FTP File Transfer System

Track IQ

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Revision History

VERSION	Details	Date	Author
1.0	Initial version	18/09/2014	Bernard Buterin
1.1	Updated post review	25/11/2014	Nick Aschberger
1.2	Updated with new Features	13/01/2015	Bernard Buterin
1.3	Updated with FleetONE Features	24/10/2018	Bernard Buterin
1.4	Updated with Improved Features	07/08/2020	Bernard Buterin
1.5	Updated describing new Features	29/04/2021	Bernard Buterin

About this document

This document provides an overview and instructions for the use of the Track IQ “NCFTP” File Transfer system used for transferring files between systems.

Track IQ uses this system primarily to push or pull result files from Track IQ wayside devices – but the scripts can be used for any required file transfers.

The NCFTP TrackIQ FTP system is the replacement for the existing methods and the following components are no longer required:

- AutoFTP (Java app)
- FTPFetchAndProcess.pl (Perl script)

The transfer methods make use of:

1. NCFTP clients, for FTP transfer.
    a. License: http://www.ncftp.com/download/
2. 7-zip, for compression:
    a. License: http://www.7-zip.org/license.txt

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1 Introduction

The TrackIQ FTP system supports:

- Both Put and Get FTP methods.
- Compressing and De-compressing the data transferred.

The choice between Put and Get methods depends on the environment in which the FTP system is to be installed. This means depending on the network topology and firewall setups for a given customer, we will need to choose which method to use.

Get Method

1. In this configuration, the site runs an FTP server and that site is polled.
2. When new data is available on the site, the “get” method retrieves data from the site.

Put Method

1. The put method can be used to push data directly from the site to an FTP server.
2. This is used when a customer provides access to an FTP server that can be reached from the remote site. It is also useful to use this method to reduce the data transfer overhead that the “get” method would use checking if data is available to transfer.
3. Data is put on the FTP server, and then retrieved from that FTP server for input into the Track IQ FleetOne database.

In both cases, appropriate firewall access is required.

1.1 Get method configuration

The example below discusses RailBAM, but the logic applies to any file transfer.

The Get method involves two fundamental batch file processes:

Batch file name	Example Location	Description
ComProcess	Wayside Processing Units (WPU)s	Compresses the wayside result files and stores them in a temporary directory. The FTP server running on the site machine has access to that temporary directory.
FTPFectchFromSite	FleetOne Server	Connects to FTP server on WPU, downloads and decompresses the result files

The following diagram shows the transfer method in get configuration:

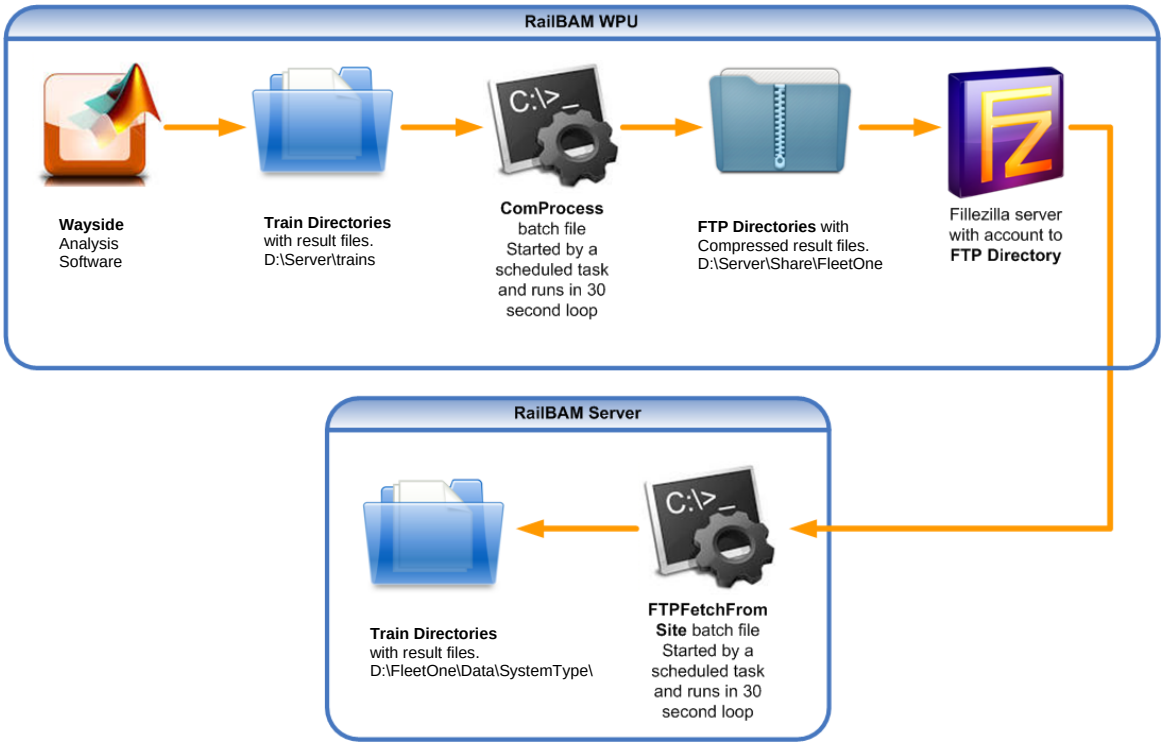


Figure 1 - Example FTP Get Configuration

1.2 Put method configuration

The example below discusses RailBAM, but the logic applies to any file transfer.

The Put method involves three fundamental batch file processes.

Batch file name	Location	Description
ComProcess.bat	RailBAM WPUs	Compresses the RailBAM files and stores them in a temporary directory.
FTPPutInter.bat	RailBAM WPUs	Connects to a customer FTP server located anywhere and puts the files into a directory.
FTPFectchFromSite.bat	RailBAM Server	Connects to the customer FTP, downloads and decompresses the RailBAM files

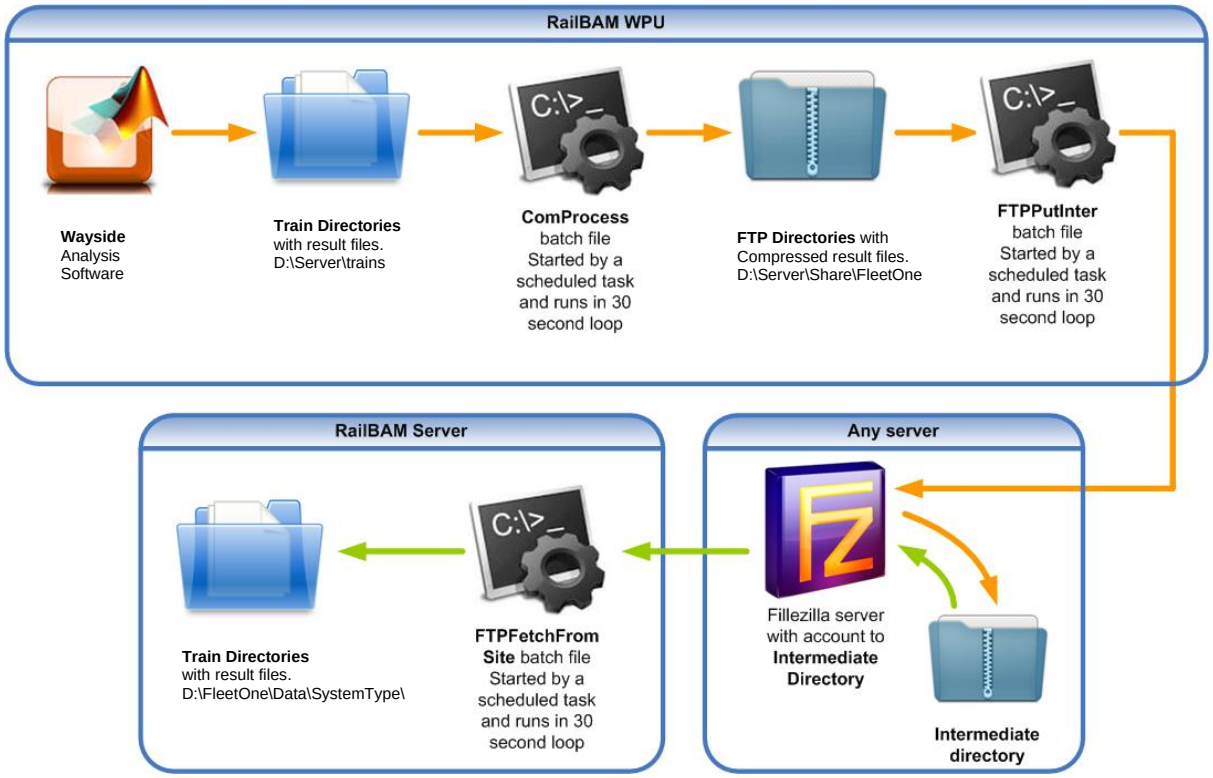


Figure 2 - Example FTP Put Configuration

2 ComProcess

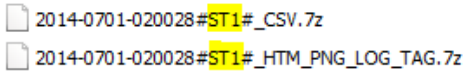
The purpose of this batch script is to compress the trains files generated by the Wayside software so that they are ready to be transferred – using either put or get method.

