Chyron®

Weather Data Flow

This page left intentionally blank

Content

Using this tutorial

Overview

Before you start, please read this guide as it will help you to get more out of this tutorial.

The majority of the information contained within this tutorial relates to Weather Presenter, but it also introduces Weather PresenterGlobe. Weather Presenter, as you will learn, is a part of Chyron Weather for which additional study will be required.

Conventions

The following conventions are adopted.

Each lesson begins with an overview containing a brief description of the content.

The Overview looks like this:

Lesson Overview

Contained within the overview is an optional prerequisites section. This section lists lessons you need to read before reading the current lesson.

The Prerequisites section looks like this:

Prerequisites

Lesson 1

Lessons may contain definitions of key terms.

Definitions look like this:

This is a definition

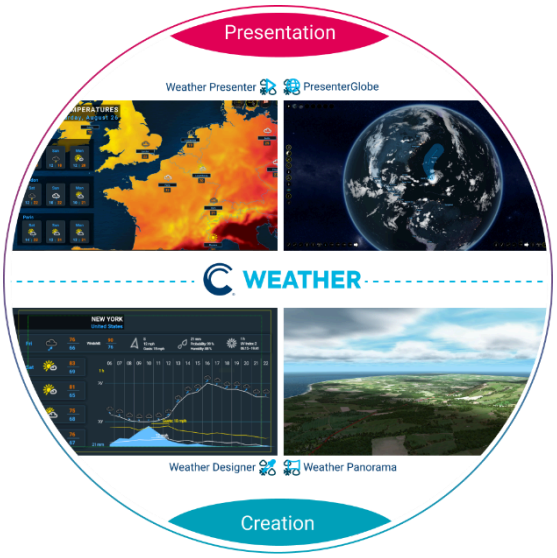
Additionally, many lessons feature tips which contain helpful information including advice on getting the best out of the software as well as hints about solving common problems.

Tips look like this:

> This is a tip

All images and tables are captioned with the lesson number, figure number and brief description of the content.

Captions look like this:



Lesson 1.1 - Chyron Weather Overview

Properties and settings are presented using tables comprising a keyword followed by a definition and look like this:

Property	**Definition**

Keyboard shortcuts and Interactions are presented as tabulated lists and look like this:

Key or button	Action

Lesson Activities

Each lesson ends with an activities section.
The activities section contains a short Multiple-Choice quiz enabling you to review what you have learnt.
The questions are followed by the answers to enable you to check your work.

The quiz looks this:

1 Questions

1. What is Weather PresenterGlobe designed for:
   A. Visualizing large scale weather phenomena
   B. Interactive weather presentations
   C. Camera flights for local weather

2 Answers

1. The correct answers are A & B.

Additionally, the Activities section may contain one or more Tasks for you to complete.
Tasks look like this:

1 Tasks

1. Create a new Playlist, add some Weather PresenterGlobe Segments via the Resource Panel and save it.
2. Open Weather PresenterGlobe in Editing Mode.

A note on navigation

It is possible to access content from the Contents page by clicking on a Lesson.

It is also possible to access content from within the body of the text where links exist. For example, in the case of the prerequisites section where links are provided to other lessons.

Of course, the text can be keyword searched using your reader's search function.

1 Getting Started

Lesson Overview

This lesson introduces Weather Data Flow, its purpose and how to set it up. Target audience is a tech user with a basic understanding of Chyron Weather, IT infrastructure and weather data.

What is Weather Data Flow?

Weather Data Flow is the Swiss army knife of Chyron Weather. While Weather Presenter, Weather PresenterGlobe, Weather Designer and Weather Panorama are created to enable Graphics Artists, Meteorologists and Presenters to visualize the weather – Weather Data Flow facilitates various supporting tasks in the background. Unknown to most of the Chyron Weather users it is a core ingredient and vital to the weather production.

Purpose of Weather Data Flow/General concept

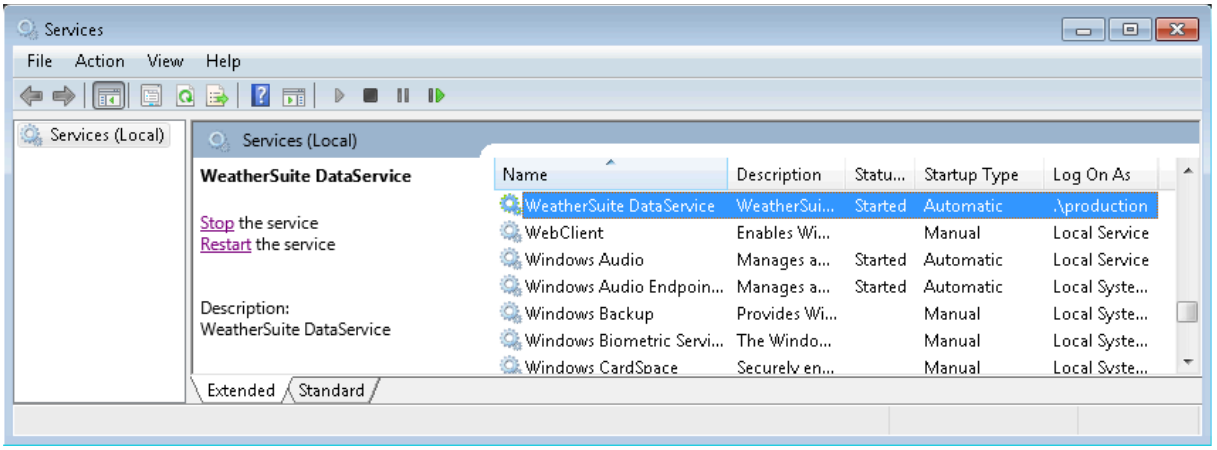
Weather Data Flow is a tool for managing data and workflows. This is primarily for CHYRONHEGO-Employees, but can also be used by customers, only in limited form, or for technical experienced power users.

It was initially developed to simplify backend processes and to make it manageable within a windows environment.

Easy and intuitive windows tool to manage data and workflows without need for unix and scripting (especially PERL and python) skills.

Windows Service

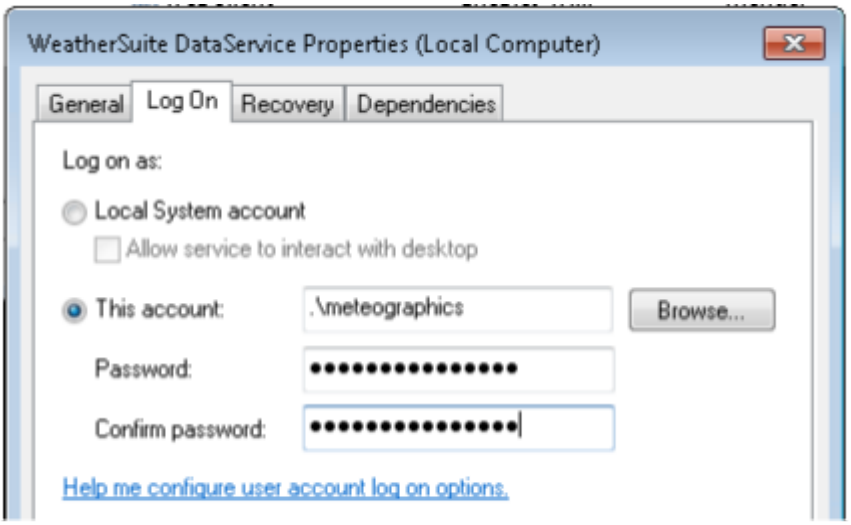
Weather Data Flow is a windows service. It’s possible (and often necessary) to run the service with another user either than the one that is logged in on the system (user rights).



Lesson STYLEREF 1 \s 1. SEQ Lesson * ARABIC \s 1 2 – Chyron Weather Data Flow in Services

The “Startup type” should be automatic.

Important: User always needs to be set up as “This account” otherwise it is very likely that you run into trouble with access rights for folders and files.



Lesson STYLEREF 1 \s 1. SEQ Lesson * ARABIC \s 1 3 - Properties

Firewall and Ports

Description	Direction	Port	Protocol	Firewall Rule (created by Setup)
WebInterface	Inbound	44700	TCP	Weather Data Flow - Web-Interface (TCP-In)
Failover - Heartbeat	Inbound	44500	TCP	Weather Data Flow - Failover (TCP-In)
Failover - Heartbeat	Outbound	44500	TCP	Weather Data Flow - Failover (TCP-Out)
MySQL CSV Ingest	Outbound	3306	TCP	
S3 Download	Outbound	80, 443	TCP	
WAPI Point-Observation Download	Outbound	80, 443	TCP	
WAPI Point-Forecast Download	Outbound	80, 443	TCP	
WAPI Lightnings Download	Outbound	80, 443	TCP	
WAPI Warnings Download	Outbound	80, 443	TCP	

Lesson STYLEREF 1 \s 1. SEQ Lesson * ARABIC \s 1 4 – Firewall and Ports

Working directory

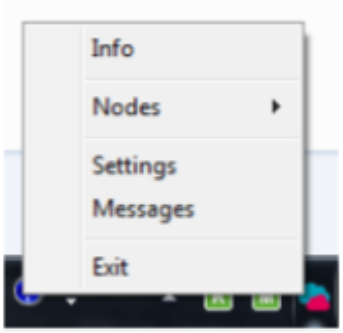
Logs – Log-messages for each node

Cache
States
Temp
} Cache and memory of Weather Data Flow

Tools – scripts or executables that you may want to use additional to Weather Data Flow functionality. This folder can be referenced by variable making configurations reusable.

Weather Data Flow Tray

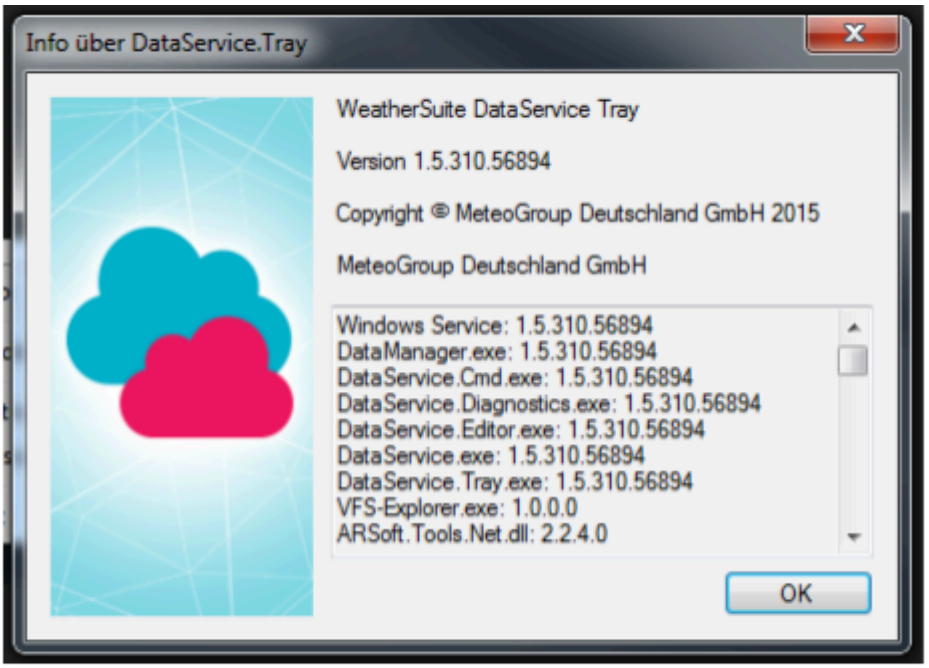
The Weather Data Flow Tray can be found on the Windows task bar in the notification area, the icon is a small cloud. Right click gives you the menu.



Lesson STYLEREF 1 \s 1. SEQ Lesson * ARABIC \s 1 5 – WSDS Tray Icon and Menu

Menu

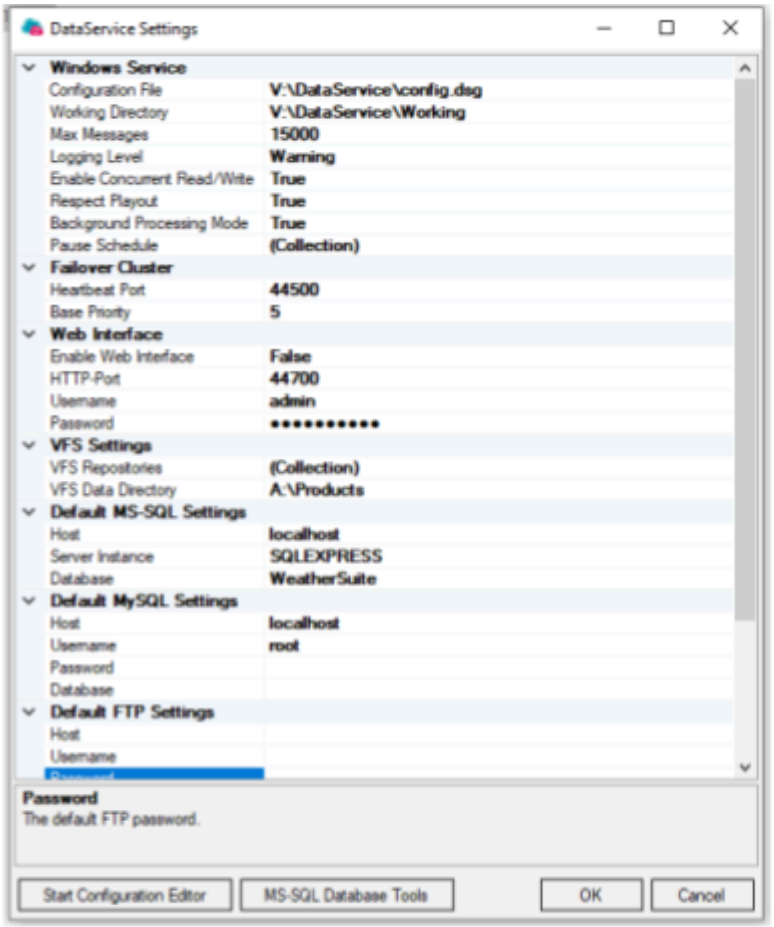
Info gives you all information about the version of Weather Data Flow



Lesson STYLEREF 1 \s 1. SEQ Lesson * ARABIC \s 1 6 – WSDS Info

Nodes gives you a list of all available nodes in the current configuration (see Lesson 11)

Settings opens the Settings Dialog (For more descriptions of the Settings see the Settings table below.)



Lesson STYLEREF 1 \s 1. SEQ Lesson * ARABIC \s 1 7 – WSDS Settings

Messages gives you the message box (see Lesson 11)

Exit closes Weather Data Flow.Tray (service is still running)

Settings

Windows Service	
Configuration File	Path to *.dsg-file which contains all tasks that Weather Data Flow should execute default: stored in the Weather Data Flow Folder (but sometimes another location is more useful)

Working Directory	Path to working directory, default: V:\DataService\Working
Max Messages	Maximum number of log messages, default: 15.000
Logging Level	Logging Levels of Messages are: Error, Warning, Info, Verbose
Enable Concurrent Read/Write	Concurrent read/write operations can increase the processing performance of multiple nodes but can also reduce the I/O performance of classical hard-disk drives
Respect Playout	True: No task is executed while Weather Presenter is in presentation mode (should be true for playouts, false for ingestor)
Background Processing Mode	True: Weather Data Flow performs in background mode without significantly affecting activity in foreground (should be true for playouts/desks, false for ingestor)
Pause Scheduler	Possibility of defining periods where no task is executed
Failover Cluster	
- Port and Priority for Failover Scenario (see Lesson 9)	
Web Interface	
- Settings for Weather Data Flow Dashboard (see Lesson 11)	
VFS Settings	
- Settings for VFS (see Lesson 6)	
Defaults	
- Default settings for different interfaces like ftp or S3 bucket etc. - Will be automatically used by according nodes (see Lesson 4)	
Start Configuration Editor (see Lesson 2)	

Lesson Activities

3 Questions

1. What is Weather Data Flow?
   A. Supports tasks in the background
   B. Graphics tool
   C. The Swiss Army knife of Chyron Weather
2. How is the Weather Data Flow implemented? Hint: what form does it assume?
   A. Windows Service
   B. Unix Service
   C. Python Scripting
3. Where is the Weather Data Flow's configuration stored?
   A. Program Files
   B. Data Services
   C. Check in the Weather Data Flow Setting

4

5 Answers

1. The correct answers are A & C.
2. The correct answer is A.
3. The correct answers are B & C.

2 Tasks

1. Launch Weather Data Flow.Tray application.
2. Review the info, Nodes, Settings and Messages menu items.
3. Where is the Weather Data Flow's configuration stored?

