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Preface

This guide describes the installation, configuration, and usage of the Microsoft SQL Server Adapter with Tidal Workload Automation (TWA).

Audience

This guide is for administrators who install and configure the Microsoft SQL Server Adapter for use with TWA, and who troubleshoot TWA installation and requirements issues.

Related Documentation

For a list of all Tidal Workload Automation guides, see the Tidal Workload Automation Documentation Overview of your release on tidalautomation.com at:

http://docs.tidalautomation.com/

Note: We sometimes update the documentation after original publication. Therefore, you should also review the documentation on tidalautomation.com for any updates.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see What’s New in Tidal Product Documentation at:

https://docs.tidalautomation.com/rss

Subscribe to What’s New in Tidal Product Documentation, which lists all new and revised Tidal technical documentation, as an RSS feed and deliver content directly to your desktop using a reader application. The RSS feeds are a free service.
Document Change History

The table below provides the revision history for the Tidal Workload Automation Microsoft SQL Server Adapter Guide.

Table 1

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<th>Version Number</th>
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<th>Reason for Change</th>
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<tr>
<td>6.1.0</td>
<td>October 2012</td>
<td>New Cisco version.</td>
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<tr>
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<td>Rebranded Cisco Workload Automation (CWA) to Tidal Workload Automation (TWA).</td>
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Introducing the Microsoft SQL Server Adapter

This chapter provides an overview of the Microsoft SQL Server Adapter and its requirements:

- Overview, page 7
- Prerequisites, page 7

Overview

The Microsoft SQL Server (MSSQL) adapter integrates Tidal Workload Automation (TWA) with MSSQL Server allowing you to:

- Create, schedule and run MSSQL queries and MSSQL Agent jobs through TWA.
- Monitor events within a MSSQL database, including table, index, and row creation, modification and deletion.

The MSSQL Adapter supports running jobs under both Microsoft SQL Server 2000, 2005, 2008, and 2012. However, event monitoring is supported on 2005, 2008 and 2012 only.

If you are installing Microsoft SQL Server 2000 and 2005 on the same machine, you will need to have separate names for each instance. Or, alternatively, you can assign each instance its own unique listening port. The default database port is usually 1433.

If you are using different versions of Microsoft SQL Server, it is a good idea to place all jobs under a SQL group. This way, when switching between versions, you only need to switch the connection at the group level.

Prerequisites

Refer to your Tidal Workload Automation User Guide for a complete list of hardware and software prerequisites. These sections describe the prerequisite Microsoft SQL Server user permissions and roles:

- Database Jobs, page 7
- Database Events, page 8

Database Jobs

Creating, viewing and running database jobs requires a variety of permissions. The easiest way to accomplish this is to assign the sysadmin role to your user.

To assign the sysadmin role and grant permissions:

1. Run the following query to determine if your user is assigned the sysadmin role:

   ```
   select is_srvrolemember('sysadmin')
   ```

   If assigning the sysadmin role is not possible, then your user must be granted the permissions listed in the next steps.

2. Run the queries below to verify these have been granted:
select has_perms_by_name('msdb..sysobjects', 'object', 'select')
select has_perms_by_name('msdb..sysproxies', 'object', 'select')
select has_perms_by_name('master..syslogins', 'object', 'select')
select has_perms_by_name('master..sysdatabases', 'object', 'select')
select has_perms_by_name('sys.objects', 'object', 'select')
select has_perms_by_name('sys.schemas', 'object', 'select')
select has_perms_by_name('sys.sysusers', 'object', 'select')
select has_perms_by_name('sys.syslogins', 'object', 'select')

3. If one or more of the above permissions are missing, issue the following statements to grant them to your user. Assume your user is TIDALSOFT\myuser.

grant select on object::msdb..sysobjects to [TIDALSOFT\myuser];
grant select on object::msdb..sysproxies to [TIDALSOFT\myuser];
grant select on object::master..syslogins to [TIDALSOFT\myuser];
grant select on object::master..sysdatabases to [TIDALSOFT\myuser];
grant select on object::sys.objects to [TIDALSOFT\myuser];
grant select on object::sys.schemas to [TIDALSOFT\myuser];
grant select on object::sys.sysusers to [TIDALSOFT\myuser];
grant select on object::sys.syslogins to [TIDALSOFT\myuser];

4. Ensure that your user has the following permissions for each database your SQL Adapter jobs reference. In the example below the database is called XYZ.

select has_perms_by_name('[XYZ]..sysobjects', 'object', 'select')
select has_perms_by_name('[XYZ]..sysusers', 'object', 'select')
select has_perms_by_name('[XYZ]', 'database', 'showplan')

5. If any of the above permissions are missing, issue the following statements:

grant select on object::[XYZ]..sysobjects to [TIDALSOFT\myuser];
grant select on object::[XYZ]..sysusers to [TIDALSOFT\myuser];
grant showplan on database::[XYZ] to [TIDALSOFT\myuser];

6. Ensure that your user can call these database functions. You do not need to assign any permissions by default.

getDate()
gUtcDate()
getServerProperty()
suser_sname()

Your user must be assigned the sysadmin role or one of the following SQL Server Agent roles: SQLAgentUserRole, SQLAgentReaderRole or SQLAgentOperatorRole. Only the sysadmin role can create, view and run all jobs in the database. Refer to SQL Server documentation about the restrictions placed on each of the SQL Server Agent roles with regard to jobs. Refer to the documentation about how to check which roles are assigned to your user and how to assign one of these roles to your user.

Database Events

Monitoring database events requires your user be assigned to the sysadmin role and the db_owner role for each database being monitored.
Configuring the Microsoft SQL Server Adapter

Overview

The Microsoft SQL Server adapter software is already installed as part of a normal installation of TWA. However, you must perform the following steps to license and configure the adapter before you can run Microsoft SQL jobs:

- **Defining a Microsoft SQL Security Policy** – Create a security policy to assign to the users that will run Microsoft SQL jobs. You may want to create different security policies to differentiate between users who just run Microsoft SQL jobs versus users who can run and edit Microsoft SQL jobs.