ComProcess runs only on the WPU.

This application breaks up the railbam measurements into compressed files – creating multiple archives and directories for:

- FleetONE result files
- FleetONE artefacts files
- Diagnostics artefacts files

Example:



- The Site Acronym is embedded in the archive file names
- A zero byte file with the site acronym is added inside each archive (to tell the **FTPFetchFromSite** batch file on the server where to put the files).

This application runs in a 30 second loop (by default) and watches the configured “trainlist” folder for any changes compared to its own “mytrainlist” folder. A “trainlist” item is a zero byte file that’s filename describes the folder structure of a train pass, the “mytrainlist” folder contains the same file but uses a “.do” or “.done” file extension to determine if the train folder needs to be compressed.

Parameters are configured in **C:\TrackIQ\Tools\ComProcess.D\ComProcess.bat**

- **TRNROOT** Default is D:\Server (Where to find trainlist and train folders)
- **FTF1DIR** Default is D:\Server\Share\FleetOne (Results Only)
- **FTF1ArtefactsDIR** Default is D:\Server\Share\FleetOne-Artefacts (Results with additional data)
- **FTDiagnoticsArtefactsDIR** Default is D:\Server\Share\Diagnostics-Artefacts (Train files without results for system health analysis, Comment out if not required)
- **SiteAcronymStatic** (See Step #2 below)
- **FTF1DIRCPY** (If required, a copy of FTF1DIRCPY files)
- **FTF1ArtefactsDIRCPY** (If required, If a copy of FTF1ArtefactsDIR files)
- **FTDiagnoticsArtefactsDIRCPY** (If a copy of FTDiagnoticsArtefactsDIR files)
- **REDUCEF1Artefacts** (Result artefacts will still be created but some larger components will be omitted)
- **CompressRAWDatFiles** (This will Compress the RAW data files to save space on the local drive only. This may take a long time but could save 50% per train folder)
- **LoopSleepSeconds** Default is 30 (Seconds)
- **OutputLogFiles** Default is 30 (Days)

Installing and configuring Compress and Process on the WPU

1) Obtain from Track IQ and Extract **ComProcess** folder to C:\TrackIQ\Tools\ **ComProcess.D** (D representing the drive letter of the result files.)

2) As of Version 6, the `SiteAcronym parameter is automatically obtained from the result files.`
`If upgrading an existing system and you require to keep the SiteAcronym as previously defined`
Set the site acronym in **C:\TrackIQ\Tools\ComProcess.D\ComProcess.bat**

```
SET SiteAcronymStatic=ST1
```

Note: The acronym must match the acronym used on the server. (RailBAM requires it to match the database importing acronym however for other wayside systems it is only used for sub folder storage location as the site ID acronym is imbedded in the result files.)

3) Run **OLDSite1stRun-Don'tUploadEverythingNow.bat**
The batch file copies the files from D:\Server**trainlist** into the ComProcess's own trainlist aka C:\TrackIQ\Tools\ComProcess.D**mytrainlist** so that it ignores old results which may have previously been transferred or not need to be transferred.
    - **trainlist** is generated by the wayside analysis software after completing analysis of a train.
    - **mytrainlist** is ComProcess's own log of what has been compressed.

4) Run **CreateScheduledTask.bat** to create the scheduled task and preferably change:
    - Conditions, deselect Stop if the computer switches to battery power
    - Conditions, deselect Start the task only if the computer is on AC power
    - Settings, deselect Stop the task if runs longer than X days

Note: If you don't change these parameters it will still work but there might be a period of time where the results are delayed.

3 FTPFetchFromSite

The purpose of this batch script is to download and un-compress train files.

It retrieves data either directly from the WPU, or from an intermediate FTP server.

This application runs in a 30 second loop (by default) and connects to the FTP Server and downloads all matching file types (default *.7z & *.rar) into a (%TEMPDIR%) local directory.

If defined parameter (%SHAREDIR%) location exists, the files downloaded are duplicated into this folder. This is to assist in cases where copies are needed for more than one database and it is beneficial to not transfer the data twice from the wayside.

The result files are extracted into (%OUTPUTDIR%) directory with the required file structure.