2 Weather Data Flow Editor

Lesson Overview

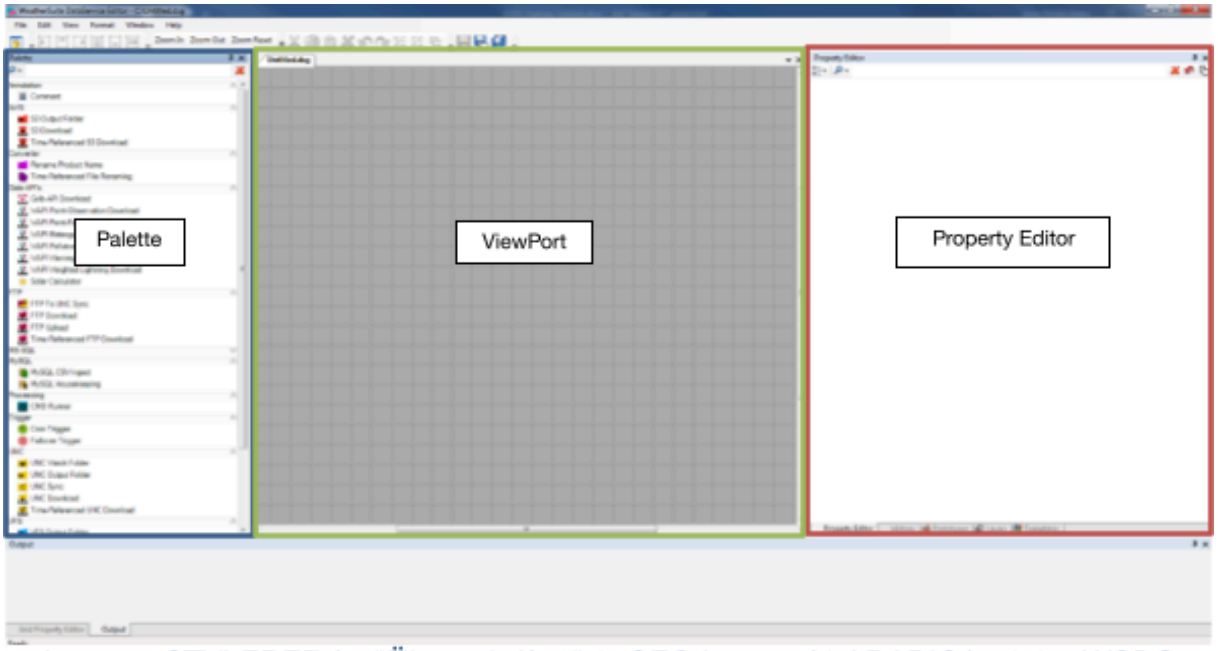
This lesson introduces the Chyron Weather Data Flow Editor. You will learn about the GUI and the basics of triggers and nodes.

Prerequisites

Lesson 1

GUI & vocabulary

To open the Weather Data Flow Editor you can search for Weather Data Flow.Editor in windows menu search box or right click on cloud icon of Tray, go to settings, click on Start Configuration Editor.



Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 1 – WSDS Editor GUI

The Palette, as a default, is located on the left side. This contains all nodes that are available in Weather Data Flow.

The Property Editor, as a default, is located on the right side. This shows the settings dialog for selected node.

The Viewport shows schematic illustration of configuration file.

Attention: by default the last loaded dsg is open in the Editor, **NOT** necessarily the active one!

Nodes & Properties

A (processing) node is a box in Weather Data Flow which represents a task or process.

You can drag and drop to add a node from Palette to Viewport.

If you select the node, you can see properties in the Property Editor. In the Property Editor you get tool tips on the bottom of the Editor if you click on a property.

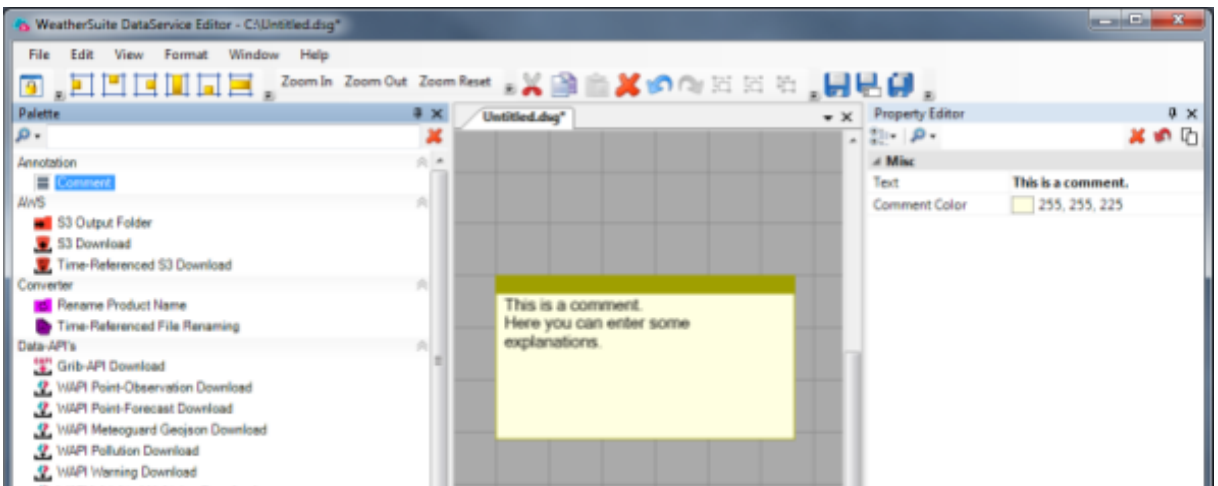
Comment

This is a special case, because it is not a process, it's only for documentation

Only 2 properties:

Text, which is of course the text on the comment field (only first line in shown in Property Editor) – to add text click on the yellow comment field in the viewport

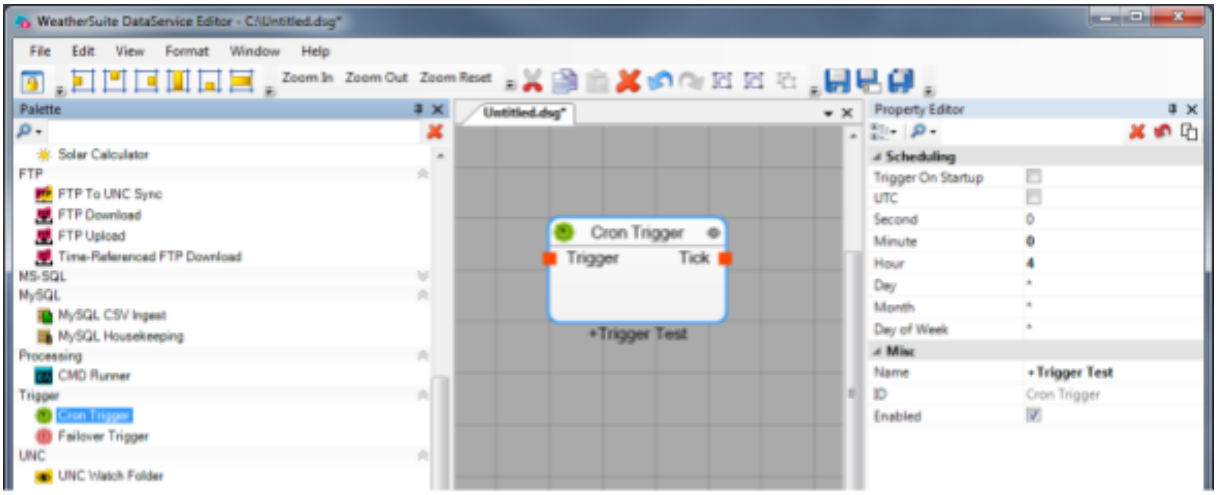
Background color – to change click on the rgb color codes in Property Editor and change them or click on small arrow on the right-hand side



Trigger

A cron trigger allows you to set the time in which the node should run. In 99% of all cases the cron trigger is the starting point of a task.

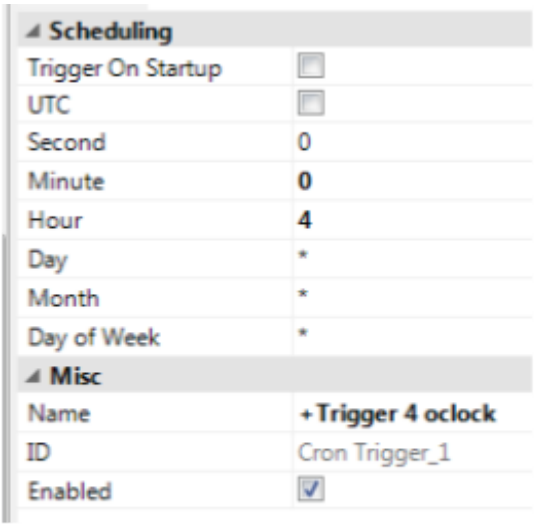
There are many options to define when task should be started (one point in time, intervals, etc.)



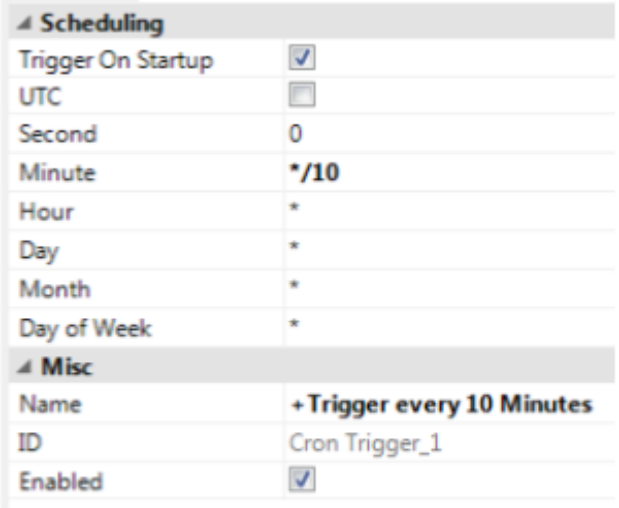
Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 3 – Cron Trigger

Scheduling	
Trigger on Startup	should the trigger be activated when the service starts (enabled: yes, disabled: no)
UTC	should the time set be in UTC or in system time (enabled: UTC, disabled: system time)
Second, Minute, Hour, Day, Month	to set up a specific time or intervals, when the trigger should be activated example minutes: * triggers every minute */10 triggers every 10th minute 12,27,40 triggers exact at times with these minutes 3-8 same as 3,4,5,6,7,8 (for more examples see below)
Day of Week	Day of week [0 - 7] (0 to 6 are Sunday to Saturday; 7 is Sunday, the same as 0) e.g.: * Triggers every day of a week. */2 Triggers every second day of a week.

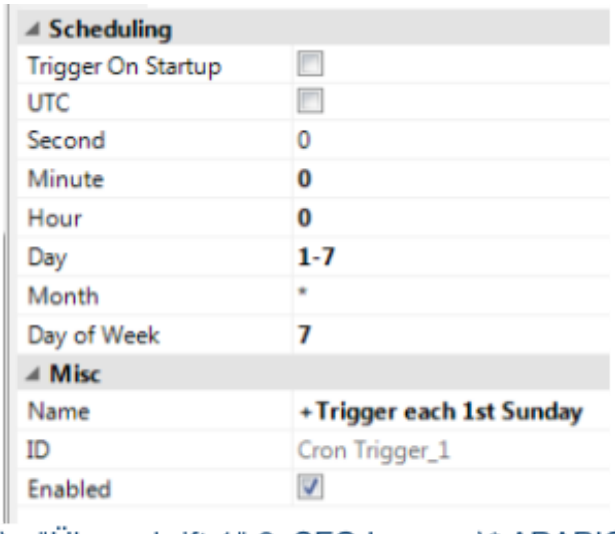
	1,2,5 Triggers on Monday, Tuesday and Friday. 1-4 Same as 1,2,3,4.
Misc	
Name	enter a proper name for the trigger (see Lesson X)
ID	internal ID of Node (used in log-files)
Enabled	enable or disable the trigger (if disabled it never triggers any action)



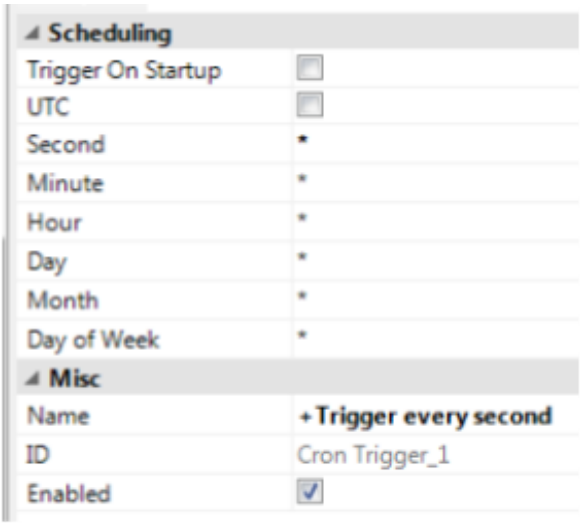
Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 4 – Scheduling Daily Trigger (4:00)



Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 5 – Scheduling Trigger Every 10mins after starting



Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 6 – Scheduling Trigger First Sunday every month



Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 7 – Scheduling Trigger Every Second

Setting a trigger for every second is a terrible idea as it will take resources away from other processes. Try to find a compromise between update frequency and polling frequency.

Nodes in general

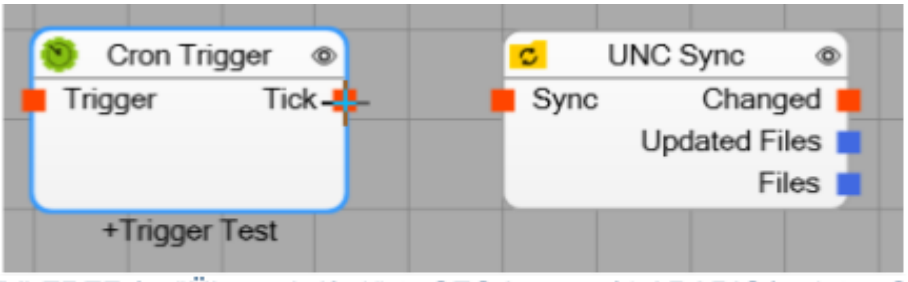
General functionality and properties for UNC Sync (exemplary)

How to connect two nodes

Add UNC Sync via drag & drop:

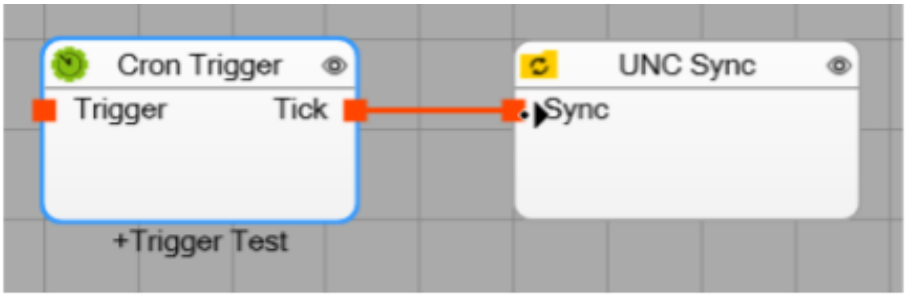
Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 8 – Cron Trigger and UNC Sync nodes

Hover over the small red rectangle (pin/connector) -> the curser symbol changes from your default ( ) to +



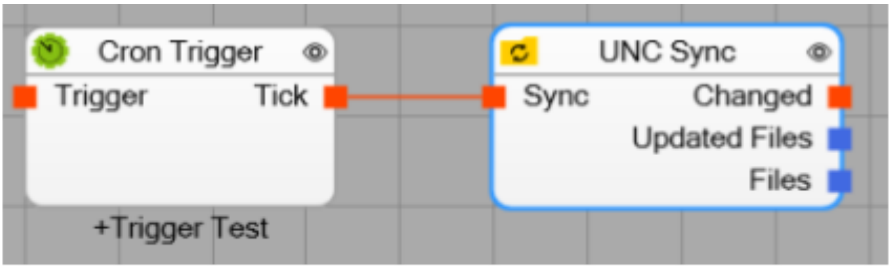
Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 9 – Connecting Cron Trigger and UNC Sync nodes

Click & hold and move to the pin of the UNC Sync Node -> the curser icon changes again to



Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 10 – Dragging to Connect Cron Trigger and UNC Sync nodes

Click -> the connection between trigger and UNC Sync is established



Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 11 –

Pins

3 kind of pins (red, blue, green) that represent 3 kind of actions:

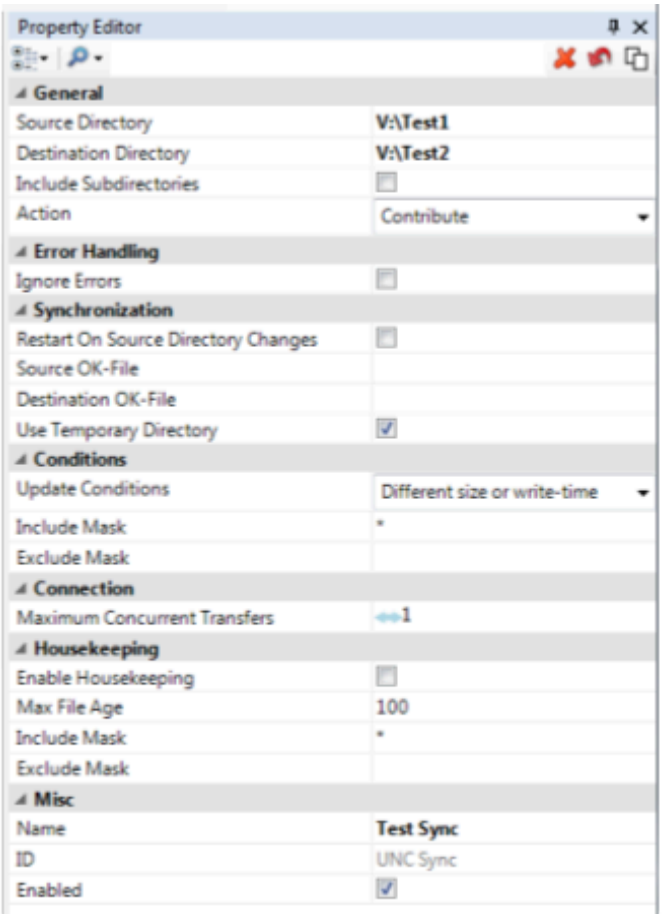
Changed - action (do something)

Files - files (pass files from one node to the other)

Time-Referenced Files - time-referenced files (special case of files)

You can only connect pins with same colors.