- **Licensing an Adapter** – License the connection(s) to the Microsoft SQL instance. You cannot define a Microsoft SQL connection until you have applied the Microsoft SQL license.

- **Securing the Microsoft SQL Database Adapter** – Create one or more user definitions in TWA with access to the Microsoft SQL instance using Microsoft SQL user names and passwords provided by the Microsoft SQL administrator. Users in TWA are authorized to run Microsoft SQL jobs on behalf of these Microsoft SQL runtime users.

- **Define a Microsoft SQL Connection, page 14** – Define a Microsoft SQL connection so the master can communicate with the Microsoft SQL instance.

See also Configuring service.props for information about general and adapter-specific properties that can be set to control things like logging and connection properties.

Defining a Microsoft SQL Security Policy

You can create a new security policy or modify an existing security policy in TWA that includes the authority to add, edit, view and delete Microsoft SQL jobs and events. In the Security Policy Definition dialog, there is an MSSql Jobs and MSSql Events category.
To grant access privileges:
1. In the Navigator pane, select Security Policies to display the Security Policies pane.
2. Select a security policy for the Microsoft SQL job privileges and double-click on it to display its Security Policy Definition dialog.
3. Scroll down the list of function categories and double-click on the MSSql Events or MSSql Jobs category to display the available functions.
4. Select the desired job privileges, then click OK.

A check mark appears next to the MSSql function category indicating that one or more functions are selected within the category.

If needed, different security policies with varying authorized functions can be created to provide different levels of access for a variety of users.

For more information about the Security Policy Definition dialog, refer to the “Users” chapter in your TWA User Guide.

Licensing an Adapter

Each TWA Adapter must be separately licensed. You cannot use an Adapter until you apply the license file. If you purchase the Adapter after the original installation of TWA, you will receive a new license file authorizing the use of the Adapter.

You might have a Demo license which is good for 30 days, or you might have a Permanent license. The procedures to install these license files are described below.

To license an Adapter:
1. Stop the master:
   Windows:
   a. Click on Start and select All Programs>Tidal Workload Automation >Scheduler>Service Control Manager.
   b. Verify that the master is displayed in the Service list and click on the Stop button to stop the master.
   UNIX:
Enter `tesm stop`

2. Create the license file:
   - For a Permanent license, rename your Permanent license file to `master.lic`.
   - For a Demo license, create a file called `demo.lic`, then type the demo code into the `demo.lic` file.

3. Place the file in the `C:\Program Files\TIDAL\Scheduler\Master\config` directory.

4. Restart the master:
   - Windows:
     Click **Start** in the Service Control Manager.
   - UNIX:
     Enter `tesm start`
   The master will read and apply the license when it starts.

5. To validate that the license was applied, select **Registered License** from **Activities** main menu.

**Securing the Microsoft SQL Database Adapter**

There are two types of users associated with the Microsoft SQL database adapter, **Runtime Users** and **Schedulers**. You maintain definitions for both types of users from the **Users** pane.

- **Runtime Users**
  Runtime users in the context of Microsoft SQL jobs represent those users and passwords required to connect to the SQL Server database to run queries and jobs. Runtime users are also for connecting to SQL Servers to monitor database events.

- **Schedulers**
  Schedulers are those users who will define and/or manage Microsoft SQL jobs and events. There are three aspects of a user profile that grant and/or limit access to scheduling jobs that invoke Microsoft SQL:
  - Security policy that grants or denies add, edit, delete and view capabilities for Microsoft SQL jobs and events.
  - Authorized runtime user list that grants or denies access to specific database user accounts for use with database connections to monitor for events and with database jobs.
  - Authorized agent list that grants or denies access to specific Microsoft SQL adapter connections for use when defining Microsoft SQL jobs and events.

**Defining Runtime Users (Database Users)**

**To define a database runtime user to run SQL jobs and monitor events:**

1. From the **Navigator** pane, select **Administration>Runtime Users** to display the **Users** pane.

2. Right-click and select **Add Runtime User** from the context menu, or select and existing user and choose **Edit** to display the **User Definition** dialog.

3. If this is a new user definition, enter the new user name in the **User Name** field.
Note: If the DB Server is Azure SQL database, append the server name to the user name in the format <username>@<servername>. For example, if the SQL database server name is TWA server.database.windows.net and the user name is testuser, enter the User Name as testuser@TWA server.

4. For documentation, enter the Full Name or description associated with this user.

5. In the Domain field, select a Windows domain associated with the user account required for authentication, if necessary.

6. On the Passwords tab, click Add to display the Change Password dialog.

7. From the Password Type list, select MSSql.

8. Enter a password (along with confirmation) in the Password and Confirm Password fields.

Only those users with a password specified for Microsoft SQL will be available for use with Microsoft SQL jobs and events. The password may be the same as the one specified for Windows/FTP jobs.

9. Click OK on the Change Password dialog.

The User Definition dialog displays the new record.

10. Click OK to add or save the user recorded in the TWA database.

Authorizing Schedulers to Work with Microsoft SQL Jobs and Events

To define a TWA user to work with Microsoft SQL jobs and events:

1. From the Navigator pane, select Administration>Interactive Users to display the Users pane, listing all defined users.

2. Right-click and select Add Interactive User from the context menu, or select an existing user and choose Edit Interactive User to display the User Definition dialog.

Note: Refer to the Tidal Workload Automation User Guide for a general discussion on setting up a user to work with TWA.
3. On the **Security** tab, select a security policy that includes authorization for Microsoft SQL jobs and/or events.

4. Click the **Runtime Users** tab.

5. Select the database users that this scheduling user may use when defining Microsoft SQL jobs and/or connections for database event monitoring.

6. Click the **Agents** tab.
7. Select which Microsoft SQL connections that this scheduling user can access when scheduling jobs or events.

