

Using TM1RunTI

IBM

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Using TM1RunTI

TM1RunTI is a command line interface tool that can initiate an IBM® Cognos® TM1® TurboIntegrator (TI) process from within any application capable of issuing operating system commands.

This utility is of special interest in application situations where TurboIntegrator processes need to be grouped in order to ensure that the processes that can run in parallel do run in parallel. It is also helpful so that those processes which cannot be run in parallel are serialized in the right order. Note that TM1RunTI does not finish (return) before the TurboIntegrator is finished which can be used to serialize calls if the calling process is waiting for TM1RunTI to finish.

Asynchronous calls and Cognos TM1

The Execute command takes two parameters; the second one describes whether to have a synchronous call or an asynchronous call. TM1 tools should only be called asynchronously (Parameter 0) to avoid server deadlocks if the system is waiting for a lock held by the TurboIntegrator process and the process is waiting for the utility. The same advice applies to any executables called by ExecuteCommand if they login to Cognos TM1.

Note: Never use a synchronous call if the tool logs into TM1.

TM1RunTI syntax

The TM1RunTI syntax is described here.

```
tmlrun ti -?  
or tmlrun ti -help  
or tmlrun t1 [<cmd_parm>...] [<ti_parm>...]
```

where <cmd_parm> is one of:

```
-i <filespec>  
-process <string>  
-connect <string>  
<connect_parm>...
```

where <ti_parm> is:

```
<parm_name> '=' <parm_value>
```

where <connect_parm> is one of:

```
-adminhost <string>  
-server <string>  
-user <string>  
<password_parm>  
-AdminSvrSSLCertAuthority <filespec>  
-AdminSvrSSLCertID <id>  
-AdminSvrSSLCertRevList <filespec>  
-AdminSvrSSEExportKeyId <id>  
-ExportAdminSvrSSLCert <T>  
-CAMNamespace <string>
```

where <password_parm> is one of:

```
-pwd <string>  
-passwordfile <filespec> -passwordkeyfile <filespec>
```

Parameters

Parameters can be either in a configuration file or passed on the command line. Command line parameters take precedence over parameters that are in the configuration file. This makes it possible to have persistent default parameters for relatively static parameters (such as adminhost and server) and to supply just the few parameters needed to either override the defaults or to provide values that are not easily defaulted, such as the user name or the TurboIntegrator process name.

The parameters have a different format when passed on the command line. While all parameters are passed in a "-parameter_name value" fashion, everything that is passed as "parameter_name=value" is treated as a TurboIntegrator process parameter.

There are four types of parameters:

- **Command parameters**
Used to specify the config file to use, which group of connection parameters to use, or which TurboIntegrator process to run.
- **Connection parameters**
Used to specify the servername, username and other information needed to connect to a TM1 server.
- **Password parameters**
Can either be a username and plaintext password or can be a filename containing an encrypted password and associated keyfile used for decryption.
- **TurboIntegrator parameters**
Passed to the named TurboIntegrator.

Parameters specified on the command line must begin with dash (-) or slash (/). The parameter value is separated from the parameter name by a space, and the value can be specified as is or in quotes (if there are embedded spaces).

For example:

```
tmlrun ti -server MyTM1Server -username John -pwd "my secret"  
ti_parm1=yes ti_parm2="my value"
```

TM1RunTI Parameters

Parameter	Description Value/Required/Default
i	Path to configuration files String/No/None
connect	This parameter can be used to specify a section in the configuration file containing parameters used to make server connections, such as user, pwd, CAMnamespace, etc. String/No/None
Process	Name of the TurboIntegrator process to call String/No/None
Help	Display help text to the command window (stdout). not applicable/No/not application

Parameter	Description
	Value/Required/Default
?	Display a synopsis of command line parameters to the command window (stdout). not applicable/No/not application

Connect Parameters

Connect parameters are common among Cognos TM1 tools, and can be defined in their own section to enhance reuse and avoid the effort and risks associated with maintaining multiple copies.

Parameter	Value/Required/Default	Description
adminhost	String/No/None	TM1 admin host
sever	String/No/None	TM1 server name
user	String/No/None	TM1 or CAM name
AdminSvrSSLCertAuthority	String/No/none	The full path of the certificate authority file that issued the TM1 Admin Server's certificate
AdminSvrSSLCertID	String/No/none: API Default is : tmladminserver	The name of the principal to whom the TM1 Admin Server's certificate is issued. Note: The value of this parameter should be identical to the SSLCertificateID parameter in the Tmladmsrv.ini file.
AdminSvrSSLCertRevList	String/No/None	The full path of the certificate revocation file issued by the certificate authority that originally issued the TM1 Admin Server's certificate. A certificate revocation file will only exist in the event a certificate had been revoked.
ExportAdminSvrSSLCert	Boolean/No/F	Specifies whether you want the certificate authority certificate which originally issued the TM1 Admin Server's certificate to be exported from the Microsoft Windows certificate store at runtime. When this option is selected, you must also set a value for AdminSvrSSLExportKeyID as described here. Refer to <i>IBM Cognos TM1 Installation and Configuration Guide</i> for appropriate TM1Server configuration.