Properties



Lesson STYLEREF \s "Überschrift 1" 2. SEQ Lesson * ARABIC \s 1 12 – Property Editor

General	
Source Directory	Source Directory for synchronization
Destination Directory	Destination Directory for synchronization

Include Subdirectories	if enabled, subdirectories are included in synchronization
Action	Contribute: New and updated files are copied from source to destination. No deletions. Echo: New and updated files are copied from source to destination. Deletes on source are repeated on destination.
Error Handling	
Ignore Errors	if enabled, synchronization continues even if an error occurs
Synchronization	
Restart On Source Directory Changes	if source directory is modified during synchronization process, the synchronization will be restarted
Source OK-File	if file is defined here, synchronization is only performed if this file exists in the source directory (e.g. ok.txt)
Destination OK-File	Before updating the destination directory, this file is deleted and recreated after the update process. (e.g. ok.txt)
Use Temporary Directory	Synchronizes all new files to a temporary directory on the destination volume (*foldername*_part). After that, the files are moved to the actual destination directory.
Conditions	
Update Conditions	Always: all files are added/replaced each time the sync is triggered Different size: only new files and files that changed their size are added/updated Different size or write-time: only new files and files that changed their size or write-time are added/updated Preserve newest: only new files and files that changed their write-time are added/updated, but only if the file on source is newer, otherwise file will not be updated to keep the newer version on destination Ignore existing: only new files will be added to destination
Include Mask	only files matching this mask are synchronized (default: all files (*), mask is defined by regular expressions)
Exclude Mask	files matching this mask are not synchronized (default: no files ())
Connection	

Maximum Concurrent Transfers	maximum number of files transfers at the same time
Housekeeping	
Enable Housekeeping	enabled: housekeeping is activated
Max File Age	all files older than 'max file age' (in days) are deleted
Include Mask	only files matching this mask are housekept (default: all files (*), mask is defined by regular expressions)
Exclude Mask	files matching this mask are not housekept (default: no files ())
Misc	
Name	enter name according to naming convention (see Lesson 12)
ID	internal ID of Node (used in log-files)
Enabled	enable or disable the node (if disabled it will never be executed)

Lesson Activities

6 Questions

1. What application do you use to create/edit a Chyron Weather configuration?
   A. Weather Presenter
   B. Weather Data Flow Editor
   C. Weather Data Flow Tray
2. What is a trigger?
   A. Tells the process when to run.
   B. Downloads Data
   C. Starts 99% of tasks
3. What is a node?
   A. A Trigger
   B. A task or a process
   C. The GUI
4. How do you connect nodes?
   A. In the Properties Editor.
   B. Drag and Drop.
   C. Click and drag from the output pin to the input pin.

7

8 Answers

1. The correct answer is B.
2. The correct answers are A & C.

3. The correct answer is B
4. The correct answer is C.

3 Tasks

1. Open 2_2_2 dsg file and review configuration. Create your own configuration and save it.
2. Open 2_2_3 dsg file and review configuration. Create your own configuration and save it. Review the differences between the Contribute and Echo options. Add an include mask.

3 First Steps

Lesson Overview

This lesson introduces watch folders and triggers. It will also show you how to check error messages.

Prerequisites

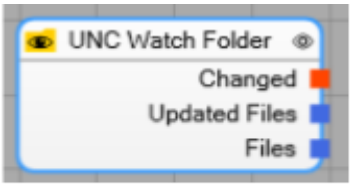
Lesson 1

Lesson 2

Watchfolder and UNC Output

A watchfolder is the only alternative to the trigger to start a process chain. It does not trigger at a specific time, but whenever a file is added or updated within a folder

Pins



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 1 – UNC Watch Folder

What are the different output pins doing?

Changed – triggers whenever there is a change in the watch folder according to the settings

Updated Files – pass on the new/changed file

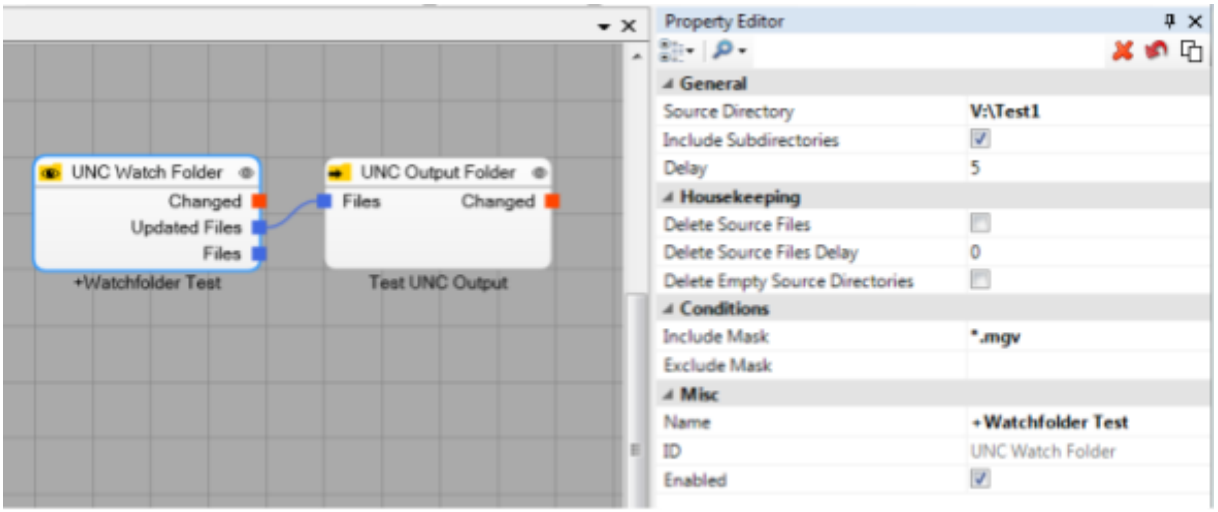
Files – pass on all files in Source Directory regardless of which files were changed

Properties

General

Source Directory	observed folder
Include Subdirectories	if enabled, subdirectories are watched as well
Delay	if no new or updated files appear within this time span (in seconds), trigger to next node is done otherwise it waits until this condition gets true, before triggering (the idea is to not trigger 10 times, if 10 new files appear, but once)
Housekeeping	
Delete Source Files	enabled: remove files from source directory
Delete Source Files Delay	remove files from source directory after this time span (in seconds), only valid if 'Delete Source Files' is enabled
Delete Empty Source Directories	remove empty subdirectories from source directory
Conditions	
Include Mask	only files matching this mask are watched (default: all files (*), mask is defined by regular expressions)
Exclude Mask	files matching this mask are ignored (default: no files ())
Misc	
Name	enter a proper name for the node (see Lesson 12)
ID	internal ID of Node (used in log-files)
Enabled	enable or disable the node (if disabled it will never be executed)

Example



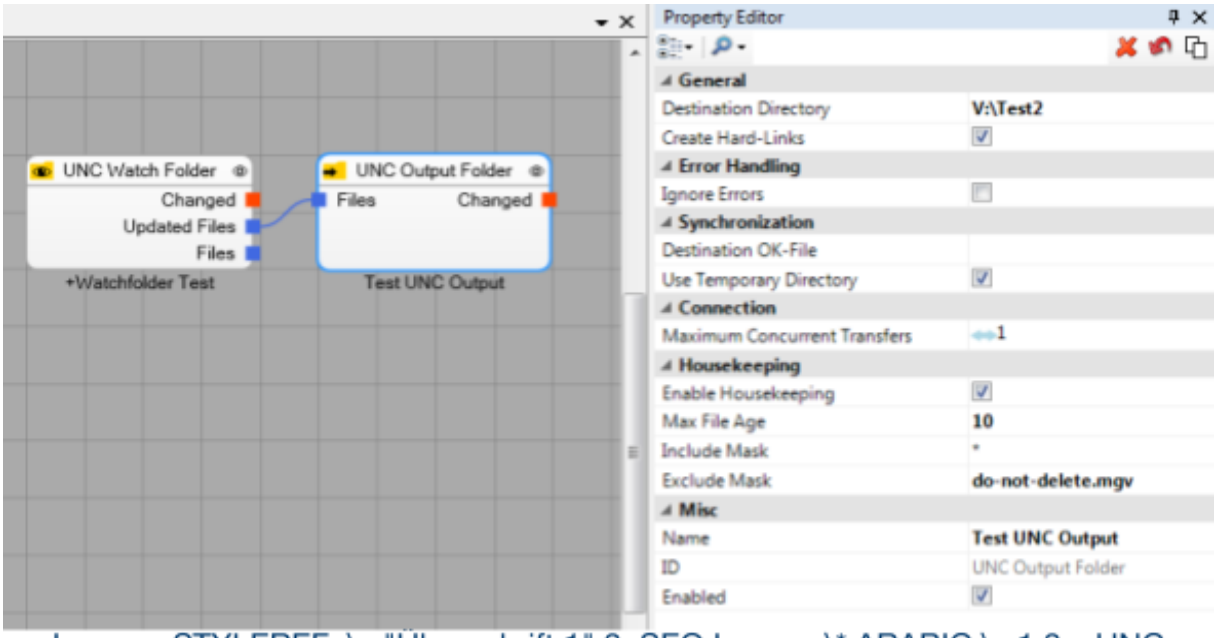
Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 2 – UNC Watch Folder and Properties

Whenever an mgv-file is added or changed in Folder V:\Test1 or any subdirectory the added/changed clip is passed to the next node (e.g. UNC Output Folder).

UNC Output Folder

Whenever the UNC Output Folder gets a file / some files it is saving them into the Destination Directory.

Only files can be passed on to the UNC Output Folder



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 3 – UNC Output and Properties

The UNC Output Folder gets a new/updated mgv clip and saves it in V:\Test2. Furthermore, all files that are older than 10 days will be deleted by the housekeeping, except for the do-not-delete.mgv.

Watchfolder vs. Trigger

Same action like in example before can be realized with a Cron Trigger and UNC Download (Example 1). Or with a Cron Trigger and a UNC Sync (Example 2).

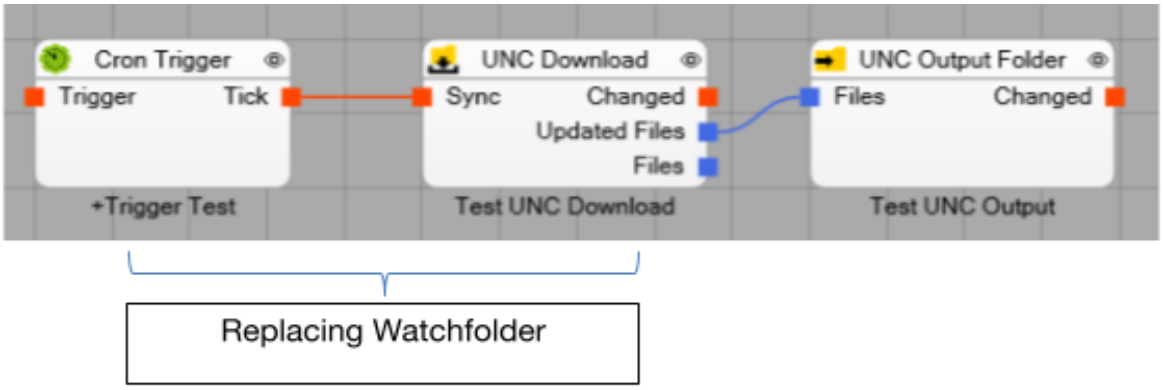
Example 1

UNC Download

It will download files from a specific folder and pass them on to the next node, or give a trigger if some file(s) changed in specific folder.

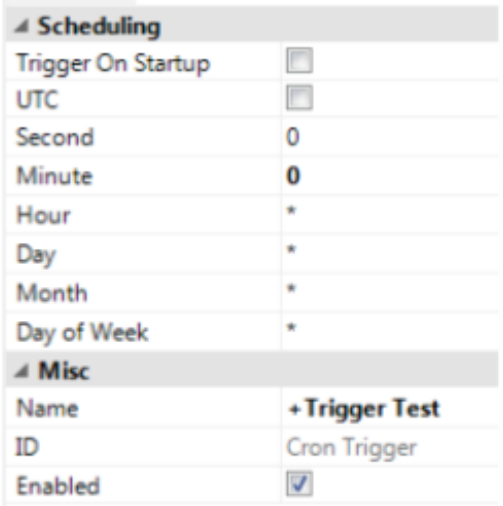
This method is often used as this mechanism works more reliably than the watchfolder if the folder is on a remote server (e.g. network drive).

(Time-referenced UNC Download will be explained in Lesson 4.)



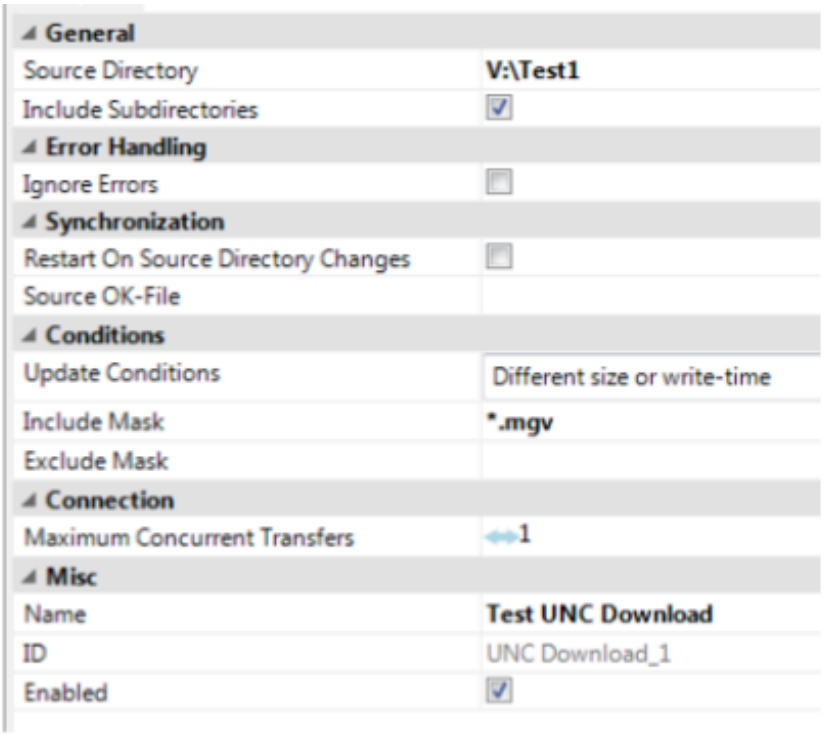
Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 4 – Cron Trigger and UNC Download

Cron Trigger



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 5 – Cron Trigger Scheduling Properties

UNC Download

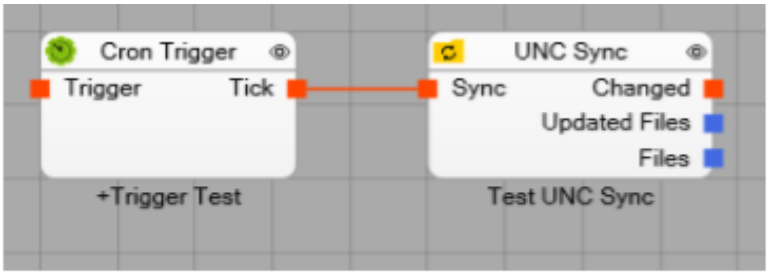


Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 6 – UNC Download Properties

In this example UNC Output Folder stays the same as in example with Watchfolder

If you download data and store it in a UNC folder and want to execute a task whenever this data is updated, you can use UNC Output Folder and UNC Download

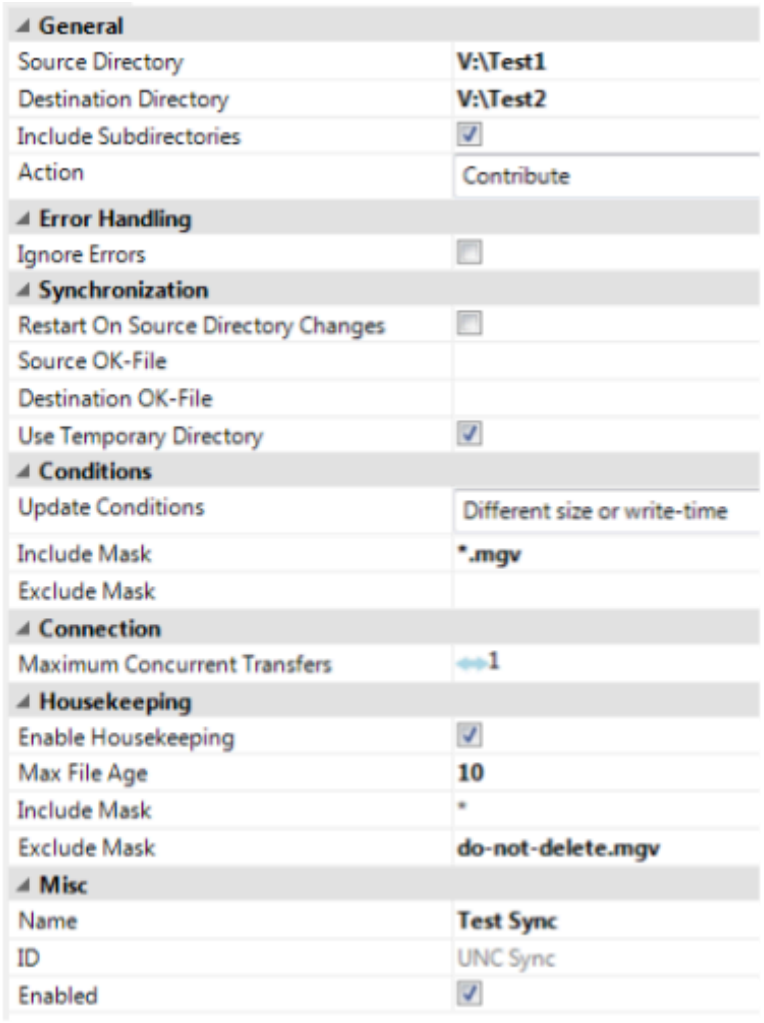
Example 2



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 7 – Cron Trigger and UNC Sync

Trigger like in example 1

UNC Sync



General	
Source Directory	**V:\Test1**
Destination Directory	**V:\Test2**
Include Subdirectories	☑
Action	Contribute
Error Handling	
Ignore Errors	☐
Synchronization	
Restart On Source Directory Changes	☐
Source OK-File	
Destination OK-File	
Use Temporary Directory	☑
Conditions	
Update Conditions	Different size or write-time
Include Mask	***.mgv**
Exclude Mask	
Connection	
Maximum Concurrent Transfers	1
Housekeeping	
Enable Housekeeping	☑
Max File Age	**10**
Include Mask	*
Exclude Mask	**do-not-delete.mgv**
Misc	
Name	**Test Sync**
ID	UNC Sync
Enabled	☑

Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 8 – UNC Sync Properties

Advantage / Disadvantage Watchfolder

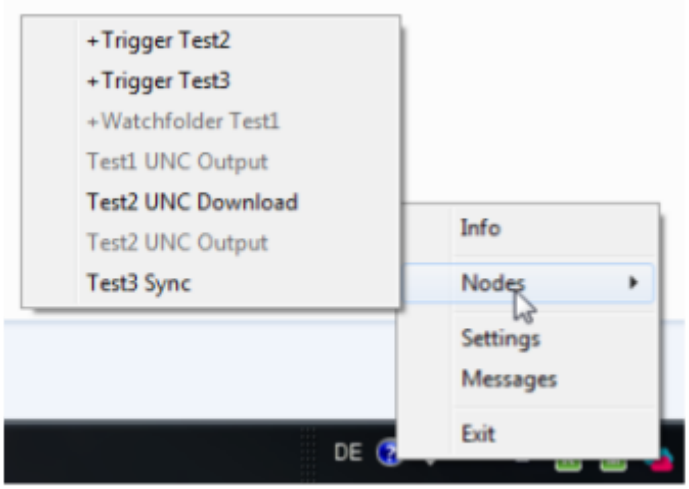
Advantage: It triggers exactly when change in directory is done – no delay.