8. Click **OK** to save the user definition.

**Define a Microsoft SQL Connection**

You must create a connection to the Microsoft SQL instance(s) before TWA can run your Microsoft SQL jobs or monitor database events. These connections also must be licensed before TWA can use them.

The connection for the Microsoft SQL adapter is defined like other TWA connections except it requires configuration information unique to Microsoft SQL instances.

You can create connections to one or more Microsoft SQL instances and/or databases. Microsoft SQL access can be managed by limiting a user account to use only certain connections to particular servers. A connection is created through the **Connection Definition** dialog.

This dialog contains the following elements:

- **Name** – Enter a name for this Microsoft SQL adapter connection.

- **Enabled** – Activates or disables (deactivates) the connection, shutting down the adapter.

  A job cannot run on an adapter if its connection is disabled. If jobs try to run on a disabled connection, the job enters Agent Disabled status. Jobs already running on an agent that is disabled (or if the connection to the agent is lost) run to completion; however, their completion status is not returned until the agent is enabled.
- **Use as default for MSSQL Jobs** – Select to use the connection as your default connection when setting up future Microsoft SQL jobs.

- **General** – This tab designates a job limit and default runtime user.

- **MSSQL Connection** – This tab provides information to connect to the designated Microsoft SQL instance.

- **Options** – This tab provides configuration options for accessing the Microsoft SQL instance.

- **Description** – This tab describes the connection and provides a convenient place for notes about its purpose and use.

### Adding a Microsoft SQL Connection

**Note:** Modifying an adapter's connection configuration should only be done when there are no jobs running that utilize the adapter connection. If the connection is created while jobs are active, the jobs may go into an orphan state.

#### To add a connection:

1. From the **Navigator** pane, select **Administration>Connections** to display the **Connections** pane.

2. Click the **Add** button or right-click and select **Add Connection>MSSQL Adapter** from the context menu to display the **MSSQL Connection Definition** dialog.

3. Enter a name for the new connection in the **Name** field.

4. In the **Job Limit** field of the **General** tab, select the maximum number of concurrent active processes that TWA should submit to this Microsoft SQL instance and/or database at one time.

5. Optionally, in the **Default Runtime User** list, select the name of a default user for Microsoft SQL jobs.

   Only users that have been defined with Microsoft SQL passwords display in this list. The user selected is automatically supplied as the runtime user in TWA Microsoft SQL job definitions.

6. Click the **MSSQL Connection** tab.

   ![MSSQL Connection Definition dialog](image)

   This tab defines how to access a Microsoft SQL instance. There are several different ways to connect to a Microsoft SQL instance. If you wish to connect to a specific database, you can designate that Microsoft SQL database for the connection.

7. In the **DB Name** field, enter the name of the default database for this connection.
This is identical to the DatabaseName value in a JDBC connection string.

This field is optional. If not specified here, you will need to select a database for each job and/or event definition that uses this connection.

8. Optionally, in the **DB Instance** field, enter the name of the database instance to connect to (if there are multiple instances installed on the same server).

This field is optional. Leave blank to use the default, unnamed instance.

9. (Optional) Check the **User Windows authenticate** checkbox to enable the use Windows Authentication feature.

   **Note:** When using Windows Authentication, verify that the MSSql Server for that instance is running as a domain account. MSSql Server requires AD access for login account verification when the adapter intends to connect to MSSql Server.

   **Note:** If Windows Authentication is checked, the connection user and all runtime users associated with jobs for the connection will be authenticated with Windows Authentication. Similarly, if Windows Authentication is left unchecked, the connection user and all runtime users will be authenticated using SQL Authentication. Mixing the two authentication methods is not allowed for a single connection.

The jTDS JDBC driver is used to support Windows Authentication. You can download this driver from [http://jtds.sourceforge.net](http://jtds.sourceforge.net).

To apply the driver:

a. Stop the master.

b. Unzip the download driver file, then copy the jTDS JDBC driver (**jtds-1.2.5.jar**) into `{TWA_HOME}/services/{CAFA6E81-E29F-4263-8E80-4928FFF416A2}/lib`.

c. Restart the master.

10. From the **Connect User** list, select the appropriate Microsoft SQL user.

11. In the **DB Server** field, enter the machine name where the Microsoft SQL database is located.

12. In the **Port** field, specify the port the database instance listens on.

13. In the **DB Version** list, verify the correct version of the database you are connecting to.

14. Select the **Override Jdbc URL** option if you need to override the JDBC connection string.

15. Click the **Options** tab to configure parameters for this connection.

   **Note:** If the **DB Server** is Azure SQL database, add CONN_TYPE=Azure as the configuration parameter.

16. Click the **Outages** tab to define time windows when the agent/adapter will not be available.

17. Click **OK** to add the connection to the TWA database.

### Microsoft SQL Connection Status Light

If the Microsoft SQL connection is not available to the master, the connection status light in the first column of the display is red (or yellow if other agents are connected to the master).

The status light indicates the health of the adapter connection to the SQL server.

If the TWA master cannot connect or loses its connection to a Microsoft SQL instance, you will see a red status light next to your Microsoft SQL connection in the **Connections** pane of the TWA Web client.
Note: If the SQL master adapter connection is not available, you will not be able to define Microsoft SQL jobs and extract information on job steps from your Microsoft SQL instance.
Defining Microsoft SQL Jobs

Overview

There are three types of Microsoft SQL Server Adapter jobs that you can define in TWA:

- **MSSQL Job** – Direct inclusion of T-SQL statements.
- **Database Job** – Includes one or more steps of various database task types, including the following:
  - T-SQL
  - ActiveX Scripts
  - Operating system command
  - Replication distributor
  - Replication merge
  - Replication queue reader
  - Replication snapshot
  - Replication transaction-log reader
  - SQL Server analysis services command
  - SQL Server analysis services query
- **Existing Database Job** – Includes jobs already defined to run under the SQL Server agent.

