

SCHEMATRACK

**Installation, Deployment and
Administration Guide 2.4**

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1.1 Introduction

After registering for your free 60-day trial for SchemaTrack software, you will receive an email to schedule your walkthrough demonstration of SchemaTrack software and applications.

After your walkthrough demonstration, you will receive a second email that includes:

1. Link to SchemaTrack software download.
2. Software key – needed to complete your installation of SchemaTrack.
3. PDF copy of this Installation, Deployment and Administration Guide.

The five basic steps to install, deploy and administer SchemaTrack are:

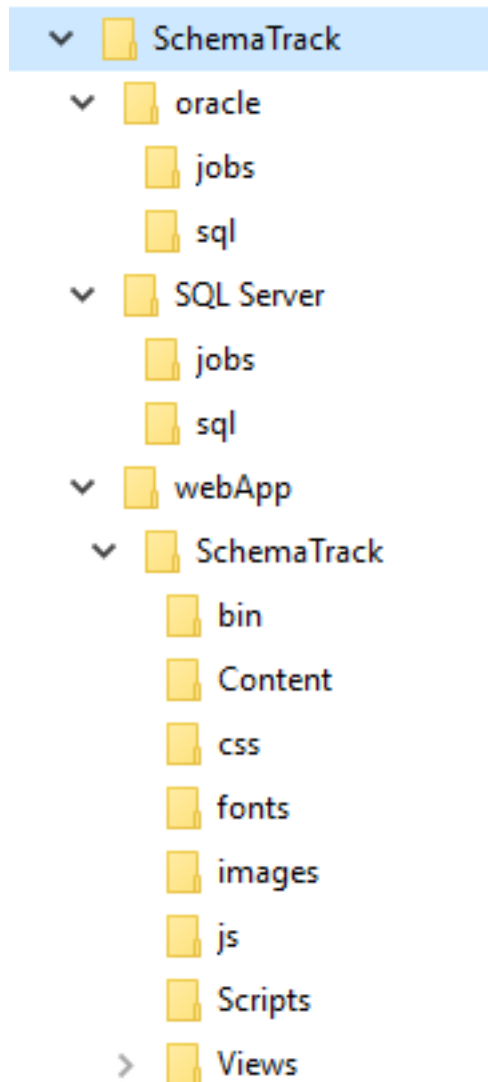
- Un-zip the software download file.
- Create and populate (DDL) SchemaTrack account for each RDBMS that will need tracking.
- Edit the web.config file and create web application site.
- Perform discovery and activation of all database environments to be tracked.
- Understand and use SchemaTrack's updateable fields.

1.2 un-zip SchemaTrack.zip

Copy the download file SchemaTrack.zip to the root drive on the IIS or ASP.NET compatible web server where SchemaTrack web application will reside...

C:\SchemaTrack.zip

Right-click this file and click extract all which will unzip to the following SchemaTrack home directory structure:



In a subsequent step for Oracle you will be running sqlplus scripts from C:\SchemaTrack\oracle\sql which depend on this path. If you decide to unzip SchemaTrack.zip into a different location, you will need to change the script driver.sql to include this path. For linux, you might be changing the C:\ to /u01/, etc.

2.1 - setup the oracle account SCHEMATRACK

If you will be tracking oracle schemas you will create an account named SCHEMATRACK which will be used as the data layer for tracking results of oracle schemas.

1. Login to sqlplus as system and run C:\SchemaTrack\oracle\sql\driver.sql. Driver.sql will create the account, grant necessary privileges and create database objects including tables, views, indexes, constraints and packages. Here is a quick view of driver.sql:

```
create user schematrack identified by schematrack
```

```
alter user schematrack quota unlimited on users
```

```
grant resource, connect to schematrack
```

```
grant select any dictionary to schematrack
```

```
grant create view to schematrack
```

```
connect schematrack/schematrack
```

```
@C:\SchemaTrack\oracle\sql\tbl
```

```
@C:\SchemaTrack\oracle\sql\pak
```

```
@C:\SchemaTrack\oracle\sql\pak_ui
```

```
@C:\SchemaTrack\oracle\sql\pak_admin
```

```
@C:\SchemaTrack\oracle\sql\pak_email
```

```
@C:\SchemaTrack\oracle\sql\analyze
```

```
@C:\SchemaTrack\oracle\sql\obj
```

2. If you need to create SCHEMATRACK in a remote database you will need to edit driver.sql and add the TNS alias to this line of code: connect schematrack/schematrack
3. The default password for SCHEMATRACK will be schematrack so if you prefer a stronger password you can alter the account now with the stronger password.
4. The end of driver.sql will provide a list of database object types with counts by status as listed below. There should not be any INVALID objects.