Parameter	Value/Required/Default	Description
AdminSvrSSLExportKeyId	String/No/None	<p>The identity key used to export the certificate authority certificate, which originally issued the TM1 Admin Server's certificate, from the certificate store.</p> <p>This parameter is required only if you choose to use the certificate store by setting ExportAdminSvrSSLCert=T. Refer to <i>IBM Cognos TM1 Installation and Configuration Guide</i> for appropriate TM1Server configuration.</p>
CAMNamespace	String/No/none	<p>CAM namespace id. Note: This not the CAM namespace name.</p> <p>This value is needed only if the TM1 Server authenticates using CAM.</p>

TurboIntegrator Parameters

These parameters are defined by the TurboIntegrator process and must be of the correct type (number or string).

Parameter	Description
<ti_parm>	<p>Provide the string or number value <value> to the parameter named <ti_parm> which must be a valid parameter name accepted by the TurboIntegrator being run.</p> <p><value>/No/None</p>

Password Parameters

Passwords are either provided in cleartext (not recommended) using the pwd parameter, or using an encrypted file provided by the passwordfile parameter.

Parameter	Value/Required/Default	Description
pwd	String/No/None	TM1 or CAM password
passwordfile	String/No/None	The full path of the file containing the encrypted password for the specified user. If no path is specified, the TM1 server directory is assumed. When this option is used, you cannot use -pwd.
passwordkeyfile	String/No/None	If passwordfile is set, the full path to the key file is also required in order to decrypt the password. The password file and key file can be created using TM1Crypt tool. Refer to <i>IBM Cognos TM1 Installation and Configuration Guide</i> .

TM1RunTI configuration file

TM1RunTI can function with or without a configuration file.

If a configuration file is specified, its parameters are read first.

Parameters specified on the command line are then used to override those obtained from the configuration file. When a configuration file is read, TM1RunTI first obtains parameters from the [TM1RunTI] section of the configuration file.

If a connect parameter is present, then parameter values are obtained from the associated [Connect <name>] section and used to override anything read from [TM1RunTI].

A -connect parameter can also be provided on the command line, and overrides any connect parameters found in the configuration file.

The configuration file contains:

1. A single TM1RunTI section.
2. One or more sections defining the TurboIntegrator processes that may be run.
3. Zero or more sections defining connection parameters.

All entries must start at column 1. Lines beginning with # are treated as comments.

Section names must be enclosed in square brackets []. If a section name is repeated, only the first one is used.

Parameters within a section:

- cannot have blank lines between them
- can appear in any order
- are specified in keyword=value format.

Parameter values need to be enclosed in quotes (") if they contain whitespace.

Connect sections

To facilitate easy maintenance for different server environments such as development, test and production, connection parameters for each environment can be specified in separate sections. Each section is named using the prefix "Connect -" followed by a user defined name. For example:

```
[Connect - Production]
```

```
[Connect - Test]
```

```
[Connect - Development]
```

Process sections

Multiple process sections are permitted. Each section is named to match a process in the server.

Each TurboIntegrator process section is used to define the parameters of the TurboIntegrator process and their default values.

If there are multiple process sections with the same name, only the first one is used.

Example configuration file

This example shows the [TM1RunTI] section and a section for a single TurboIntegrator process ("my_ti_process"). The parameters and their default values, which may be overridden by parameters provided on the command line, are defined below each section header.

```
[TM1RunTI]
process=my_ti_process
connect=Production

[Process - my_ti_process]
num1="value1"
stringX="value2"
stringY="value3"

[Connect - Production]
adminhost=
server=MyTM1server
user="MyTM1AdminServer"
pwdfile="c:\tm1_admin_area\passwords\tm1_password.txt"
AdminSvrSSLCertAuthority=.\ssl\applixca.pem
AdminSvrSSLCertID=tm1adminserver
AdminSvrSSLCertRevList=
CAMNamespace=LOCAL_NTLM
```

Processing logic

Configuration parameters and command line parameters are processed in the following fashion:

1. If specified by -i, the configuration file is opened and any connect option specified in [TM1RunTI] is processed first.
2. Any other parameters in [TM1RunTI] are then processed and may override those specified by the connect parameter.
3. The command line parameter -connect is processed next, if present. It loads values from the associated [Connect - <connection_name>] section of the config file, overriding any values loaded by the preceding steps.
4. The remaining command line parameters are processed.

For example, if you save the configuration file in the preceding example with the name tm1tools.config and then you execute the following:

```
tm1run -i ".\tm1tools.config" -passwordkeyfile c:\keystore\prodkey.dat -connect prodssystem
```

Since the -i parameter was provided, the tool would do the following:

1. Open the config file and load the [tm1run] section
2. Upon seeing the connect parameter in [tm1run], load the parameter values from [Connect - testssystem]
3. Process the command line parameters:
 - a. Upon seeing the connect parameter, load the parameters from [Connect - prodssystem]
 - b. Replace the value for passwordkeyfile.