Disadvantage: It only triggers once. If you for any reason miss this action (connection to output folder is interrupted or something like this), it is lost.

We experienced that the watchfolder is not as reliable as the alternative with trigger, therefore we always use this option. How often the cron trigger is started (all minute/ all 30 seconds/ all 5 minutes) depends on the use case.

Trigger Nodes Manually

As learned in Lesson 1 if you right click on the Weather Data Flow Tray and click on Nodes you see a list of all Nodes in your configuration (dsg).

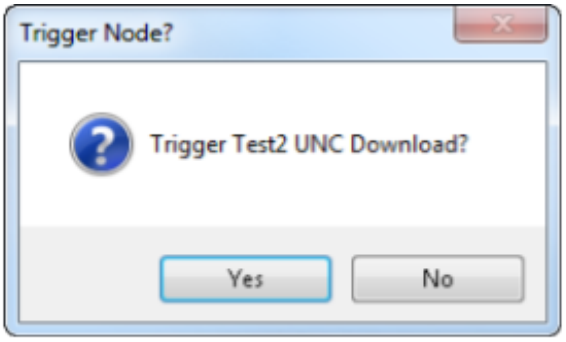


Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 9 – Tray Applet Nodes

Nodes written with black color can be triggered manually

Nodes written with grey color cannot be triggered

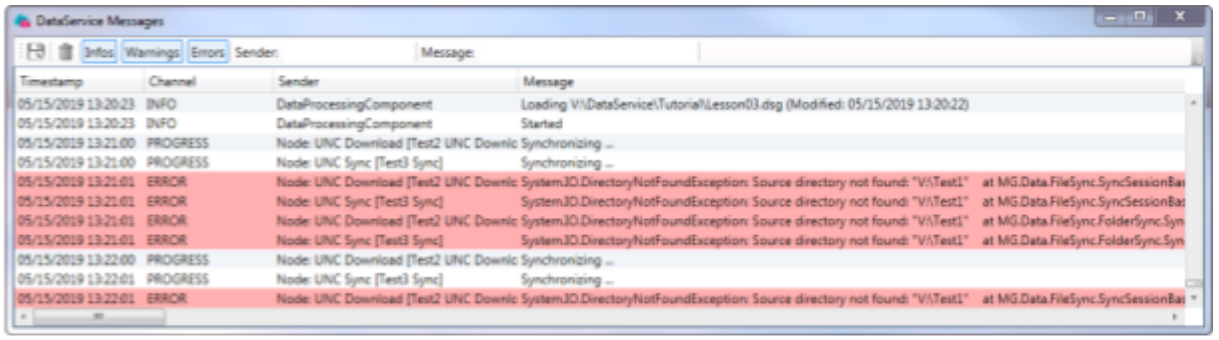
If you click on a black Node you can trigger the Node if you confirm message box



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 10 – Tigger Confirmation

Messages

As learned in Lesson 1 if you right click on the Weather Data Flow Tray and click on Messages the Messages Box opens.



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 11 – Messages

It shows the latest messages and colors errors in red and warnings in yellow

In the given example some errors occur

In column ‘Sender’ you can see the Node that is causing the error

UNC Download [Test2 UNC Download]

UNC Sync [Test3 Sync]

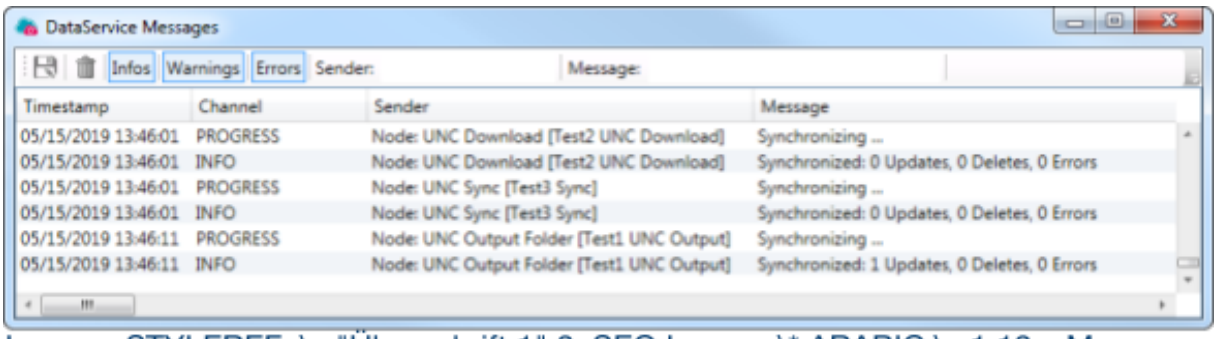
In column ‘Message’ you can find the error message

Source directory not found: “V:\Test1”

If we create the missing folder the problem is solved and we don’t get any more error messages

Additionally we get information about the status of our synchronization processes

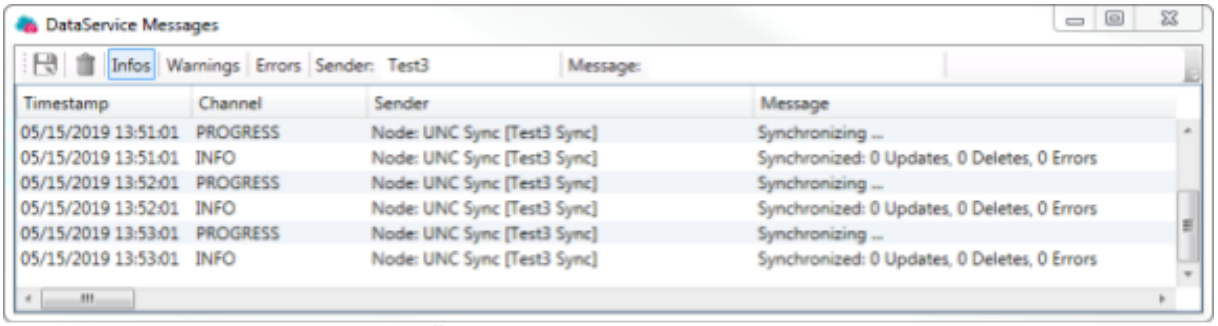
Synchronized: 1 Update, 0 Deletes, 0 Errors



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 12 – Messages without errors

It’s possible to save ( )or clear ( ) the log messages and to switch Info/Warning/Error-Messages on or off

Furthermore, you can search for a specific string in the Sender or Message field



Lesson STYLEREF \s "Überschrift 1" 3. SEQ Lesson * ARABIC \s 1 13 – Messages, Info

Lesson Activities

9 Questions

1. The Watchfolder option is less reliable than the Trigger option.
   True or False?
2. With reference to the Weather Data Flow tray applet, what is the difference between black coloured nodes and grey coloured nodes:
   A. Black Nodes are enabled and Grey nodes are disabled.
   B. Nothing.
   C. Black Nodes can be triggered and Grey nodes cannot.
3. How do you access Weather Data Flow Messages?
   A. By right clicking on the Weather Data Flow Tray applet.
   B. In the Settings.
   C. In the Preferences.

10 Answers

1. True
2. The correct answer is C.
3. The correct answer is A.

4 Tasks

1. Review the Watchfolder node using the supplied DSG (3_1_Watchfolder). Try adding a mask to prevent a file of a particular type or name from being synched.
2. Review the differences between using a Watchfolder and a Trigger. Refer to DSGs 3_2_Watchfolder_vs_Trigger_Example_1 and 3_2_Watchfolder_vs_Trigger_Example_2.
3. Manually trigger a node to perform a specified task for example synchronise the files between two folders. Use the Weather Data Flow tray applet for this exercise.

4 Data Download

Lesson Overview

This lesson shows you how to download data. It is broken into 3 parts: FTP & S3, Time-Referenced Files, and WAPI.

Prerequisites

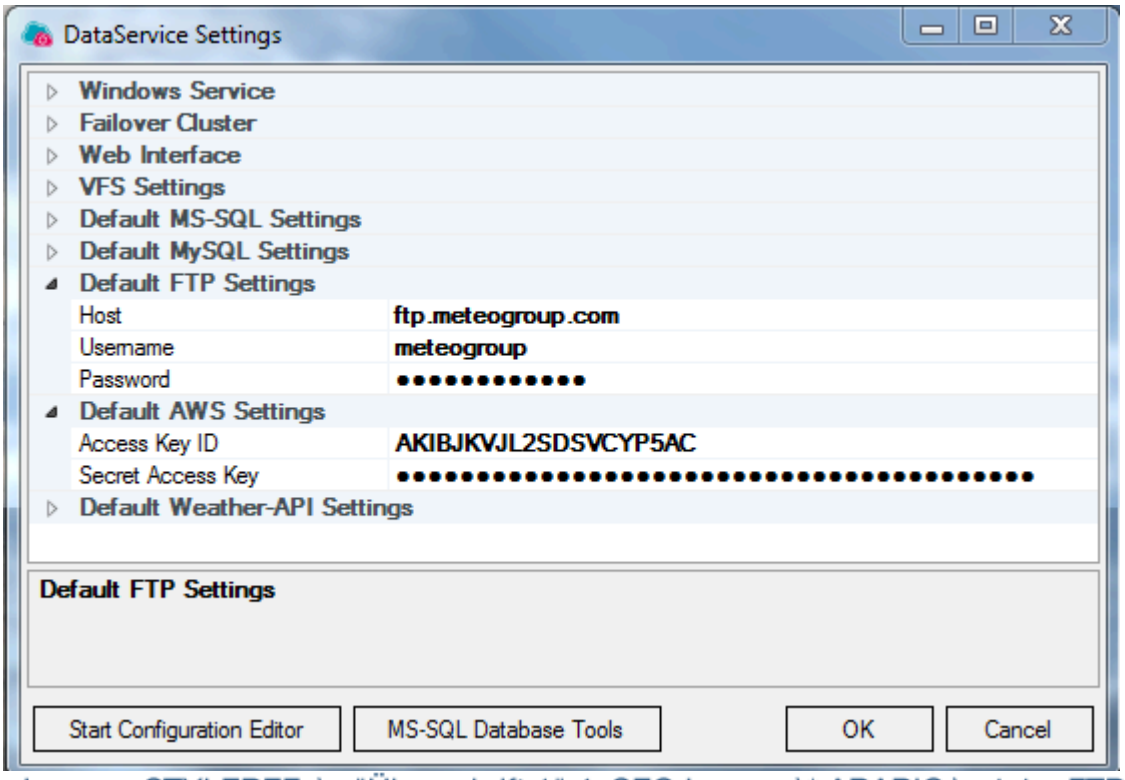
Lesson 2

Lesson 3

1 FTP & S3

Default credentials

In Weather Data Flow Settings (right click on Tray and click on Settings) you can define defaults for all kind of connections. When you enter credentials here, they are used as default for all nodes which are using these kind of connection (e.g. ftp or S3). The Advantage is that you only need to define it once and it is easy to adjust in case something changes. You can overwrite this default setting in the node properties if needed (for example if you are using multiple ftp servers)



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 1 – FTP and AWS Credentials

FTP Download

This will download data from an ftp server.

Most properties are already known from other nodes.

In Server section the credentials for ftp connection can be set (leave it empty if default is set in settings or enter another connection if you want to overwrite default for this node)

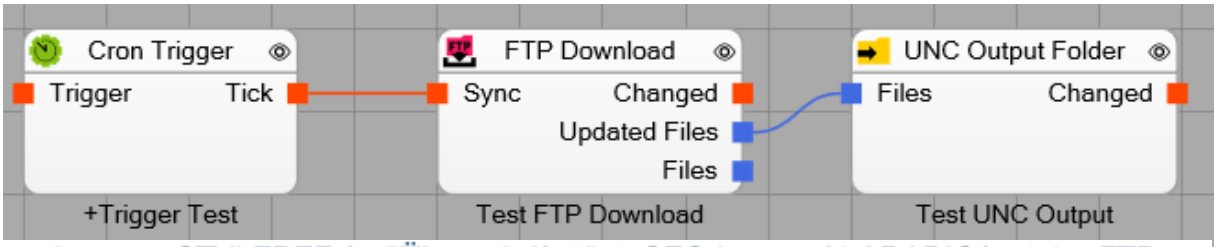
(Time-referenced FTP Download will be explained in Lesson 4-2.)

Following table only shows unknown properties:

Server	
Host	address of ftp (e.g. ftp.meteogroup.com or IP)
User	user to access data
Password	password for this user
Connection	
Socket Timeout	maximum time (in seconds) to wait for server response
Enable MDTM	enabled: if MLSD is not supported, MDTM is used to determine last write time of a file

	(scanning large directories with MDTM is very slow)

Example:



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 2 – FTP Download Workflow

Scheduling	
Trigger On Startup	☐
UTC	☐
Second	0
Minute	*/5
Hour	*
Day	*
Month	*
Day of Week	*
Misc	
Name	**+Trigger Test**
ID	Cron Trigger_1
Enabled	☑

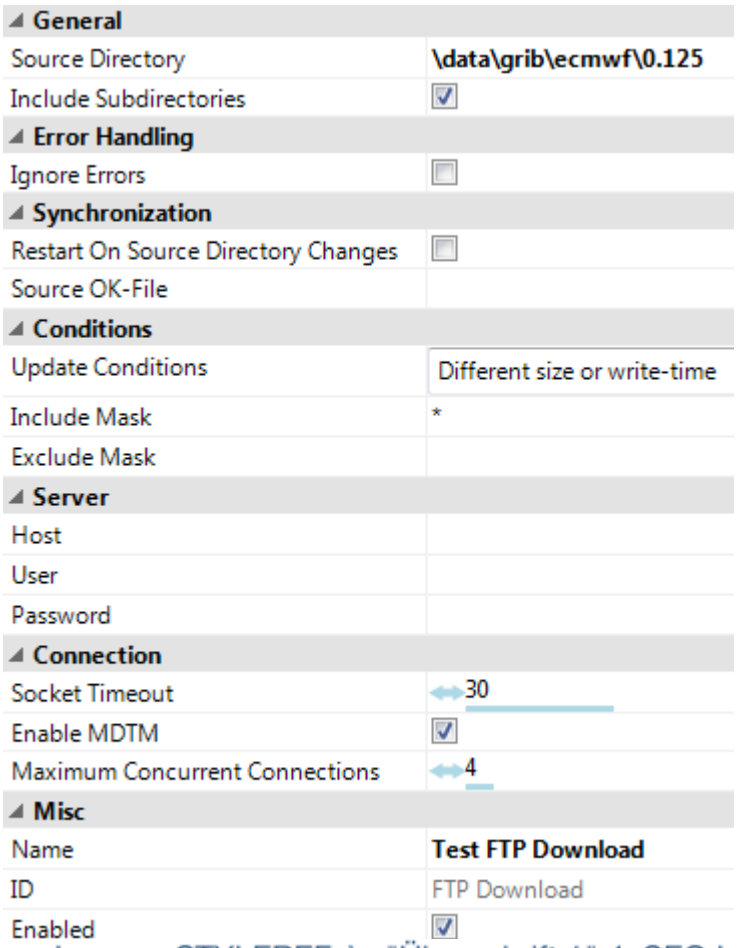
Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 3 – Process chain is triggered every 5 Minutes

It starts the download from folder \data\grib\ecmwf\0.125 including subdirectories on ftp (default connection from Weather Data Flow Settings)

If server does not answer within 30 seconds, node gives an error

All new/updated files on ftp are passed on to the next node

If the process is triggered 5 minutes later, Weather Data Flow knows which files it already downloaded (cache) and only download new or updated files.