FUNCTION	VALID	1
INDEX	VALID	54

PACKAGE	VALID	4
PACKAGE BODY	VALID	4
TABLE	VALID	40
VIEW	VALID	13

2.2 - setup the SQL Server database SchemaTrack

If you will be tracking SQL Server schemas (database) you will create a database named SchemaTrack which will be used as the data layer for tracking results of SQL Server schemas.

1. Open SSMS, right-click Databases, then click New Database, type in SchemaTrack as the new database name and click save. Open and execute each of the following sql scripts in the listed order. Each script must complete successfully without any warnings or errors...
 - C:\SchemaTrack\SQL Server\sql\tbl_SS.sql
 - C:\SchemaTrack\SQL Server\sql\pak_SS.sql
 - C:\SchemaTrack\SQL Server\sql\pak_SS_UI.sql
 - C:\SchemaTrack\SQL Server\sql\pak_SS_admin.sql
 - C:\SchemaTrack\SQL Server\sql\pak_SS_email.sql

3.1 – Edit web.config file

With your text or xml editor open C:\SchemaTrack\webApp\SchemaTrack\web.config and make your changes to the items highlighted yellow:

- Enter your organization or company name.

```
<add key="site_name" value="myCompanyName" />
```

- Enter your software installation key.

```
<add key="cust_id" value="myInstallationKey" />
```

- Enter passwords for project user and DBA. Leave them as guest if you prefer open access for everyone in your organization as they will only need to click the login button without knowing or entering the password. This is fine for project user, but the DBA login should be protected (secret) because the DBA login can perform discovery and edits. Discovery and edits should be limited to one person or group.

```
<add key="userPassword" value="guest" />
```

```
<add key="adminPassword" value="guest" />
```

- For each RDBMS (Oracle and SQL Server) that you setup in step 2 above, uncomment the line (<!--xml data-->) and provide your entries for the items highlighted yellow...

```
<connectionStrings>
```

```
  <!--To track SQL Server schemas, uncomment and complete SQL Server
  connection element for either SQL Server authentication, or Windows
  authentication...-->
```

```
    <!--SQL Server authentication:-->
```

```
    <!--<add name="connectionSS" connectionString="data
    source=myHostName;initial catalog=myDatabaseName;user id=myUserName;password=
    myPassword;MultipleActiveResultSets=True;App=EntityFramework"
    providerName="System.Data.SqlClient" />-->
```

```
    <!--Windows authentication:-->
```

```
    <!--<add name="connectionSS" connectionString="data source=
    myHostName;Initial Catalog=SchemaTrack;Integrated Security=True;"
    providerName="System.Data.SqlClient" />-->
```

```
    <!--Oracle connection element for local instance or TNS:-->
```

```
    <!--<add name="connectionOracle"
    providerName="Oracle.ManagedDataAccess.Client" connectionString="Data Source=
    myHostName:1521/myInstanceName or TNS;User Id=myUserID;Password=myPassword;persist
    security info=false;Connection Timeout=120;" />-->
```

```
</connectionStrings>
```

3.2: Create SchemaTrack Website

In IIS Manager or your ASP.net compatible web server, create the SchemaTrack website with physical path SchemaTrack/webApp/SchemaTrack. Assign Application Pool and Connect As according to internal policy.

3.3: Start SchemaTrack UI

These two URLs will open SchemaTrack in your web browser:

<http://localhost/SchemaTrackLogin/Login> (substitute host name if necessary)

<http://localhost/SchemaTrack/index.html> (substitute host name if necessary)

4.0: Perform Discovery and Activate Tracking

1. Login to SchemaTrack UI with DBA login.
2. Click Administration, then click Discovery.
3. Select the database links to be used in discovery. Note each database link must use an account with select any dictionary privilege similar to the SCHEMATRACK account setup previously. For SQL Server you will select linked servers (equivalent to Oracle's database links).
4. Click Schemas (web page step 2) and select each schema to be tracked. Each line maps to the unique occurrence of database link and account.
5. For each selected schema, you can change certain defaults...

Schema Friendly Name - This starts out as the account name which you can change to a more meaningful name. You will want to use the same name for multiple database environments of the same schema. For example, you may have three environments for the HR schema...

<u>Schema Friendly Name</u>	<u>Database Link</u>	<u>Account</u>
Human Resources	DEV	HR
Human Resources	UAT	HR
Human Resources	PROD	HR

Later the UI's schema tree will keep them together for ease of use.