Parameters are configured in **FTPFetchAndProcessBatch\FTPFetchFromSite.bat**

3.1 Installing and configuring FTPFetchFromSite

1) Obtain from Track IQ and copy **FTPFetchAndProcessBatch** folder to C:\TrackIQ\
   - In the case of Get method, there is one process for each site, so Add the site acronym the end of the folder to differentiate it from the other sites
     Example: **C:\TrackIQ\FTPFetchAndProcessBatch - ST1**
   - In the case of Put method, there is one process for each System Type, so Add the System Type the end of the folder to differentiate it from the other System Types
     Example: **C:\TrackIQ\FTPFetchAndProcessBatch - RailBAM**

2) Set the FTP address (ending with a forward slash) in **C:\TrackIQ\FTPFetchAndProcessBatch - ST1\FTPFetchFromSite.bat**

```
SET FTPURLPTH=ftp://FTPAddress/FolderPath/
```

3) Optional configuration
   - There is a second IP address code block that can be uncommented in case a backup IP address is used by the coms carrier.
   - If rar is unused, remove it from the line as to just leave 7zip files:

```
SET FTPFLEFLT=.7z
```

   - To decrease the number of retries and force active uncomment the line:

```
SET FTPREVSRV=-DD -r 1 -t 10 –E
```

   For more information on optional switches:
   http://www.ncftp.com/ncftp/doc/ncftpget.html

4) Run **CreateScheduledTask.bat** to create the scheduled task and change:
   - Conditions, deselect Stop if the computer switches to battery power
   - Conditions, deselect Start the task only if the computer is on AC power
   - Settings, deselect Stop the task if runs longer than X days

   Note: If you don't change these parameters it will still work but there might be a period of time where the results are delayed.

4 FTPPutInter

The purpose of **FTPPutInter** is to put the files prepared by **ComProcess.bat** into an intermediate FTP directory. With the “Get only” method this script is unused.

Multiple copies of this script can be configured to transfer different folders to different locations or to ensure the result files arrive in priority over result artefact files.

This application runs in a 30 second loop (by default) and any matching File Type (%FTFILEFILTER% default *.7z & *.XML) are uploaded to the configured FTP site using a “.tmp” file extension until the file transfer is complete, then is renamed back to the original file name. The successfully transferred file is then removed from the local (%INPUTDIRX%) folder.

4.1 Installing and configuring FTPPutInter

1) Obtain from Track IQ and copy **FTPPutInter** folder named with it’s purpose ; C:\TrackIQ\Tools**FTPPutInter-FleetOne**

2) Set the URL address ending with a forward slash in C:\TrackIQ\Tools**FTPPutInter-FleetOne\FTPPutInter.bat**

```
SET URLX=ftp://UserName:PassWord@FTPAddress/FolderPath/
```

3) Set the `Input Directory` C:\TrackIQ\Tools**FTPPutInter-FleetOne\FTPPutInter.bat**

```
SET INPUTDIRX=D:\server\Share\FleetOne
```

4) Run **CreateScheduledTask.bat** to create the scheduled task and change:
   - Conditions, deselect Stop if the computer switches to battery power
   - Conditions, deselect Start the task only if the computer is on AC power
   - Settings, deselect Stop the task if runs longer than X days

   Note: If you don’t change these parameters it will still work but there might be a period of time where the results are delayed.

Appendix 1 – Troubleshooting ComProcess

Problem	Task	Detail
No Files Created	Check if it's running	Check the Scheduled task status or if the task has been disabled
	Compare the trainlist and mytrainlist directories	If they are the same there is a problem with compressing the files If they are not the same, check if directory paths match, check if it is running.
	Check the train folder	Do files exist to be compressed?
	Check the output folder location	Have the files already been uploaded quickly that you didn't see them? Try to re-transfer a Train
I re-analysed a train and I want it in the database	Need to re-transfer a Train	Find the "mytrainlist" directory and select the train you want to re-transfer and delete it.
WPU analysis software hasn't created the trainlist entries	Update the "hndltrain_ini.txt" file parameter "rprt_paras.trainlistdir" by un-commenting it out to resolve this for new trains Run the "GenerateTrainlist.bat" to fix for the existing trains at site	This is sometimes commented out on WCM systems.

Appendix 2 – Troubleshooting FTPFetchFromSite

Problem	Task	Detail
No Files Transferred	Check if there is a network connection	Test the FTP location manually
	Check if there are files to transfer	Check the watch folder location
	Check if it’s running	Check the Scheduled task status or if the task has been disabled

Appendix 3 – Troubleshooting FTPPutInter

Problem	Task	Detail
No Files Transferred	Check if there is a network connection	Test the FTP location manually
	Check if there are files to transfer	Check the watch folder location
	Check if it’s running	Check the Scheduled task status or if the task has been disabled