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 4 – FTP Download Properties

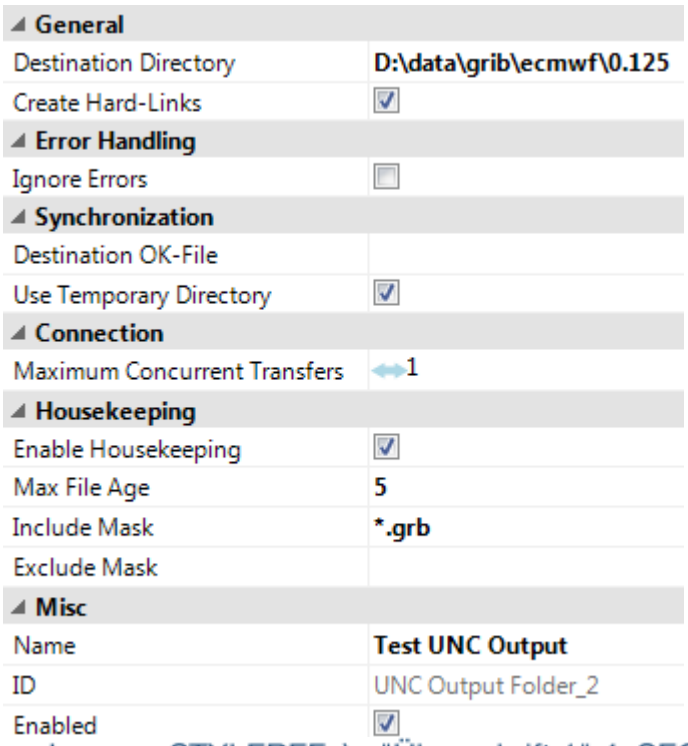
UNC Output Folder saves the downloaded files from ftp to the local drive D:\data\grib\ecmwf\0.125

It is using a temporary directory – you should always use a temporary directory if you want all files to update at the same time.

E.g. for grib data it is important that you update all files in a folder at once, otherwise you mix up model runs.

E.g. for videos it doesn't matter if you update each clip one after the other or all at once.

If you are not sure what to use, use the temporary directory option



General	
Destination Directory	**D:\data\grib\ecmwf\0.125**
Create Hard-Links	☑
Error Handling	
Ignore Errors	☐
Synchronization	
Destination OK-File	
Use Temporary Directory	☑
Connection	
Maximum Concurrent Transfers	1
Housekeeping	
Enable Housekeeping	☑
Max File Age	**5**
Include Mask	***.grb**
Exclude Mask	
Misc	
Name	**Test UNC Output**
ID	UNC Output Folder_2
Enabled	☑

Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 5 – UNC Output Folder Properties

FTP To UNC Sync

You can combine FTP Download and UNC Output Folder, but in one node.

Example: (Same actions like in example before)

General	
Source Directory	**\data\grib\ecmwf\0.125**
Destination Directory	**D:\data\grib\ecmwf\0.125**
Include Subdirectories	☑
Action	Echo
Error Handling	
Ignore Errors	☐
Synchronization	
Restart On Source Directory Changes	☐
Source OK-File	
Destination OK-File	
Use Temporary Directory	☑
Conditions	
Update Conditions	Different size or write-time
Include Mask	*
Exclude Mask	
Server	
Host	
User	
Password	
Connection	
Socket Timeout	30
Enable MDTM	☑
Maximum Concurrent Connections	4
Housekeeping	
Enable Housekeeping	☑
Max File Age	**5**
Include Mask	***.grb**
Exclude Mask	
Misc	
Name	**Test FTP To UNC Sync**
ID	FTP To UNC Sync
Enabled	☑

Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 6 – FTP to UNC Sync Properties

S3 Download

Downloads data from Amazon Cloud (AWS) S3 buckets.

Most properties are already known from other nodes.

In AWS Credentials section the credentials for S3 access can be set (leave it empty if default is set in settings or enter other credentials if you want to overwrite default for this node)

Following table only shows unknown properties:

General	
Bucket	name of S3 bucket (e.g. fcst-nwp.ecmwf.hres.sh.s3.mg)
Alternative Bucket	The name of an alternative S3 bucket that is used if the first one is not available.
AWS Credentials	
Access Key ID	AWS Access Key ID
Secret Access Key	AWS Secret Access Key

Lesson Activities

11 Questions

1. What credentials are required to access files stored using AWS (Amazon Web Services)?
   A. Username and Password
   B. Access Key ID and Secret Access Key
   C. No credentials are required
2. It is possible to override the Default Credentials for a service. True or False?

12 Answers

1. The correct answer is B.
2. The answer is true.

5 Tip

Did you know S3 Buckets can be accessed using an S3 Browser? See http://s3browser.com/

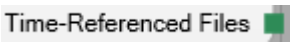
6 Tasks

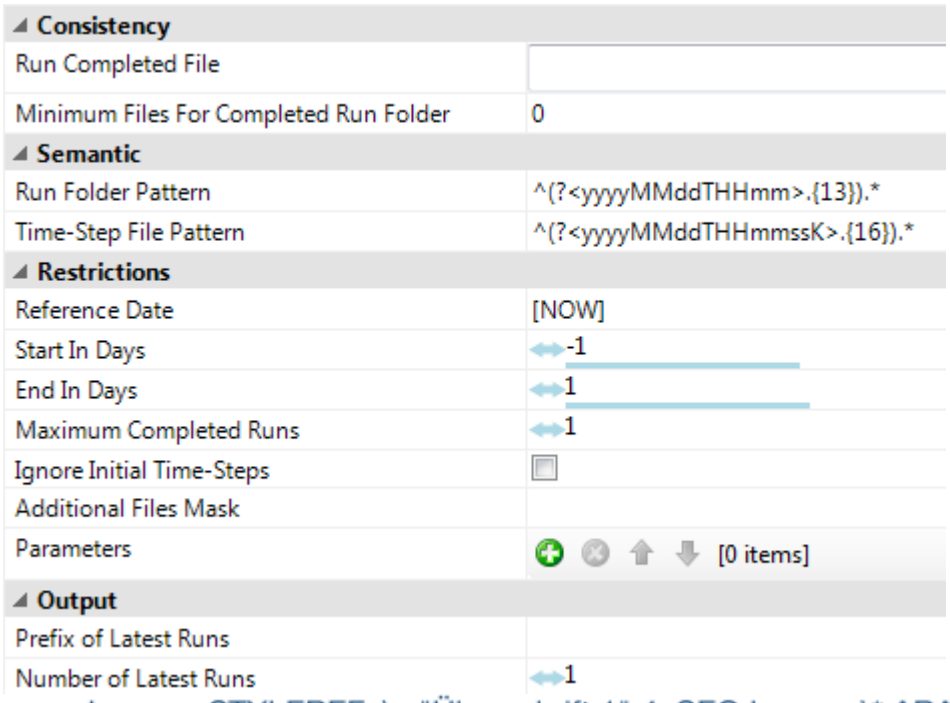
1. Find and identify the fields where the Default Credentials for the Weather Data Flow are entered/stored.
2. Review the 4_1_2_FTP_Download DSG. Test the configuration using your own set of credentials.
3. Review the 4_1_3_FTP_To_UNC_Sync DSG. Test the configuration using your own set of credentials. How does this configuration differ from the FTP Download configuration?
4. Review the 4_1_4_S3_Download DSG. Test the configuration using your own set of credentials. You will require an S3 Account for this exercise

2 Time-Referenced Files

General

This is for files that contains time reference in their name (for what point in time they are valid). E.g. forecasts like grib data, or observation like radar or satellite images, Model run folders (mainly grib).

Time-referenced files always have a green pin: 



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 7 – Time-Referenced Properties

Consistency	
Run Completed File	name of the file that indicates that a model run is complete
Minimum Files For Completed Run Folder	folder is treated as completed run if at least this number of files is available on source (default: 0)
Semantic	
Run Folder Pattern	regular expression describing date and time information in folder name
Time-Step File Pattern	regular expression describing date and time information in file name

Restrictions	
Reference Date	can be set to [NOW] (default) or a fixed point in time
Start In Days	start time for processing data relative to reference date (e.g. -1 with reference date [NOW] -> all data that file name time step is older than one day will be ignored)
End In Days	end time for processing data relative to reference date (e.g. 1 with reference date [NOW] -> all data that file name time step is newer than one day will be ignored)
Maximum Completed Runs	Restricts the maximum number of model runs. Value is ignored if no “Run Completed File” is defined and “Minimum Files For Completed Run Folder” is zero
Ignore Initial Time-Steps	Ignore files with same date as model run
Additional Files Mask	additional file mask for non time-referenced files (e.g. calibrator xml’s)
Parameters	specifies the meteorological parameter that should be processed
Output	
Prefix of Latest Run	The prefix is used to create a subdirectory in the output directory. If the number of latest runs is larger than one, this prefix is mandatory.
Number of Latest Runs	The number of latest runs in the output directory.

Grib data

Grib data are model forecasts from different distributors (e.g. UK MetOffice, ECMWF, Deutscher Wetterdienst, etc.)

Forecast calculations are started on a daily base. Most common twice (0z, 12z) or four times (0z, 6z, 12z, 18z) a day. All forecast data calculated with one atmospheric reference condition at a specific starting point is called a model run.

A model run contains forecasts for a specific period (depending on model) and is named by its starting point in time. It also contains different meteorological parameters (often in different temporal or rarely in different spatial resolution).

Example: 00z run of Euro4 from UK MetOffice

Starting conditions at 00 UTC, so first timestep is 00 UTC. Forecast period is 54h, so last time step is 6 UTC two days later.

Standard format of Grib data

Run folder naming convention: YYYYMMDDThhmmssZ

e.g. 20190102T000000Z -> 2nd January 2019 00z run

default in Weather Data Flow can be used: ^(?<yyyyMMddTHHmm>.{13}).*

File naming convention: YYYYMMDDThhmmssZ_parameter-abbreviation.grb

e.g. 20190102T030000Z_tt_ins_surface_oper.grb -> 2m-temperature valid at 2nd January 2019, 3 UTC

default in Weather Data Flow can be used: ^(?<yyyyMMddTHHmmssK>.{16}).*

Model run is not identifiable from file name! It's possible (and very likely) to have a file with the same file name in two different model runs.

Geoimages

Geoimages are observation data like satellite or radar images.

Standard format of Geoimages

There is nothing like a model run for geoimages. Run Folder Pattern in Weather Data Flow node needs to be empty.

File naming convention: YYYYMMDDThhmmssZ.geotif

e.g. 20190102T135500Z.geotif -> image valid at 2nd January 2019, 13:55 UTC

default in Weather Data Flow can be used: ^(?<yyyyMMddTHHmmssK>.{16}).*

Time-referenced Nodes in Weather Data Flow

Nodes that pass on time-referenced files are:

Downloads (self-explanatory)

Time-referenced S3 Download

Time-referenced FTP Download

Time-referenced UNC Download

Other

Time-referenced File Renaming

File Renaming Node is a special case:

It has three main use cases (but is very flexible and maybe also usable in another circumstances)

1) Parameter filter – sometimes there are actions that are only required for parts of the downloaded data – e.g. only for special parameters. In this case the renaming node can be used to filter and only pass on some parameters.

2) Time-referenced files – if the input is not time-referenced this node can be used to convert ‘normal’ files to time-referenced files

3) Run check – mostly as add-on to 2), this node can be used to set an amount of files that need to be reached to define a run as completed

Nodes that accept time-referenced files are:

VFS Satellite Data Ingest

VFS Radar Data Ingest

VFS GRIB Data Ingest

(see Lesson 6)

Lesson Activities

13 Questions

1. What are time referenced files?
   A. Files that can only be used after a specific time
   B. Files that expire at a specific time
   C. Files that reference the time when they are valid
2. What is Grib data?
   A. Model forecasts
   B. Only has one provider
   C. Observation data only
3. What are Geoimages?
   A. Observation data (e.g. satellite and radar images)
   B. Images of the earth
   C. Forecast data

14

15 Answers

1. The correct answer is C.
2. The correct answer is A.
3. The correct answer is A.

7 Tasks

1. Using the Weather Data Flow Editor, find and identify a time referenced download node.

3 WAPI (WeatherAPI)

General

WAPI deliverers point data.

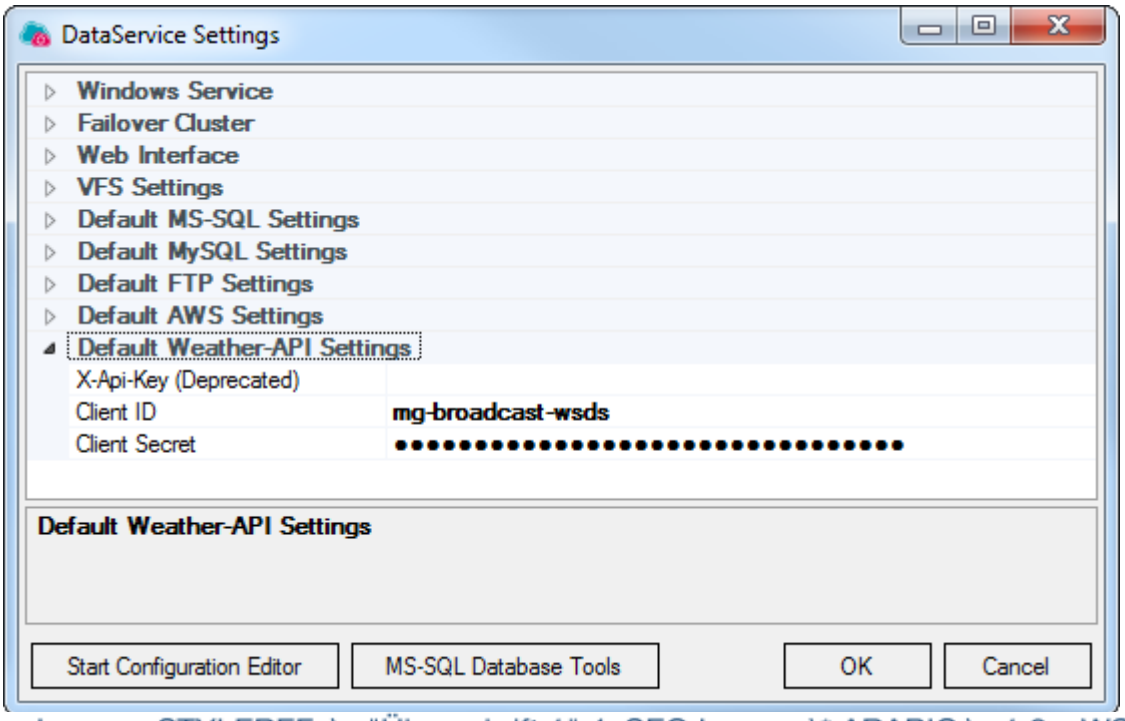
Point data refers to a specific point or location e.g. weather stations.

Credentials can be set up like this:
https://confluence.meteogroup.net/display/DBD/WeatherAPI+keys

This needs to be done by CHYRONHEGO. Please reach out to your account manager should you require credentials.

Default credentials

In Weather Data Flow Settings you can define default for WAPI. When you enter credentials here, they are used as default for all nodes which are using WAPI. The Advantage is that you only need to define it once and easy to adjust in case something changes. You can overwrite this default setting in the node properties if needed.



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 8 – WSDS
Weather API settings

Point-Observation & Point-Forecast Download

Downloads data from WAPI.

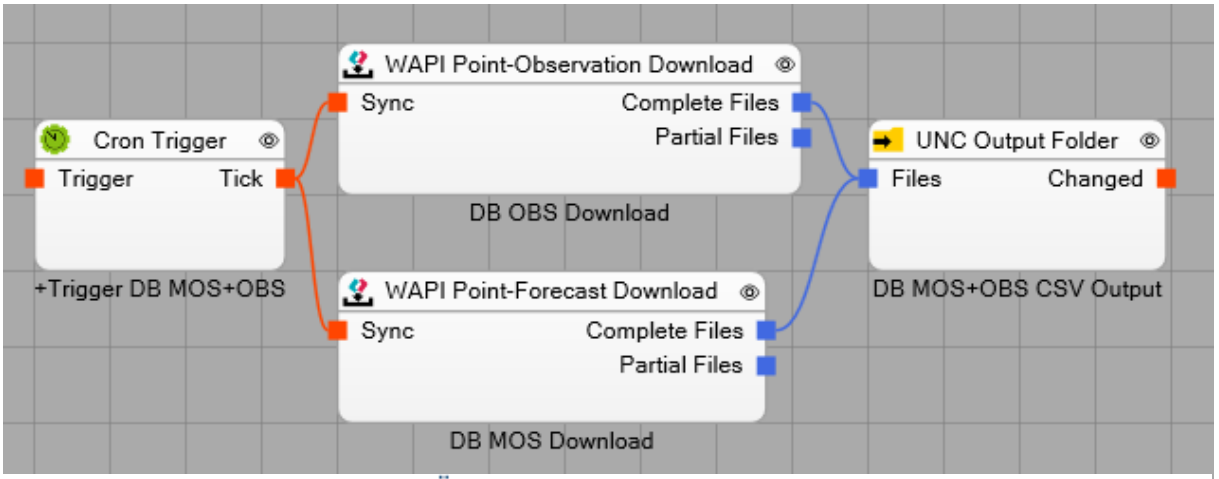
Server	
Host	address of WAPI https://point-observation.weather.mg https://point-forecast.weather.mg
X-Api-Key	outdated (no longer in use)
Client ID Client Secret	WAPI credentials, if not set in Weather Data Flow settings
Data Processing	
Maximum Concurrent Threads	The maximum number of conversions which are executed at the same time.
Maximum Stations Per Chunk	The maximum number of stations per request.
Output File Name	Name of the output file (csv).
Stations File	
Stations File	list of weather stations for which you want to download data
ID Column	name of column in the Stations File that contains station ID
Name Column	name of column in the Stations File that contains station name
Latitude Column	name of column in the Stations File that contains station latitude
Longitude Column	name of column in the Stations File that contains station longitude
Shuffle Stations	random order of station list each time node is triggered
Restrictions	
Reference Date	can be set to [NOW] (default) or a fixed point in time
Observed From In Days	start time for processing data relative to reference date (e.g. -1 with reference date [NOW] -> all data that file name time step is older than one day will be ignored)
Observed Until In Days	end time for processing data relative to reference date (e.g. 1 with reference date [NOW]

	-> all data that file name time step is newer than one day will be ignored)
Parameter Selection	
Symbol Code Algorithm	The name of a predefined symbol code algorithm that is provided by the Weather-API. This is used when you choose weather symbol in parameters. (available atm are: BBC, mg-medium)
Parameters	specifies the meteorological parameter that should be processed
Symbol Mapping	
Symbol Mapping Script	Java-Script for defining a mapping in case it is not supported by WAPI (\\berdatafs01c.de.meteogroup.net\MGDEWSFS01\Software\Weather Data Flow_Tools) This can also be used to map symbols if the customer does not want to use the standard symbol set. This is a service that can be provided by CHYRONHEGO.
Symbol Mapping	to define which Parameters should be used for Mapping

If one station is not available, the whole chunk will not be downloaded!