Configuration filename and location

The command line parameter `-i` can be used to specify a configuration filename. This is particularly useful if several TM1 servers are supported in the environment, as a different configuration file can be used for each server and like-named processes in different servers can be defined with different parameters.

TM1RunTI return codes and error messages

The following error messages are used by TM1RunTI.

Return codes and error messages

Return Code

Message: Description

- | | |
|---|---|
| 0 | None: The program completed successfully. |
| 1 | Password not specified: Password not specified as an argument or as a password file.

Short Help text: Necessary parameters not provided (user, server, process). The short help is sent to stdout. Equivalent to <code>-?</code>

Invalid number of parameters at <n>: More parameters were detected than are actually supported by the program, beginning at the <n> parameter. |
| 2 | Server connection failed: The program was unable to make a connection to a Cognos TM1 server. |
| 3 | Calling process<TI_name> completed with minor errors: The TurboIntegrator process completed but with minor errors. |
| 4 | Calling process <TI_name> completed with messages: The TurboIntegrator process completed but returned messages. |
| 5 | Error retrieving password: The program was unable to get the password from the password file. One of the other error messages listed may appear in stderr before this one, indicating more precisely the nature of the problem. <ul style="list-style-type: none">• NULL key returned from reading <filename> key path.• NULL password returned from reading <filename> password file.• Error obtaining file status of <filename>.• Error opening <filename>.• Unable to allocate data for key.• Error reading <filename> key file. |
| 6 | TI process: <TI_name> not found on server: <server_name>: The TI process was not found on the specified server. |
| 7 | TI process: <TI_name> parameter cannot be read: Cannot read parameter information from the TurboIntegrator process. |
| 8 | TI process: <TI_name> no read access: Specified user does not have read access to the TurboIntegrator process. |
| 9 | calling process: <TI_name> called ProcessQuit.: The TurboIntegrator process called ProcessQuit. |

- 10 **calling process: <TI_name> aborted.:** The TurboIntegrator process was aborted.
- 11 **TI process: <TI_name> reading numeric parameter <param_name>=<param_value> failed:** A non-numeric value was passed into a numeric TurboIntegrator parameter.
- 99 **Other TI error:** The TurboIntegrator process completed with an unspecified error.

Errors are also returned from the TM1API. They are displayed as (TM1 API Error) <xxx> where <xxx> is the value defined in the TM1API.

Modes of execution and error handling limitations

TM1RunTI can be run as a standalone executable, from within an operating system batch script, or from within a Cognos TM1 TurboIntegrator process.

The most straightforward way to run TM1RunTI from within TurboIntegrator is to use the ExecuteCommand() call to directly execute it. For example:

```
ExecuteCommand("tm1runTI -i myconfig.config -connect prodserver -process update")
```

The ability to define connection and other relatively static parameters in a configuration file makes it possible to simplify the parameter list passed to TM1RunTI from a calling TurboIntegrator process, and to reduce maintenance effort by centralizing connection information.

Executing TM1RunTI directly from within a TurboIntegrator process using ExecuteCommand() has an important limitation. TM1RunTI returns an error code if it fails, but the ExecuteCommand() does not return the error code and there is no other mechanism in TurboIntegrator to access the return code after the call.

Another limitation to consider is that the process will have the same current drive and directory as the calling process (the server) which will be the database directory.

To deal with errors, execute TM1RunTI from a batch script called by ExecuteCommand so that the error return code can be obtained in CMD.EXE through the ERRORLEVEL variable and so that error messages can be logged or intercepted by redirecting stderr. Various options are then available to the application designer for handling the error, such as:

- Write the error information to database.
- Write the error information to a file and then, in a subsequent TurboIntegrator process, load the information into a TM1 Cube. The cube can then be used for reporting, alerts, etc.

Note: In TM1 versions 9.5.1 and earlier, this could create additional lock contentions.

- Write the error information to a file or files and then, within the calling TurboIntegrator process, use the FileExists() TurboIntegrator process function to test for the existence of that file or files. The process can then take conditional actions based on the existence of the files generated by the batch script.

TM1RunTI other considerations

These are some additional considerations when using TM1RunTI.

Password Security

The use of passwords on the command line for this utility is not recommended for production deployments. Instead of using passwords on the command line, the password should be passed to the program using the passwordfile parameter to specify a file that contains the encrypted password. A keyfile is also needed, to decrypt the password, and this is provided through the passwordkeyfile parameter. These files can be stored in a location accessible to the username running the tool, but under operating system protection so that other users cannot access them.

A combination of password and key can be generated by using TM1Crypt tool which comes with the standard TM1 installation. See the *IBM Cognos TM1 Installation and Configuration Guide* for details.

Platform Portability

The tool is 32-bit and 64-bit Microsoft Windows utility. The executable name is all lowercase for platform portability and for consistency with tm1top and other TM1 server tools.

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