Note: Before creating and scheduling Microsoft SQL jobs, you must have:
- added the Microsoft SQL database user to TWA.
- defined your Microsoft SQL connection(s).
These topics are covered in Configuring the Microsoft SQL Server Adapter, page 9.

This chapter covers these topics:

- Adding a Microsoft SQL Job, page 19
- Adding a Database Job, page 23
- Linking to an Existing Database Job, page 26

Adding a Microsoft SQL Job

You can create a Microsoft SQL job using the context menu within the Jobs pane. You can also edit, copy and delete an existing Microsoft SQL job. If you add a Microsoft SQL job to a TWA job group, items common between the job group and the Microsoft SQL job are inheritable.
However, unless the parent group has a Microsoft SQL agent assigned to it, you must clear the **Inherited** option and choose an appropriate Microsoft SQL connection.

Selecting the **Add MSSQL Job** option from the TWA **Jobs** pane displays the **MSSql Job Definition** dialog.

**To add a Microsoft SQL job:**

1. From the **Navigator** pane, select **Definitions>Jobs** to display the **Jobs** pane.

2. Click the **Add** button from the TWA toolbar or right-click in either the **Navigator** or **Jobs** pane and select **Add MSSQL Job** from the context menu to display the **MSSQL Job Definition** dialog.

![MSSQL Job Definition dialog](image)

3. In the **MSSql Job Name** field, enter a name up to 50 characters in length for your job.

   The Microsoft SQL Job Name is an identifier for TWA only. All of the other job definition information, such as Job Class, Owner and Parent Group, is also the same as a standard TWA job and is used in the same way.

   If you are putting your Microsoft SQL job into a group, note that unless the parent group selected has a Microsoft SQL agent connection assigned, you must clear the **Inherited** option on the **Run** tab before you can select a Microsoft SQL connection.

4. On the **Run** tab, select an agent/adapter name from the **Agent/Adapter Name** list.

5. Select a runtime user from the **Runtime User** list.

   For information on authorizing a runtime user, see *Defining Runtime Users (Database Users), page 11*.

6. Click the **MSSql Job** tab.
7. Select the job type (SQL Job) from the Type list.

8. Select the database associated with the job from the Database list.

9. In the SQL tab field, type in SQL statements to execute here (multiple statements separated by semi-colons).
   
   To include parameters that are replaced at runtime, use a parameter name of your choice preceded by a colon (i.e. :id).

10. Select the Output as XML option to write the query results in XML format, if desired.

11. In the Output Format list, select how the query results are formatted, if Output as XML is not selected.
   
   - Align Columns – Displays the values in the most readable format.
   
   - CSV Format – Separates values with commas.
   
   - Raw – Separates values with a user-defined character.

12. In the Delimiter field, specify the custom character to use for delimiting the query results, if Raw is selected for Output Format.
13. Select the **Include Headers** option to write out the column headers of the results as well.

14. If you are using parameters to be replaced at runtime, click the **Parameters** tab view a list of parameters that have been preceded by a colon where you can provide values.

15. Click **Edit** display the **Variable Definition** dialog.

16. Enter a parameter value, then click **OK** to save the value.
   
   The value displays in the variable row.

17. Click **OK** to save the job.
Adding a Database Job

To add a database job:

1. From the Navigator pane, select Definitions>Jobs to display the Jobs pane.

2. Click the Add button from the TWA toolbar or right-click in either the Navigator or Jobs pane and select Add MSSQL Job from the context menu to display the MSSQL Job Definition dialog.

3. In the MSSql Job Name field, enter a name up to 50 characters in length for your job.

   The Microsoft SQL Job Name is an identifier for TWA only. All of the other job definition information, such as Job Class, Owner and Parent Group, is also the same as a standard TWA job and is used in the same way.

   If you are putting your Microsoft SQL job into a group, note that unless the parent group selected has a Microsoft SQL agent connection assigned, you must clear the Inherited option on the Run tab before you can select a Microsoft SQL connection.

4. On the Run tab, select an agent/adapter name from the Agent/Adapter Name list.

5. Select a runtime user from the Runtime User list.

   For information on authorizing a runtime user, see Defining Runtime Users (Database Users), page 11.

6. Click the MSSql Job tab.

7. Select the job type (Database Job) from the Job Type list.

8. In the Name field, enter the name you want to use to identify the job within SQL Server.

   If you would like the SQL job name to match the TWA job name, leave this field blank and select the Use Job’s Name option.

   When this option is selected, the Name field will be disabled.

9. On the Database Job tab, select the SQL Server category to classify job under from the Category list.
The default is **Uncategorized**.

10. From the **Start Step** list, select the first step to execute when job is run.

11. Use the **Import Job** field to select a pre-existing job to import as a template.

   See **Importing Steps from an Existing Database Job**, page 25.

12. Select the **Enabled** option to enable/disable job definition.

13. Click **OK**.

14. Click **Add** to display the **Job Step** dialog.

![Job Step dialog]

15. Enter a name for the step in the **Step Name** field.

16. Select the type of step from the **Type** field.

   Database jobs support a variety of step types, from ActiveX scripts to T-SQL procedures.

17. Select the database associated with the job from the **Database** list.

18. In the **Command** tab field, type in a command to execute.

19. If you are using parameters to be replaced at runtime, click the **Parameters** tab to view a list of parameters that have been preceded by a colon where you can provide values.

![Parameters tab]

20. Click the **Advanced** tab to configure options for this step.
Note: Depending on the option selected from the Type list of the General tab, this dialog displays different options.

21. Select the **Append output to step history** option.

You can also re-direct the output to a local file or log it to a database table.

In the advanced configuration, you can also specify what action to take when a step succeeds or fails. You can stop the entire job, reporting either success or failure. Or, you can jump to any previous or next step. For the last step of the job, you usually want to specify Quit the job reporting success from the **On success action** list.