E.g. if 'Maximum Stations Per Chunk' is set to 30 and one station in this list is not available, all other 29 available stations will not be downloaded. Therefore, it is important to carefully check the station list and use 'Shuffle Stations', so in case one station is not available, the list of not downloaded stations changes for each time the node is triggered.

Example:



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 9 – Downloading Data Workflow

(Ingest in DB see Lesson 6)

Meteoguard Geojson Download

This is for Frontal Data (produced by CHYRONHEGO) downloads.

Whenever the download is triggered a new file is downloaded regardless of if the fronts are updated or not, this could cause problems if the ingestor is already busy (locking VFS etc.)

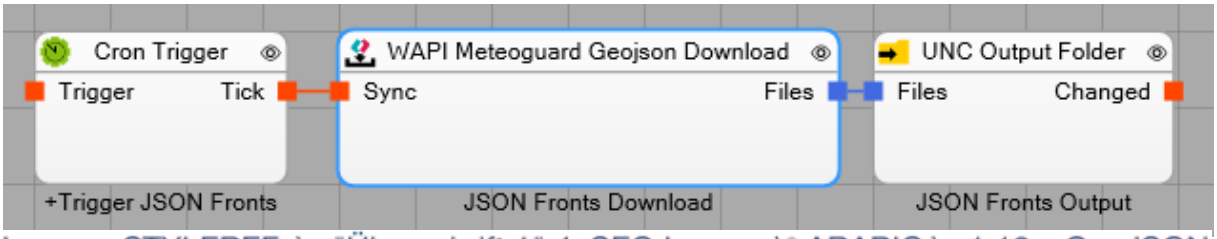
Server	
Host	address of Meteoguard https://meteoguard.meteogroup.com/enrichment-front-export/api/weather-element
X-Api-Key	outdated (no longer in use)
Client ID Client Secret	WAPI credentials, if not set in Weather Data Flow settings
Data Processing	
Time interval hours	choose the time interval between timestamps (keyframes). Example: 6 – Gets data for each 6th hour starting from Reference Date value. In that case, it'd create 4 timestamps (keyframes) per day.
Output File Name	Define Output File Name as a mask of the files. Example: [NOW]_Fronts.geojson
Restrictions	
Reference Date	can be set to [NOW] (default) or a fixed point in time
Valid From In Days	start time for processing data relative to reference date (e.g. -1 with reference date [NOW] -> all data that file name time step is older than one day will be ignored)
Valid Until In Days	end time for processing data relative to reference date (e.g. 1 with reference date [NOW]

	-> all data that file name time step is newer than one day will be ignored)

Be careful how much data you download. It is not recommended to download more than 13 days (with maximum 4 hours as time interval).

If you download too much data, Weather Data Flow will return an error message (because the API request is limited/timed out).

Example:



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 10 – GeoJSON Workflow Example

Air Quality Download

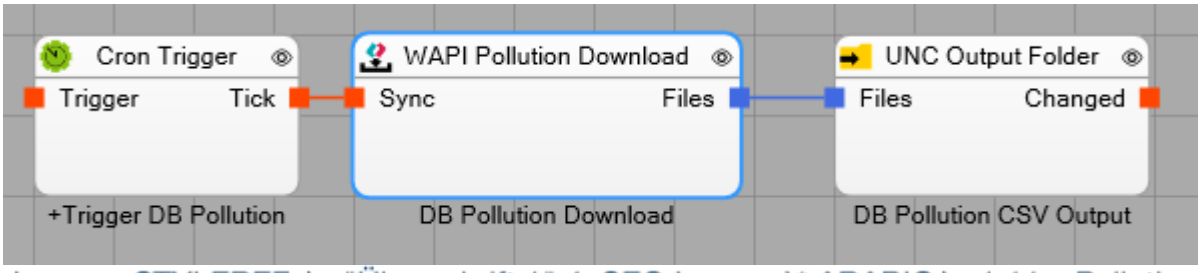
Air Quality API delivers more than just pollution and pollen.

Pollen data is not delivered in the winter and can only be use with UK stations.

Server	
Host	address of WAPI https://air-quality-forecast.weather.mg
Client ID Client Secret	WAPI credentials, if not set in Weather Data Flow settings
Air Quality Type	The type of data you would like to download (Pollution/Pollen)
Data Processing	
Maximum Concurrent Threads	The maximum number of conversions which are executed at the same time.
Output File Name	Name of the output file (csv).
Stations File	
Stations File	list of all weather stations for which you want to download data
Stations ID Column	name of column in the Stations File that contains station ID

Stations Name Column	name of column in the Stations File that contains station name
Stations Latitude Column	name of column in the Stations File that contains station latitude
Stations Longitude Column	name of column in the Stations File that contains station longitude

Example:



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 11 – Pollution Workflow Example

Warning Download

Currently out of service: As of March 2020 this does not function as expected.

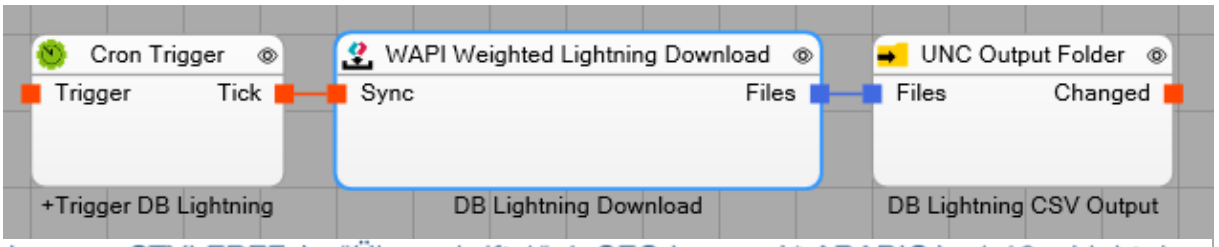
Server	
Host	address of WAPI https://warning.weather.mg
Client ID Client Secret	WAPI credentials, if not set in Weather Data Flow settings
Data Processing	
Output File Name	Name of the output file (csv).
Location	
Country	country code (??)
Parameter Selection	
SourceAgency	The name of environmental sourceAgency which severe weather warnings.

Weighted Lightning Download

Lightning WAPI delivers lightning observation.

Server	
Host	address of WAPI https://lightning.weather.mg
Client ID Client Secret	WAPI credentials, if not set in Weather Data Flow settings
Data Processing	
Output File Name	Name of the output file (csv).
Location	
Top Left Longitude	Corner points for requested region
Top Left Latitude	
Bottom Right Longitude	
Bottom Right Latitude	
Resolution	
Temporal Resolution	5 or 15 minute interval
Spatial Resolution	0.05, 0.25 or 0.5° grid
Restrictions	
Reference Date	can be set to [NOW] (default) or a fixed point in time
Occurred From In Days	start time for processing data relative to reference date (e.g. -1 with reference date [NOW] -> all data that file name time step is older than one day will be ignored)
Occurred Until In Days	end time for processing data relative to reference date (e.g. 1 with reference date [NOW] -> all data that file name time step is newer than one day will be ignored)

Example:



Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 12 – Lightning Workflow Example

Server	
Host	https://lightning.weather.mg
Client ID	
Client Secret	
Data Processing	
Output File Name	[NOW]_weighted_lightning.csv
Location	
Top Left Longitude	-13
Top Left Latitude	63
Bottom Right Longitude	5
Bottom Right Latitude	48
Resolution	
Temporal Resolution	15 Minutes
Spatial Resolution	0.25°
Restrictions	
Reference Date	[NOW]
Occurred From In Days	**-0.1**
Occurred Until In Days	**-0.003**
Misc	
Name	**DB Lightning Download**
ID	WAPI Weighted Lightning Download_1
Enabled	☑

Lesson STYLEREF \s "Überschrift 1" 4. SEQ Lesson * ARABIC \s 1 13 – Lightning Properties

Lesson Activities

16 Questions

1. What is WAPI?
   A. Point data
   B. Grib data
   C. XML data
2. What is point data?
   A. Gridded data.
   B. Data from a specific point in time.
   C. Data from a specific weather station.
3. Name the types of point data available via the WAPI:
   A. Observation data
   B. GeoImages
   C. Forecast data
4. What other types of data are available via the WAPI?
   A. Lightning
   B. Air Quality
   C. Pressure
5. What do you need in order to ingest Point Data for use within Chyron Weather?
   A. S3 Bucket
   B. WAPI node
   C. Credentials

17 Answers

1. The correct answer is A.
2. The correct answer is C.
3. The correct answers are A & C.
4. The correct answers are A & B.
5. The correct answer is B & C.

8 Tasks

1. Using Weather Data Flow Editor, find and identify the WAPI nodes

9 Review 4_3_Data_Download_WAPI DSG. Using your own credentials, test each of the nodes in turn. If you do not have access to a database, use a UNC Output node just so you have somewhere to put the file(s) you download!

10 Note that a sample stations file named Stations is available to use containing station records for Berlin and London

5 Data Upload

Lesson Overview

Not only is it possible to download data (Lesson 4), but you can also upload them to ftp or S3 bucket.

Prerequisites

Lesson 2

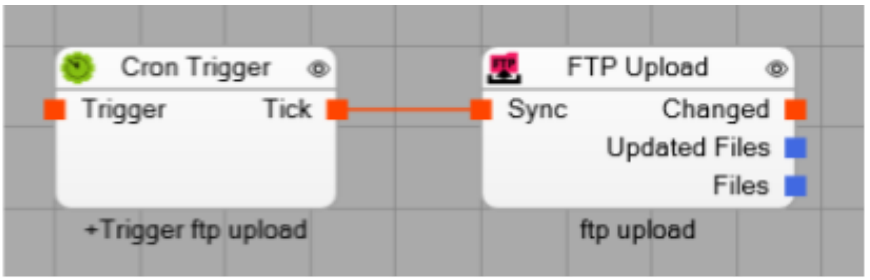
Lesson 3

Lesson 4

FTP Upload

This will upload files from UNC folder to an ftp. The properties should all be known.

Simple example:

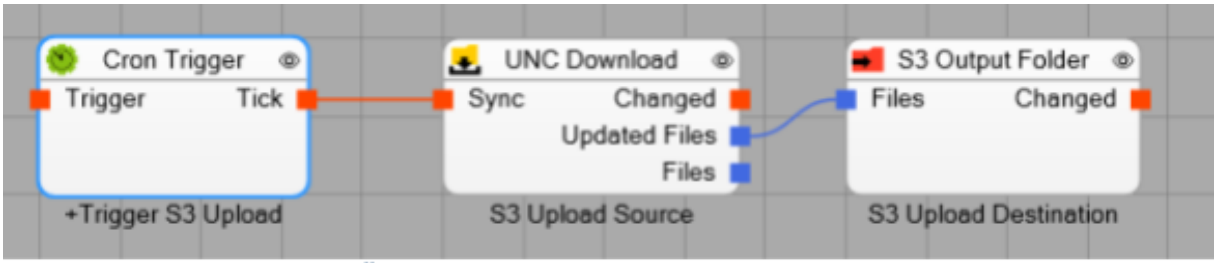


Lesson STYLEREF \s "Überschrift 1" 5. SEQ Lesson * ARABIC \s 1 1 – FTP Upload

S3 Output Folder

This will upload files to S3 bucket. The properties should all be known and housekeeping on Destination is possible.

Example with UNC Download:



Lesson STYLEREF \s "Überschrift 1" 5. SEQ Lesson * ARABIC \s 1 2 – S3 Output Folder

Lesson Activities

18 Questions

1. It is possible to upload data using Weather Data Flow. True or False?
2. Name some of the locations data can be uploaded/output to using Weather Data Flow:

19 Answers

1. The correct answer True.
2. The correct answers are FTP and S3.

11 Tasks

1. Find and identify as many upload nodes as you can. Hint: Output Folders also act as Upload nodes. (Note: there are 4 nodes)
2. Use the 5_1_FTP_Upload DSG to configure a file upload to an FTP site using your own set of credentials.
3. Review the 5_2_S3_Output_Folder DSG and if available to you configure it to upload one or more files to an S3 Bucket.

6 Data Ingest

Lesson Overview

This lesson explains how to configure Weather Data Flow to ingest data into MySQLS databases and the proprietary VFS.

Prerequisites

Lesson 2

Lesson 3

Lesson 4

1 MySQL

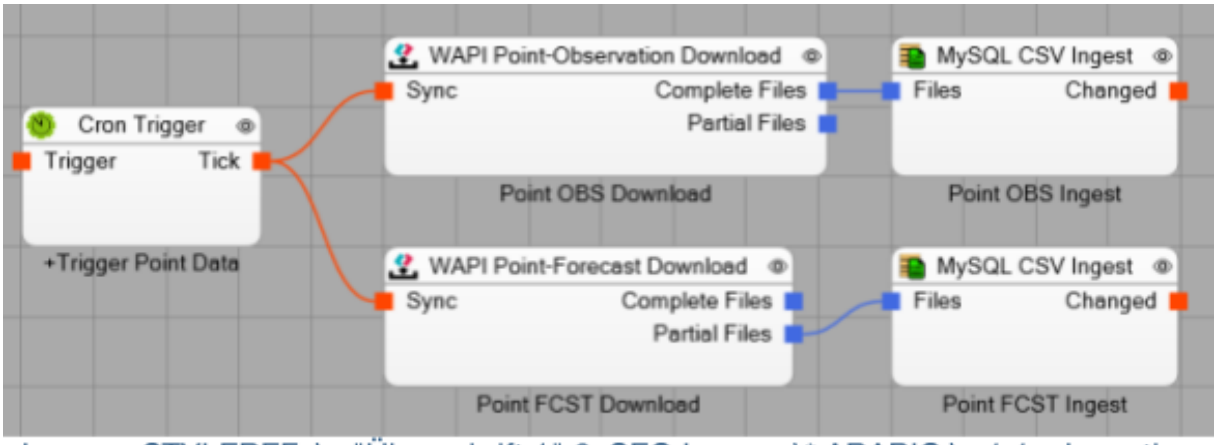
CSV Ingest

After downloading point data from ftp or WeatherAPI it needs to be ingested into a database to be usable in Chyron Weather, therefore we use the MySQL CSV Ingest.