6. Environment – This starts out as the database link. If your database link names do not have friendly environment names such as DEV, PROD, etc., you can change them here.
7. Change Group – Default value is 1.0 though you can change to any value you prefer. The intention of change-group is to mirror the schema's front-end application, so if you setup tracking and your front-end is already version 3.1.22, then use this value as the first change-group.
8. Description and Change Control are optional fields that you can enter here.
9. Click Activation (web page step 3) to begin tracking.
10. Meta-capture Interval – Select the interval to be used when meta-capture is run automatically via meta-capture schedule interval job (section 5.3 below).

5.1 Updateable Fields

Login with the DBA login and click the middle tab Lifetime Audit.

Drill-down on Schema, Environment and Change-group. Use the property sheet in the right side panel to edit the same fields used when setting up discovery in the previous step. Additionally, there are a few other fields:

- Schema Friendly Name
- Environment
- Change-group – in addition to the edit link, change-group has an add link. Use the add link when adding a new change-group to the database environment. Ideally you should be adding the new change-group ahead of schema changes that you will deploy. You also have the option to back-date the new change-group with “Effective Date” at the bottom of the Create New Change Group panel as follows...

Effective Date defaults to the current date which will group schema changes going forward until the next change group is created. If certain schema changes have already occurred and you want them included in this new change group, click "Back Date" and select a prior date for this Schema/Environment.

Note, back dating will remove previous change groups (tag only) if your back date precedes them. Caution should be used when back-dating as these changes cannot be un-done without completely re-organizing your change groups for the schema/environment.

A typical use of back dating - in the case of normally deploying database changes over the weekend, you will create new change-groups on the Friday evening ahead of the deployment. If you forgot to create the new change-group and notice this on Monday morning, you will use a back date of Friday evening which will be the date/time of when you would have created the new change-group. This will tag changes made over the weekend to the new change-group.

- Description and Change Control
- Tracking Status – turn on or off tracking (meta-capture) for the schema/environment
- Email Alert Status - turn on or off email alerts for the schema/environment
- Display Status – turn on or off to include the schema/environment in the schema tree for the project user login.
- Tracking Interval

5.2 Setup Email Alerts

Login to SchemaTrack UI with DBA login and click Administration, then click Email Alerts.

Oracle – Click “SMTP and Send Test Email”, then enter SMTP address and click Save. This address will be used by SchemaTrack’s meta-capture job to send email notifications when schema changes are detected. Enter Send to email address, subject and body to send yourself a test email. Use this test to prove that SchemaTrack will be able to successfully send email alerts with Oracle's UTL_SMTP.open_connection.

SQL Server – Click “SMTP and Send Test Email”, then enter Mail Profile Name and click Save. The mail profile will be used by SchemaTrack’s meta-capture job to send email notifications when schema changes are detected. Enter Send to email address, subject and body to send yourself a test email. Use this test to prove that SchemaTrack will be able to successfully send email alerts with SQL Server's msdb.dbo.sp_send_dbmail.

If either Oracle or SQL Server is throwing an error for the test email, click Administration, then click DBA Logs to check for any database error that may have occurred and should help to troubleshoot the problem.

Click “Manage Email Alerts” to activate up to three send intervals:

- **Immediate** - email will be sent directly after meta-capture job runs.

- **Hourly** - email will be sent according to 60 minute intervals... changes will accumulate, then be sent when meta-capture executes and the send interval is satisfied.
- **Daily** - email will be sent according to 24 hour intervals... changes will accumulate, then be sent when meta-capture executes and the send interval is satisfied.

You can change the status from paused to active according to need. You may want to start out just sending Daily interval to yourself to become familiar with SchemaTrack email alerts, then add additional recipient email addresses later.

If you cannot get your SchemaTrack environment to send a test email successfully, or you do not want to use the email alert feature, please set all three intervals to paused for each RDBMS. Meta-capture job performance will not achieve optimal speeds if there are high volume schema changes and the stored procedure send_ready_email is always throwing errors.

Please call or email SchemaTrack Support to get help with SchemaTrack's email alerts.

Click "Email Alerts Pending and Sent" to review email alerts.

5.3 Setup Meta-capture Schedule Interval Job

Setup your job scheduling tool to execute the meta_capture job to run automatically on an interval basis. Use an interval that is less than or equal to your smallest Tracking Interval for the schemas being tracked. Note, this job is optional. You can also run meta_capture manually on an adhoc basis with the submit meta-capture link in the Schemas property sheet.

To use the schedule interval job, here is the job to run for Oracle and for SQL Server:

```
SchemaTrack\oracle\jobs\run_metaCapture_by_interval
```

```
SchemaTrack\SQL Server\jobs\run_metaCapture_by_interval
```

Both are currently setup as batch (*.bat) files though they can be changed to run as shell scripts for linux or unix to invoke a sql script which executes an API call to stored procedure pak_ui.meta_capture_run_interval() for oracle and dbo.meta_capture_run_interval() for SQL Server.