22. Click **OK** to return to the **MSSql Job** tab.

**Importing Steps from an Existing Database Job**

As an alternative to adding steps one-by-one, you can import steps from an existing Microsoft SQL server job definition.

To import steps:

1. On the **MSSql** tab of the **MSSql Job Definition** dialog, select **Database Job** from the **Type** list.

2. In the **Import Job** field, click the ellipsis to display the **Database Job Selection** dialog.

3. In the **Select A Job** field, select the job that contains the steps you want to import.

4. Click **OK**.
The steps display on in the **Job Steps** field of the **MSSql Job Definition** dialog.

5. If necessary, you can edit the imported step by clicking the **Edit Step** button to display the **Edit Job Step** dialog and you can add a new step by clicking the **Add Step** button to display the **New Job Step** dialog.

6. Click **OK**.

**Linking to an Existing Database Job**

**To link to an existing database job:**

1. From the **Navigator** pane, select **Definitions>Jobs** to display the **Jobs** pane.

2. Click the **Add** button from the TWA toolbar or right-click in either the **Navigator** or **Jobs** pane and select **Add MSSQL Job** from the context menu to display the **MSSQL Job Definition** dialog.

3. In the **MSSql Job Name** field, enter a name up to 50 characters in length for your job.

   The Microsoft SQL Job Name is an identifier for TWA only. All of the other job definition information, such as Job Class, Owner and Parent Group, is also the same as a standard TWA job and is used in the same way.

   If you are putting your Microsoft SQL job into a group, note that unless the parent group selected has a Microsoft SQL agent connection assigned, you must clear the **Inherited** option on the **Run** tab before you can select a Microsoft SQL connection.

4. On the **Run** tab, select an agent/adapter name from the **Agent/Adapter Name** list.

5. Select a runtime user from the **Runtime User** list.

   For information on authorizing a runtime user, see *Defining Runtime Users (Database Users), page 11*.

6. Click the **MSSql Job** tab.

7. Select the job type (**Existing Database Job**) from the **Type** list.

8. In the **Job** field, click the ellipsis to create a link to an existing job.

   The **Database Job Selection** dialog displays.

9. From the **Results** section, select the job.

10. Click **OK** to return to the **MSSql Job** tab where the select job steps are displayed in the **Job Steps** field.

11. From the **Start Step** field, select the first step to execute when the job is run.

12. If necessary, you can edit this step by clicking **Edit** or you can add a new step by clicking **Add** to display the **Job Step** dialog.

13. If adding a step, enter a name for the step in the **Step Name** field.

14. Select the type of step from the **Type** field.

   Database jobs support a variety of step types, from ActiveX scripts to TSQL procedures.

15. Select the database associated with the job from the **Database** list.

16. In the **Command** tab field, type in a command to execute.

17. Click the **Parameters** tab to enter variables inside the query for parameter replacement.

18. Click the **Advanced** tab to collect output for this step.
Note: Depending on the option selected from the On success action list, this dialog displays different options.

19. Select the **Append output to step history** option.

You can also re-direct the output to a local file or log it to a database table.

In the advanced configuration, you can specify what action to take when a step succeeds or fails. You can stop the entire job, reporting either success or failure.

Or, you can jump to any previous or next step. For the last step of the job, you usually want to specify Quit the job reporting success from the **On success action** list.

20. Click **OK** to return to the MSSql Job tab.

21. Click **OK** to save the job.
4

Working with Microsoft SQL Jobs

Overview

This chapter describes how to work with Microsoft SQL jobs in TWA.

- Understanding Microsoft SQL Job Output, page 29
- Controlling Adapter and Agent Jobs, page 31

Understanding Microsoft SQL Job Output

The Job Details dialog displays by double-clicking on a job instance record in the Job Activity pane or by right-clicking and selecting the Details option from the context menu. The Job Detail dialog provides information on the job after it has completed or as it is still running. The tabs of this dialog specific to the Microsoft SQL Server Adapter are the Output, MSSQL, and Run Info tabs.

Output Tab

The Output tab of the Job Detail dialog, if job is configured to save output, the Microsoft SQL logs generated for the job and any output if available. TWA can be configured to save or discard job output by default from the Defaults tab of the System Configuration dialog. Regardless of the system default, any individual job instance can be configured from its job definition to override the system default. Each time a job is rerun that run's output is separated by a block of number signs (#).

Note: TWA's default is to discard job output. If you want to be able to view job output, you must select the Save Output option on the Options tab in the Job Definition dialog or change the system default on the Defaults tab in the System Configuration dialog.
MSSql Tab

The MSSql tab of the Job Detail dialog contains the request with the variables used when this job was submitted. This tab allows you to override the parameter values listed.

Run Info Tab

The Run Info tab of the Job Detail dialog contains the request that was submitted to Microsoft SQL. Each tab reflects the last run of this Microsoft SQL instance. This may or may not be the same thing you see on the MSSQL tab depending on whether you have made any changes to this instance since the last run. This tab is read-only.
Controlling Adapter and Agent Jobs

Scheduler provides the following job control capabilities for either the process currently running or the job as a whole:

- **Holding a Job**—Hold a job waiting to run.
- **Aborting a Job**—Abort an active job.
- **Rerunning a Job**—Rerun a job that completed.
- **Making One Time Changes to an Adapter or Agent Job Instance**—Make last minute changes to a job.
- **Deleting a Job Instance before It Has Run**—Delete a job instance before it has run.

### Holding a Job

Adapter/agent jobs are held in the same way as any other Scheduler jobs.

Adapter/agent jobs can only be held before they are launched. Once a job reaches the Adapter/Agent system, it cannot be held or suspended.

**To hold a job:**

1. From the **Job Activity** pane, right-click on the job.
2. Select **Job Control>Hold/Stop**.

### Aborting a Job

Adapter/agent jobs are aborted in the same way as any other Scheduler jobs.