File Format	
Fields Terminated By	Seperator between columns (MG standard ‘,’)
Fields Enclosed By	enclosing character of each field (MG standard ‘ ’)
Fields Escaped By	escape character (MG standard ‘ ’)
Lines Starting By	string that indicates start of line (MG standard ‘ ’)
Lines Terminated By	string that indicated end of line (MG standard ‘\r\n’)
Ignore Lines	number of lines which are ignored when reading csv file (MG standard ‘1’)
Ingest	
File Mask	possible file mask for restrict ingested files

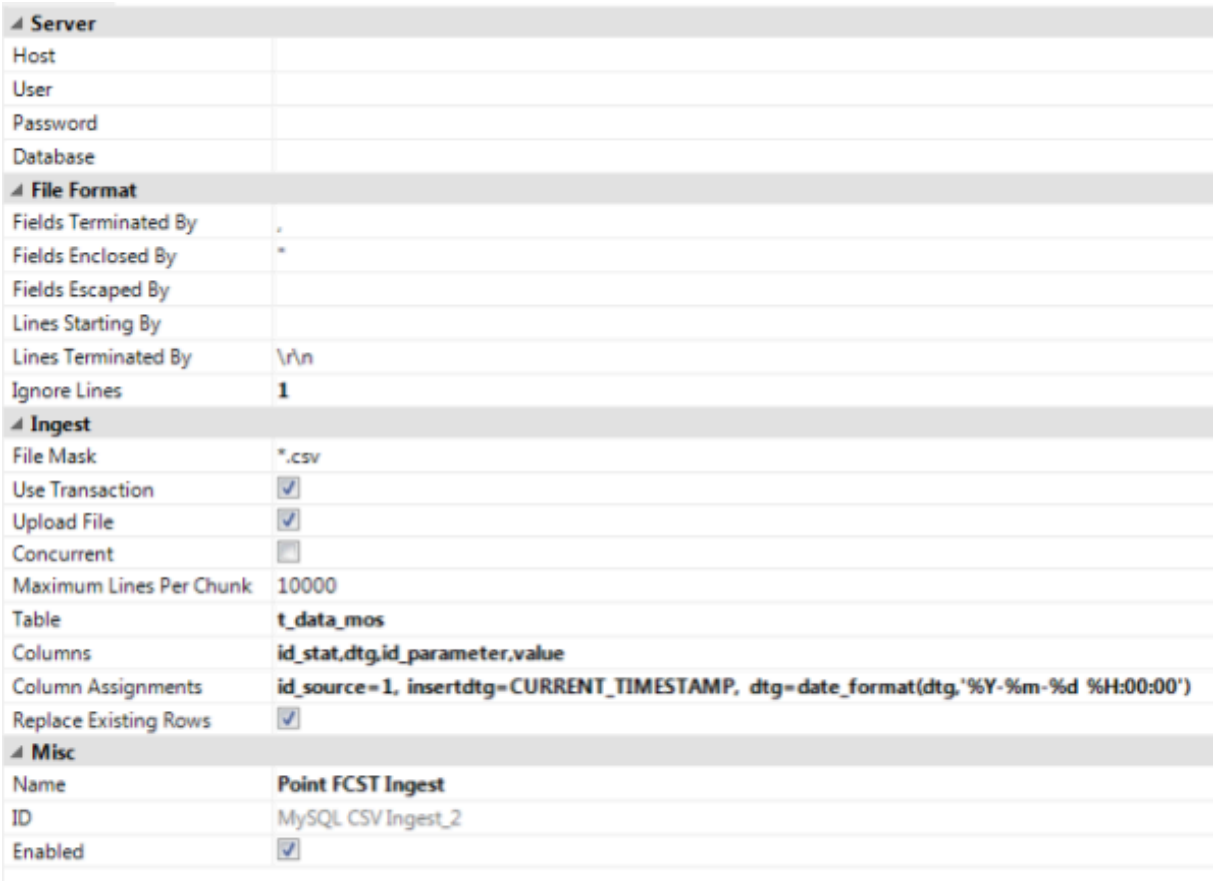
Use Transaction	Use transaction to prevent data inconsistency.
Upload File	Upload the file to the MySQL server before it is ingested.
Concurrent	If this option is enabled, other threads can retrieve data from the table while data is ingested. This option is affecting the performance a bit, even if no other thread is using the table at the same time.
Maximum Lines Per Chunk	Large CSV files can be splitted into smaller files with this number of lines per file. This provides more detailed progress information and enables the support of cancellation. A value of 0 disables this function.
Table	The name of the table where all CSV files have to be ingested.
Columns	A comma separated list of column names or user variables. e.g. id_stat,dtg,id_parameter,value
Column Assignment	A comma separated list of assignments of values to columns. e.g. id_source=1, insertdtg=CURRENT_TIMESTAMP
Replace Existing Rows	Replace all existing rows with the same primary key or unique index.

Example with WAPI Download:



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 1 – Ingesting Data Using MySQL CSV

Exemplarily:



Server	
Host	
User	
Password	
Database	
File Format	
Fields Terminated By	,
Fields Enclosed By	"
Fields Escaped By	
Lines Starting By	
Lines Terminated By	\r\n
Ignore Lines	**1**
Ingest	
File Mask	*.csv
Use Transaction	☑
Upload File	☑
Concurrent	☐
Maximum Lines Per Chunk	10000
Table	**t_data_mos**
Columns	**id_stat,dtg,id_parameter,value**
Column Assignments	**id_source=1, insertdtg=CURRENT_TIMESTAMP, dtg=date_format(dtg,'%Y-%m-%d %H:00:00')**
Replace Existing Rows	☑
Misc	
Name	**Point FCST Ingest**
ID	MySQL CSV Ingest_2
Enabled	☑

Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 2 – MySQL CSV Ingest Properties

Housekeeping

Housekeeping is important to ensure the database always has space and avoid any performance issues.

For housekeeping of separate tables.

Housekeeping	
Table	database table that should be housekept
SQL-Command	Any SQL statement to clean up a table. You can use the [TABLE] placeholder to use the value of the table property. e.g.

	DELETE FROM [TABLE] WHERE dtg < NOW() - INTERVAL 7 DAY;

Simple Example:

Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 3 – Ingesting Data Example

In case you get the following error message: "The total number of locks exceeds the lock table size."

find C:\ProgramData\MySQL\MySQL Server\my.ini

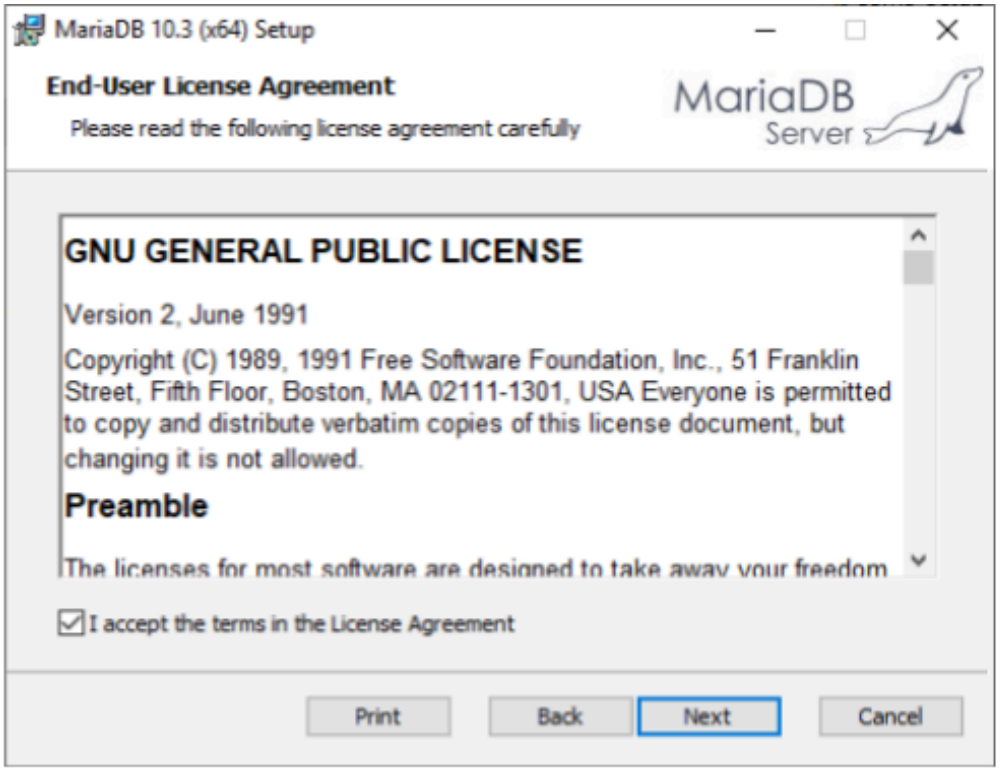
change innodb_buffer_pool_size (for example to 1G)

restart MySQL (services)

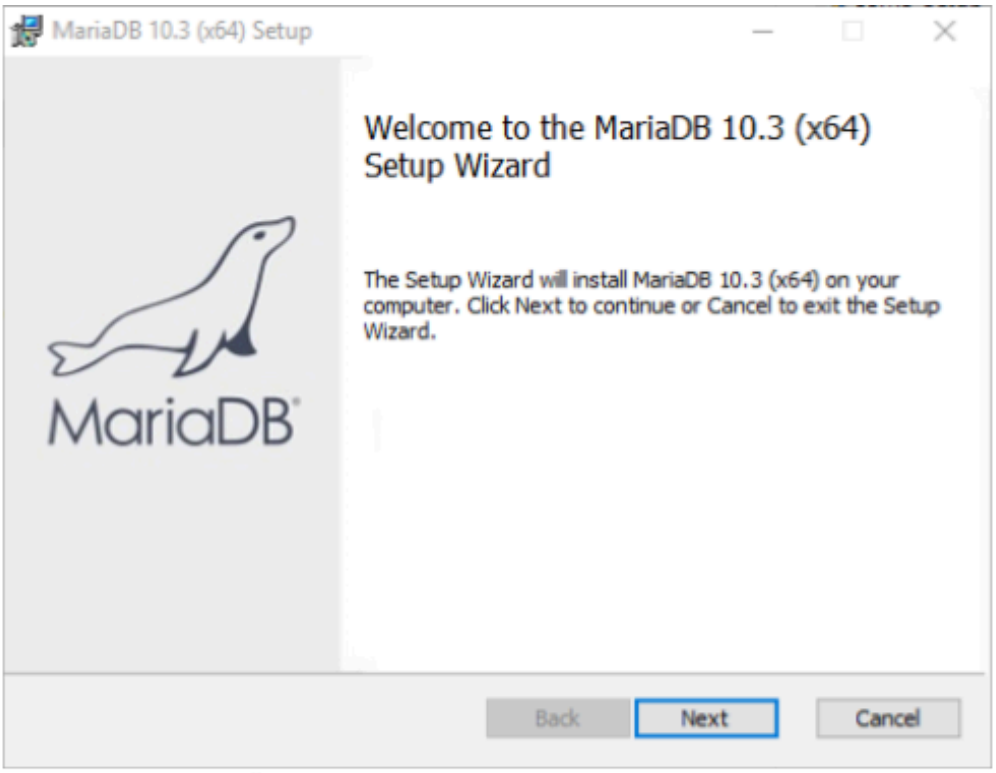
Setting up MySQL Database using Maria

MariaDB is currently CHYRONHEGO's preferred solution and is required if point data is to be used. MariaDB instances can be managed via MySQL Workbench with some caveats.

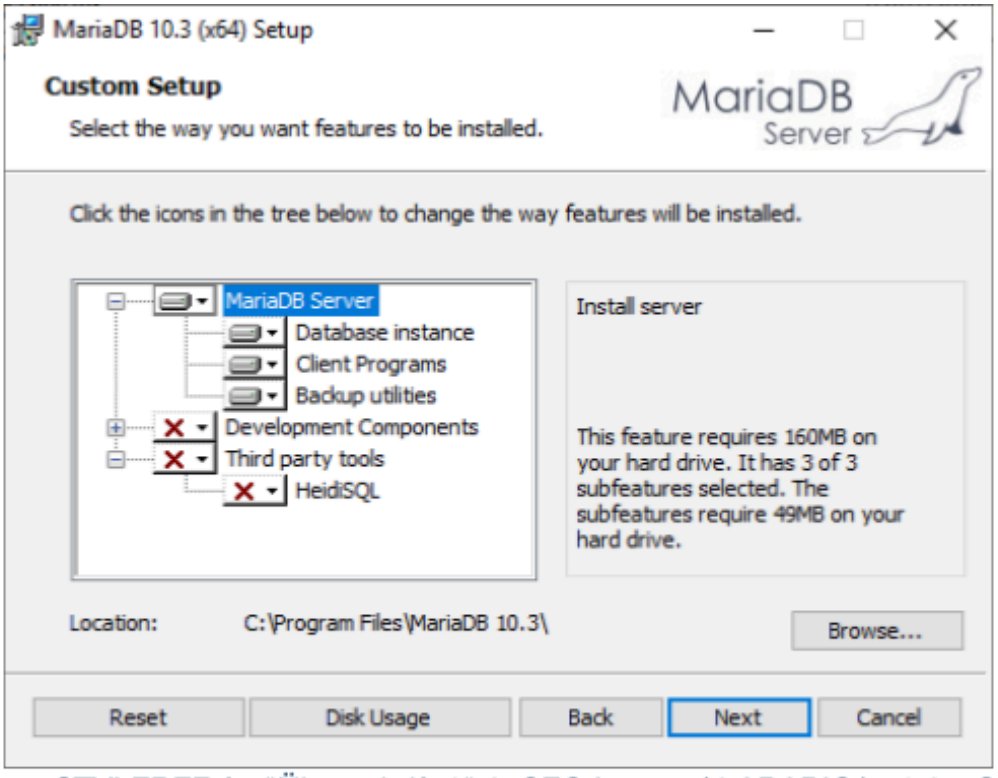
Regarding databases, CHYRONHEGO use a database named meteo for storing meteorological data so observation and forecast data is stored here and a database named geo for storing geographical related data so for example station data. Geo is the current version of CHYRONHEGO's geographical database. These tutorials assume you will be ingesting data into tables within the **meteo** database: t_data_obs (observation data) and t_data_mos (forecast data) are used in the examples



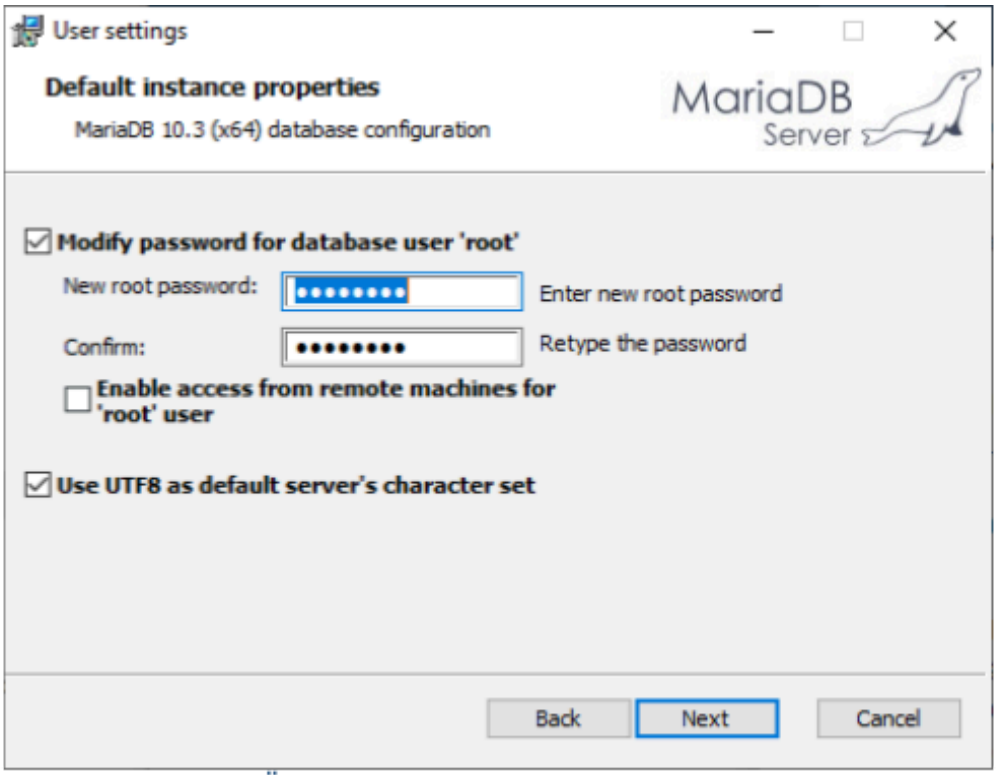
Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 4 – Accept Terms and Select Next.



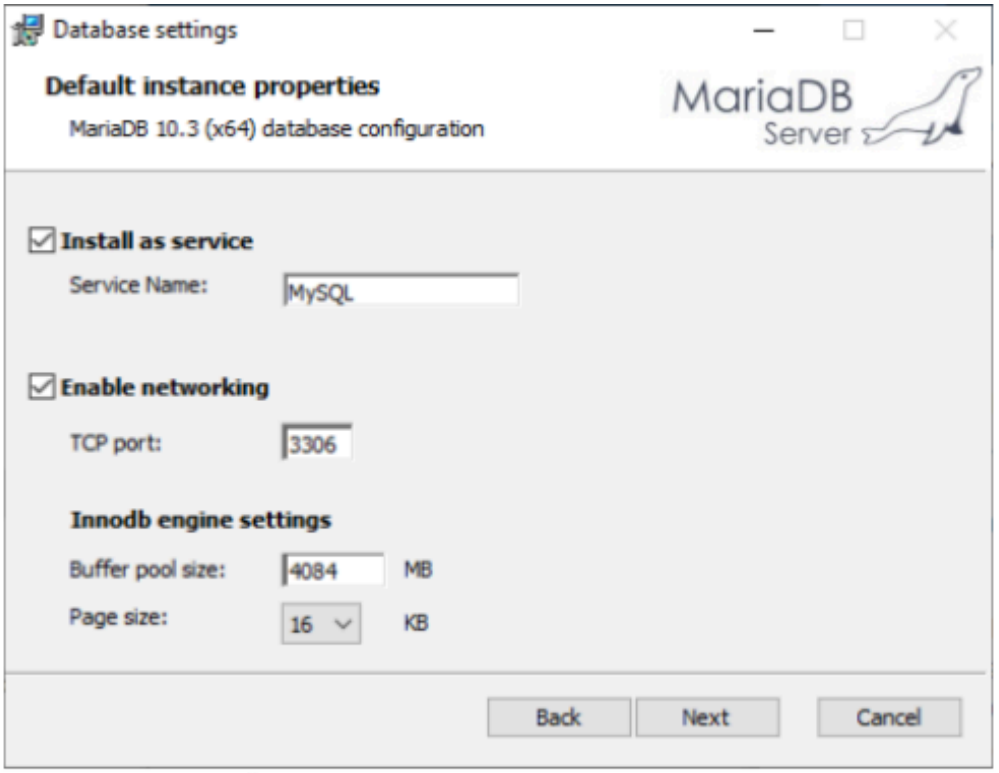
Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 5 – Prompt for MariaDB. Select Next.



