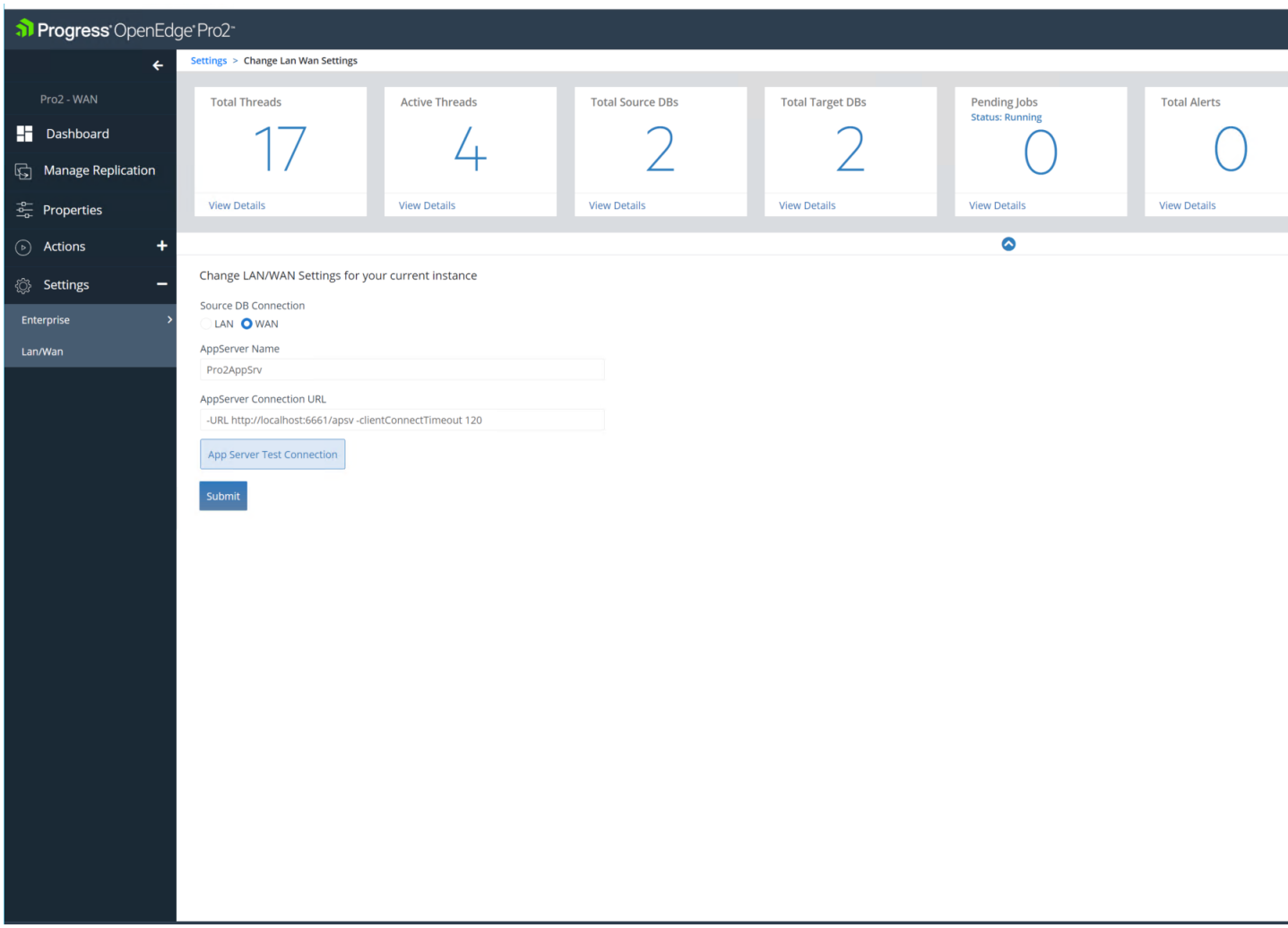
To start the job runner and initiate the scheduled Enterprise Push job, use the following procedure:

1. On the machine where you have the Pro2 instance for which you have scheduled the job, navigate to the Pro2 Scripts folder, for example `C:\Pro2\bprepl\Scripts`.
2. Select and execute the **jobrunner.bat** file.
3. Navigate back to the Pro2 instances web interface and confirm that the job completed successfully.

Your Enterprise View instance is now set up, and data will begin to populate the dashboard. Repeat phases 6, 7, and 8 for each of your Pro2 instances that you want to join to your Enterprise View dashboard.

LAN/WAN

On the **LAN/WAN** page, you can adjust the settings of your LAN or WAN configuration. For example, you can update the application server name of your deployment.



The following is a description of the fields on the page:

- **Source database connection**: use this field to select whether your deployment is LAN or WAN.
- **Application server name**: in this field you define the name of the application server that you want to associate with your deployment.
- **Application server connection URL**: enter your application server URL to connect your it to your Pro2 deployment.
- **Application server test connection**: after you have filled out all of the fields, use this button to test your Pro2 deployment's connection to your the application server.