**To abort a job:**

1. From the **Job Activity** pane, right-click on the job.
2. Select **Job Control>Cancel/Abort**.
Rerunning a Job

On occasion, you may need to rerun an Adapter/Agent job. You can override parameter values first, if necessary, from the Adapter/Agent tab.

To rerun a job:
1. From the Job Activity pane, right-click the Adapter/Agent job you need to rerun.
2. Select Job Control->Rerun option from the context menu.

Making One Time Changes to an Adapter or Agent Job Instance

Prior to a run or rerun, you can edit data on the specific Adapter/Agent tab. To ensure that there is an opportunity to edit the job prior to its run, you can set the Require operator release option on the Options tab in the Adapter Job Definition dialog. Use this function to make changes to an Adapter job after it enters Waiting on Operator status as described in the following procedure.

To make last minute changes:
1. From the Job Activity pane, double-click the Adapter/Agent job to display the Job Details dialog.
2. Click the Adapter tab.
3. Make the desired changes to the job and click OK to close the Job Details dialog.
4. If this job is Waiting on Operator, perform one of the following tasks:
   - To release the job, select Job Control->Release.
   - To rerun the job with changes, select Job Control->Rerun.

Deleting a Job Instance before It Has Run

Adapter/Agent job instances are deleted in the same way as any other Scheduler job.

Deleting a job from the Job Activity pane removes the job from the Scheduler job activity only. The original definition is left in tact.

To delete a job instance:
1. From the Job Activity pane, right-click the Adapter/Agent job to be deleted.
2. Select Remove Job(s) From Schedule.
5

Working with Microsoft SQL Events

Overview

You can add new events that are triggered on Windows SQL Server for table, index, and row creation, modification and deletion.

This chapter describes how to work with Microsoft SQL events in TWA.

- Adding a Microsoft SQL Event, page 33
- Assigning an Alert Action to an Event, page 36

Adding a Microsoft SQL Event

To add an event:

1. From the Navigator pane, select Events>MSSql Events to display the MSSql Events pane.

2. Click the Add button or right-click on the MSSql Events pane and select Add Event from the context menu to display the MSSql Event Definition dialog.

3. In the Event Name field, enter a name for the event.

4. From the Owner list, select the owner of the event.

5. On the MSSql tab, specify which database connection to monitor from the list of defined connections from the DB Connection list.

   This tab designates the data table and indexes in the Microsoft SQL database to be monitored and defines the condition that will raise the event. Once the designated change to the data table is detected, the event triggers any linked action(s) as an automatic response to the change.
6. From the **DB Connection** list, specify which database connection to monitor from the list of defined connections.

7. From the **DB Event** list, designate one of the listed database changes from the list as the event trigger.

8. From the **Database** list, specify the database to be monitored.
   
   Initially this text field defaults to the database in the Connection Definition.

9. From the **Database User** list, select the name of the user making the change in the database.
   
   Initially this text field defaults to the user in the Connection Definition.
   
   The value entered here must be all uppercase with without any spaces. The wildcard characters * and ? can be used in this text field.

10. From the **Table Name** list, select the name of the data table to be monitored.
    
    The wildcard characters * and ? can be used in this text field, but only if the database event being monitored is one of the following:
    
    - Table created
    - Table deleted
    - Index created
    - Index deleted
    
    All other database events require a specific table name. The value entered here must be all uppercase without any spaces.

11. Click the **Schedule** tab to assign a schedule to the event.

12. From the **Calendar Name** field, select the calendar or calendar group indicating which days the event monitor should run.
    
    You must select a calendar for the event monitor to be scheduled automatically. A calendar can encompass one or more days. If you do not select a calendar the event monitor will run every day.
    
    You can clear a calendar by right-clicking on the **Calendar** field and selecting **Clear** from the context menu or by pressing the **Delete** key.
13. In the **Offset** field, enter the number of days before or after every day in the calendar that the event will be monitored.

   Each day in the calendar is adjusted by the offset you provide. For example, if the event monitor is using the Fiscal Month End calendar with an offset of 2, the event monitor will be inserted into the schedule 2 days after Fiscal Month End date. If you use an offset of -2, the event monitor will be inserted 2 days before the Fiscal Month End date.

14. In the **From** field, select the earliest date that the event monitor should be active.

   The event monitor will operate starting from the first date in the calendar that is on or after this date. You can choose a date using the built-in calendar dialog by clicking the adjacent drop-down arrow.

15. In the **To** field, select the last date the event monitor can operate based on the calendar.

   If not specified, and your calendar includes repetitive dates, your event monitor will run indefinitely. You can choose a date using the built-in calendar dialog by clicking the adjacent drop-down arrow.

16. Click **Forecast** to display the **Calendar Forecast** dialog for the selected calendar (adjusted by offset, if provided) showing all the dates for which the event monitor will be active.

![Calendar Forecast dialog](image)

17. On the **Schedule** tab, select the **Trigger Constraints** option.

   The **Trigger Constraints** section defines constraints on actions associated with the event monitor. The constraints allow you to throttle the execution of actions. At times, the event condition we are searching for may trigger in rapid successions. Rather than act on each and every event in the short interval, it may be preferable to limit the action execution frequency.

   **Note:** While the event may be suppressed from occurring each time the event conditions are detected, the event monitor will still perform the associated action each time it detects the specified condition. The configured action always occurs whenever an event condition is detected whether the event “counts” or not.

18. In the **Trigger maximum of** field, specify the maximum number of times that the event monitor will react to the defined conditions within a certain time window.

19. In the **Occurrences in __ minute(s)** field, designate the time window within which the event monitor will react to the defined conditions.

20. Select the **Ignore occurrences that exceed the limit** option if you want to ignore any occurrences that exceed configured value.

21. Select the **Time Window** option.

   Selecting this option will limit the event monitor to being active only during the defined time windows that are listed here. If this option is not selected then the event monitor will always be active. This section lists multiple time windows that the event monitor will monitor for the defined conditions. Any number of time windows can be created via the **Time Window** dialog.
Row – A sequence number for the defined time window.

From Time (hh:mm:ss) – Designates the time that the event monitor will begin actively monitoring for the defined conditions. This is expressed in a 24 hour clock format of hours, minutes and seconds.

Until Time (hh:mm:ss) – Designates the time that the event monitor will stop actively monitoring for the defined conditions. This is expressed in a 24 hour clock format of hours, minutes and seconds.

Click OK to add the new event.

Assigning an Alert Action to an Event

You can assign an Alert action to an event so you know when the event has triggered. You can use the following Microsoft SQL event variables:

- **DB.User** – The database user who triggered the event.
- **DB.Object** – The database object that triggered the event.
- **EventOutput** – The output of the event selected.

To assign an Alert action:

1. In the Navigator pane, select Definitions>Actions>Alert to display the Alerts pane.

2. Click the Add button or right-click on the Alerts pane and select Add Action from the context menu to display the Action Definition dialog.

3. In the Action Name field, enter a name for the alert.

4. From the Owner list, select the owner name.

5. In the Severity Level section, select the severity level of the alert.

You can select from four different severity levels:
- **Critical** - Sends the highest priority alert to the **Job Activity** pane when the action is triggered.
- **Error** - Sends a high priority alert to the **Job Activity** pane when the action is triggered.
- **Warning** - Sends a medium priority alert to the **Job Activity** pane when the action is triggered.
- **Information** - Sends the lowest priority alert to the **Job Activity** pane when the action is triggered.

6. In the **Alert Message** field, enter the message the operator receives when viewing the alert from the **Alert Details** dialog.

   You can enter a combination of text and/or variables in your message. Click the **Variable** button to choose variables from the variables context menu.

7. Select the **Public** option.

   When selected, the action is available to all TWA users (within the constraints of their security policy). You can select the default condition for this option from the **Defaults** tab of the **System Configuration** dialog.

8. Click **OK**.

9. From the **Navigator** pane, select **Events>MSSql Events** to display the **MSSql Events** pane.

10. Double-click on the event that you would like to assign the **Alert** action to display the **MSSql Event Definition** dialog.

11. Click the **Associated Action(s)** tab.

12. In the **Available Action(s)** field, select the appropriate alert.

   **Note:** You can also add an alert from this field by right-clicking and selecting an option from the context menu.

13. Click the left arrow button to move the event into the **Selected Action(s)** field.

14. Click **OK**.
About Configuring service.props

The `service.props` file is used to configure adapter behavior. `service.props` is located in the `\config` directory located under the Adapter’s GUID directory. You can create both the directory and file if it does not yet exist. Properties that can be specified in `service.props` control things like logging and connection configuration. Many of the properties are specific to certain adapters; others are common across all adapters.

### service.props Properties

The table below lists many of the parameters that can be specified in `service.props`. Some properties apply to all adapters (shaded in the table) and some properties are adapter-specific as indicated by the `Applicable Adapter(s)` column. The properties are listed in alphabetical order.

<table>
<thead>
<tr>
<th>Property</th>
<th>Applicable Adapter(s)</th>
<th>Default</th>
<th>What It Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>BYPASS_SEC_VALIDATION</td>
<td>Oracle Apps</td>
<td>N</td>
<td>If set to Y, the secondary user validation is bypassed. If not, secondary user validation is performed.</td>
</tr>
<tr>
<td>CLASSPATH</td>
<td>All</td>
<td>&lt;none&gt;</td>
<td>(Optional) – The path to the JDBC driver. If the default <code>CLASSPATH</code> used when the Adapter process is started does not include an appropriate JDBC driver jar required to connect to the PowerCenter Repository Database, you will need to specify this <code>service.props</code> configuration.</td>
</tr>
<tr>
<td>CONN_SYNC</td>
<td>Informatica, Oracle Apps, SAP</td>
<td>N</td>
<td>Setting this flag to Y allows synchronous connections without overloading the RDOnly Thread. If set to N, the adapter might stop trying to reconnect after an outage or downtime.</td>
</tr>
<tr>
<td>DISCONN_ON_LOSTCONN</td>
<td>Informatica</td>
<td>N</td>
<td>Setting this flag to Y avoids an unnecessary logout call to the Informatica server when the connection is lost. This logout call usually hangs.</td>
</tr>
<tr>
<td>EnableDynamicPollingInterval</td>
<td>All</td>
<td>N</td>
<td>Use to avoid frequent polling on long-running jobs. When set to Y in <code>service.props</code> of a particular adapter, these properties are enabled: MinDynamicPollInterval—Minimum value should be 5 seconds. MaxDynamicPollIntervalInMin—Maximum value should be 5 minutes. PercentOfEstDuration—Default value is 5.</td>
</tr>
<tr>
<td>HADOOP_JAVA_HOME</td>
<td>Sqoop</td>
<td>&lt;none&gt;</td>
<td>If the Java version used in the Hadoop environment is lower than Java 8, then install the same lower JDK version in the in the Master and include the path of the JDK in this property.</td>
</tr>
<tr>
<td>Property</td>
<td>Applicable Adapter(s)</td>
<td>Default</td>
<td>What It Controls</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------</td>
<td>---------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IGNORE_CODES</td>
<td>Informatica</td>
<td>&lt;none&gt;</td>
<td>This parameter can be set in service.props, job configuration and connection configuration parameters. The order of precedence is service.props (applicable for all jobs running in all connections), job level (only for that particular job), and connection (applicable for all jobs in the connection). This parameter is used to specify Informatica-specific error codes, separated by commas (,), that you want to ignore while running a job.</td>
</tr>
<tr>
<td>IGNORESUBREQ</td>
<td>Oracle Apps</td>
<td>N</td>
<td>Y or N. Setting this flag to Y stops huge job xml file transfers back and forth between the adapter and the AdapterHost during polls when a single request set has multiple sub-requests of more than 100. The default value is N or empty.</td>
</tr>
<tr>
<td>kerbkdc</td>
<td>MapReduce</td>
<td>&lt;none&gt;</td>
<td>If the Hadoop cluster is Kerberos secured, use this value to specify the KDC Server. For example, kerbkdc=172.25.6.112</td>
</tr>
<tr>
<td>kerbrealm</td>
<td>MapReduce</td>
<td>&lt;none&gt;</td>
<td>If the Hadoop cluster is Kerberos secured, use this value to specify the Kerberos Realm. For example, kerbrealm=TIDALSOFT.LOCAL</td>
</tr>
<tr>
<td>Keystore</td>
<td>BusinessObjects, BusinessObjects BI, BusinessObjects DS, Cognos, JD Edwards, Oracle Applications, UCS Manager, VMware, Web Service</td>
<td>&lt;none&gt;</td>
<td>Specify Keystore=c:\&lt;adapter_certificate_directory&gt;\&lt;your_trusted_keystore&gt;.keystore when importing certificates into a Java keystore.</td>
</tr>
<tr>
<td>LAUNCH_DELAY (in milliseconds)</td>
<td>Informatica</td>
<td>&lt;none&gt;</td>
<td>This parameter can be set in service.props, job configuration and connection configuration parameters. The order of precedence is service.props (applicable for all jobs running in all connections), job level (only for that particular job), and connection (applicable for all jobs in the connection). If a non-zero value is set for this parameter, then the jobs are delayed for the specified number of milliseconds before being submitted to Informatica.</td>
</tr>
<tr>
<td>LoginConfig</td>
<td>BusinessObjects BI Platform, BusinessObjects Data Services</td>
<td>&lt;none&gt;</td>
<td>Specifies the location of the login configuration if using WinAD or LDAP authentication. For example: LoginConfig=c:\windows\bscLogin.conf where “c:\windows\bscLogin.conf” is the location of the login configuration information. Note the use of \ if this is a Windows location.</td>
</tr>
<tr>
<td>Property</td>
<td>Applicable Adapter(s)</td>
<td>Default</td>
<td>What It Controls</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------</td>
<td>---------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>MaxLogFiles</td>
<td>Informatica, JDBC, PeopleSoft</td>
<td>50</td>
<td>(Optional) – Number of logs to retain.</td>
</tr>
<tr>
<td>OUTPUT_ASYNC_LOGOUT</td>
<td>Informatica</td>
<td>N</td>
<td>Setting this flag to Y avoids jobs getting stuck in Gathering Output status.</td>
</tr>
<tr>
<td>OUTPUT_SYNC</td>
<td>All</td>
<td>Y</td>
<td>Enables concurrent output gathering on a connection. To enable this feature, set the value to N.</td>
</tr>
<tr>
<td>POLL_SYNC</td>
<td>All</td>
<td>Y</td>
<td>Enables concurrent polling on connections of the same type. This is helpful when there is a heavily load on one connection of an adapter. The heavily loaded connection will not affect the other adapter connection. To enable this feature, set the value to N.</td>
</tr>
<tr>
<td>QUERY_TIMEOUT</td>
<td>Oracle Apps</td>
<td>N</td>
<td>Y or N. If set to Y, the timeout value defined using the parameter QUERY_TIMEOUT_VALUE is applied to the SQL queries. Default value is N or empty.</td>
</tr>
<tr>
<td>QUERY_TIMEOUT_VALUE</td>
<td>Oracle Apps</td>
<td>unset</td>
<td>The time period in seconds that SQL queries wait before timeout. If 0 or not set, there is no timeout.</td>
</tr>
<tr>
<td>READPCHAINLOG</td>
<td>SAP</td>
<td>Y</td>
<td>Used to control the log gathering in SAP Process Chain jobs. This property depends on the Summary Only check box of the job definition Options tab.</td>
</tr>
<tr>
<td>SCANFOR_SESSIONSTATS</td>
<td>Informatica</td>
<td>Y</td>
<td>Y or N – Set this parameter to N to turn off the default behavior of Informatica jobs collecting the session statistics during the job run.</td>
</tr>
<tr>
<td>SCANFOR_SESSIONSTATS_AFTER_WF_ENDS</td>
<td>Informatica</td>
<td>N</td>
<td>Y or N – Set this parameter to Y to turn off the gathering of session statistics during each poll for the status of Informatica jobs.</td>
</tr>
<tr>
<td>TDLINFA_LOCALE</td>
<td>Informatica</td>
<td>&lt;none&gt;</td>
<td>Points to the Load Manager Library locale directory. See “Configuring the Informatica Adapter” in the Informatica Adapter Guide for how to set this for Windows and Unix environments.</td>
</tr>
<tr>
<td>TDLINFA_REQUESTTIMEOUT</td>
<td>Informatica</td>
<td>&lt;none&gt;</td>
<td>(Optional) – The number of seconds before an API request times out. The default is 120 seconds, if not specified.</td>
</tr>
<tr>
<td>TDLJDBC_LIBPATH</td>
<td>JDBC</td>
<td>&lt;none&gt;</td>
<td>(Windows only, optional) An alternate path to the JDBC library files. The library file path should have been configured given system environment variables. This option is available in case you wish to use an alternate set of libraries and may be helpful for trouble-shooting purposes.</td>
</tr>
<tr>
<td>TDLJDBC_LOCALE</td>
<td>JDBC</td>
<td>&lt;none&gt;</td>
<td>The path to the JDBC locale files.</td>
</tr>
<tr>
<td>TRANSACTION_LOG_BATCH_SIZE</td>
<td>MS SQL</td>
<td>5000</td>
<td>Set this parameter if more than 5000 lines need to be read from the transaction table.</td>
</tr>
<tr>
<td>version_pre898</td>
<td>JD Edwards</td>
<td>N</td>
<td>If running on a JD Edwards server version that is less than 8.9.8, set version_pre898=Y.</td>
</tr>
</tbody>
</table>