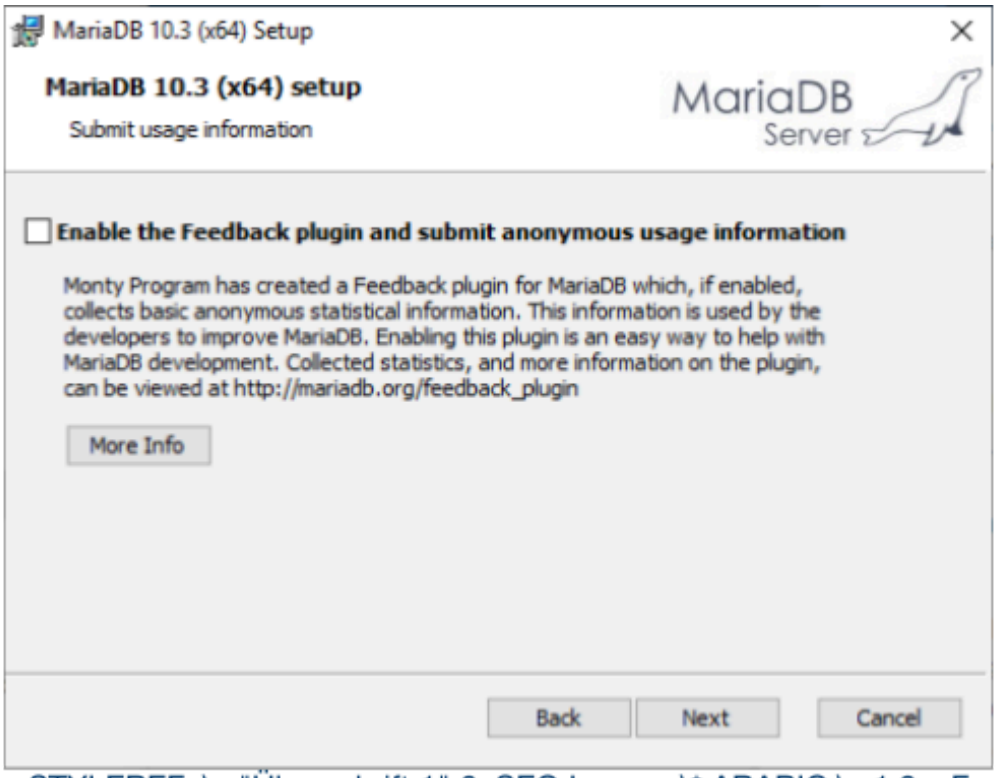
Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 6 – Select Location and Next.



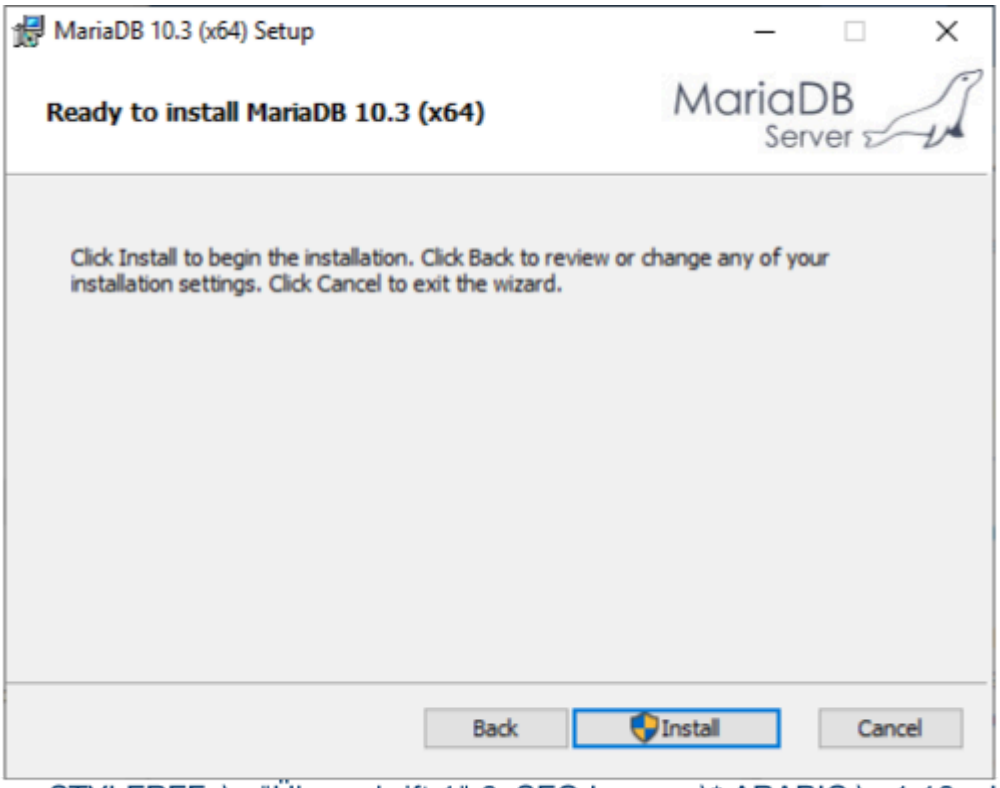
Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 7 – Set Root Password. Select Next.



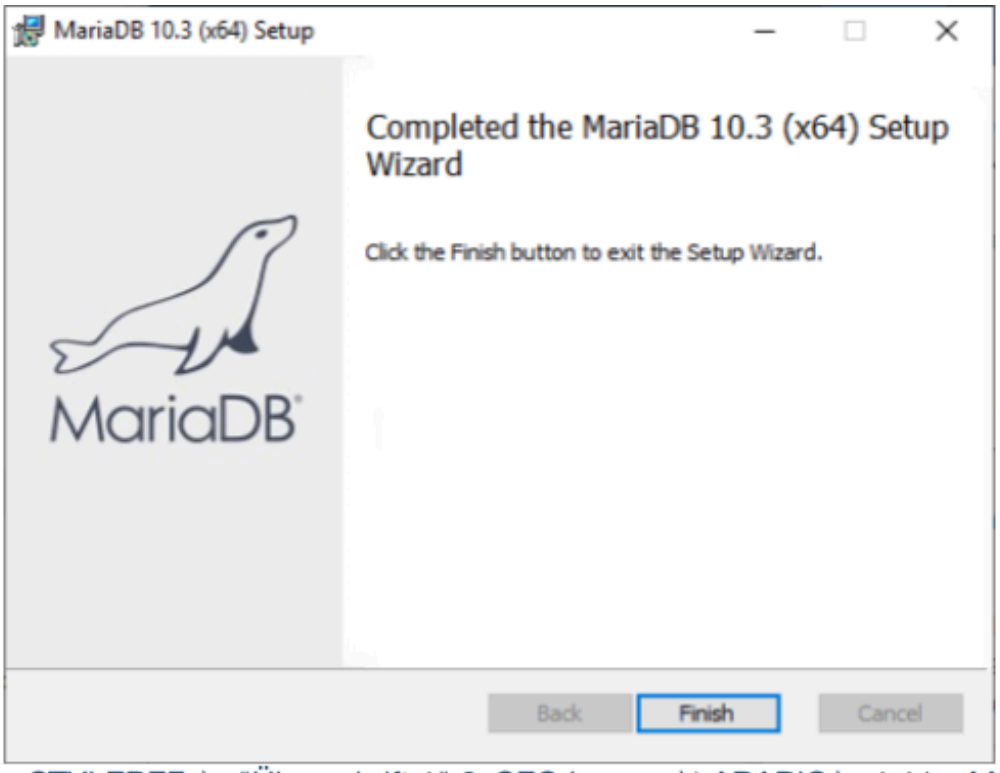
Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 8 – Set Service and Enable Port.



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 9 – Feedback Enable.



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 10 – Install



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 11 – MariaDB is ready

Lesson Activities

20 Questions

1. Point data can be directly used by Chyron Weather after download. True or False?
2. Which type of database is used to ingest data for use with Chyron Weather?
   A. Any DB can be used
   B. MySQL DB
   C. Maria DB
3. What is Housekeeping and why is it important? Think about how this might enable you to comply with data retention policies within your organization.

21

22 Answers

1. The correct answer is False.
2. The correct answers are B & C.
3. The correct answer is to ensure there is always space and it is running quickly and smoothly.

12 Tasks

1. Find and identify the MySQL Ingest node. Review its properties.
2. Find and identify the MySQL Housekeeping node. Review its properties.
3. Review the 6_1_1_MySQL_CSV_Ingest DSG. If you have access to a MySQL Server on your system, configure the nodes to download and ingest Point Data into your database.
4. Review the 6_1_2_MySQL_Housekeeping DSG for an example of MySQL Housekeeping.
5. Review the 6_2_3_VFS_Download_&_Snapshots DSG for examples of the VFS Download and VFS Snapshot nodes.

2 VFS

VFS (Versioned File System) is CHYRONHEGO's proprietary file data storage system. It enables Chyron Weather to deal with different versions of the same file (e.g. for model runs) and to continuously ingesting while reading from the data.

Set up VFS

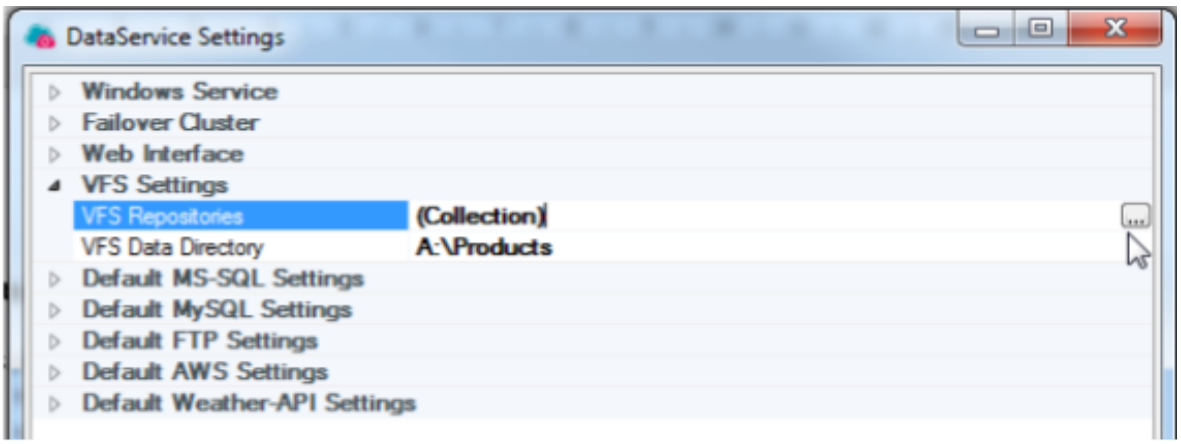
First find a folder where you want to store your VFS, then create config.vfs with following content:

```
{
  "VfsType": 1,
  "MaxRevisionAgeInSeconds": 14400,
  "LockTimeoutInSeconds": 300,
  "FilesDirectory": "Files",
  "RevisionsDirectory": "Revisions"
}
```

Alternatively, you can use the VFS Explorer to create and save a new VFS repository.

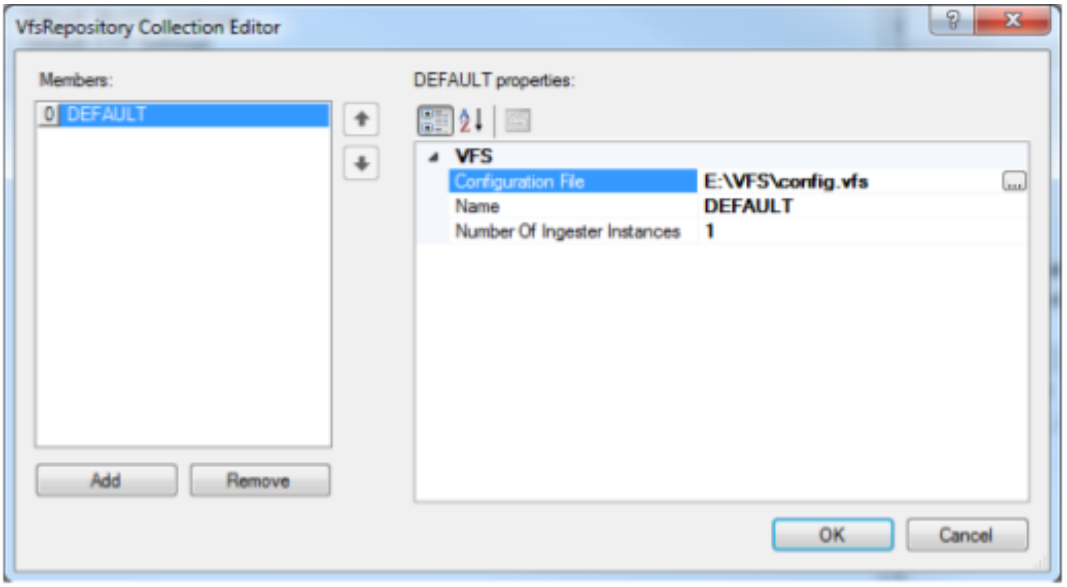
VFS Explorer: A tool to manually manage the VFS. It can be used to create repositories, view its content and manually export and import files.

Now go to Weather Data Flow Settings -> VFS Settings -> click on VFS Repositories



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 12 – WSDS VFS Settings

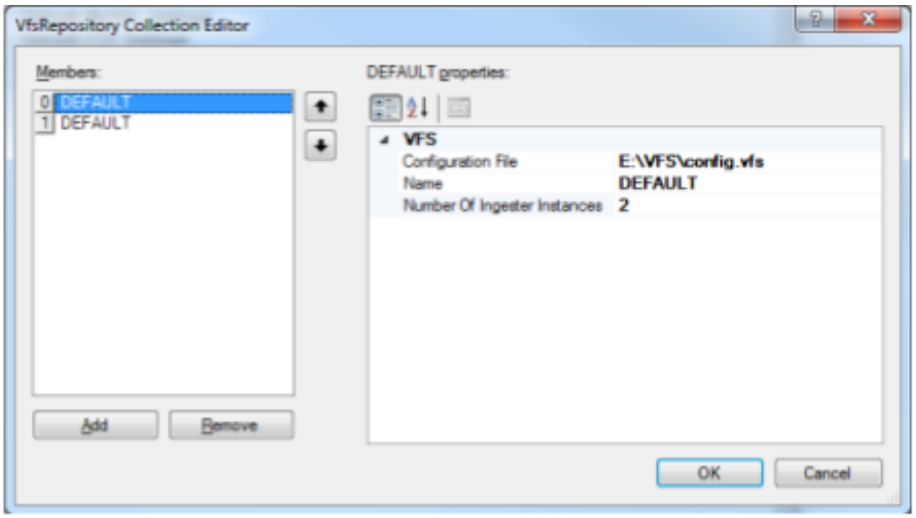
And click on … and set up Path to config.vfs



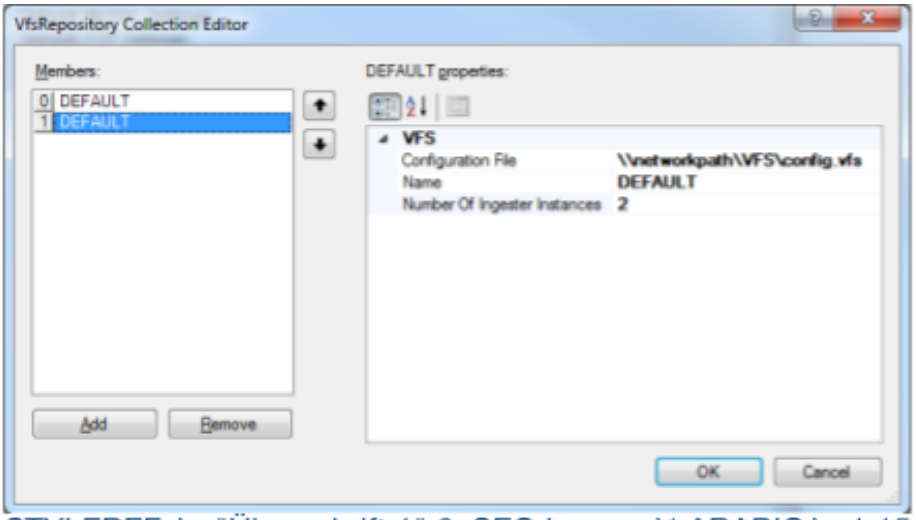
Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 13 – VFS Settings

If you want Weather Data Flow to ingest in more than one VFS, click on Add and set up a second (third,…) one

Number of Ingester Instances needs to be 2 (for 2 VFS), 3 (for 3 VFS …) for all members



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 14 – VFS 1 Settings



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 15 – VFS 2 Settings

The Name of VFSs can be changed (but needs to be the same for all VFSs!).

The VFS Data Directory can also be changed (Default: A:\Products).

Note that ingesting into multiple VFS repositories at the same time can lead to longer lock and therefore ingest times. However, this can still be necessary to ensure consistency when reading from different repositories.

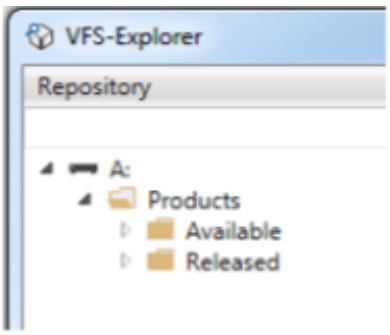
Ingesting into VFS

There are 2 kind of directories in VFS: available and released, but only the released data should be used. Available also holds partial data that could still change.

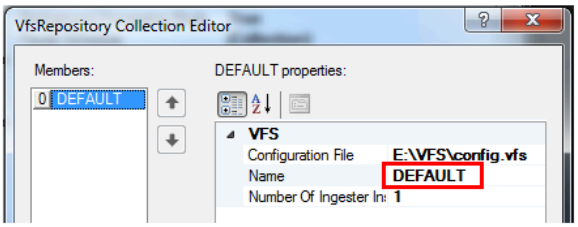
If you ingest data (Ingest Nodes) it is placed in “available”.

If you release data (Release Node) it will become visible in “released”.

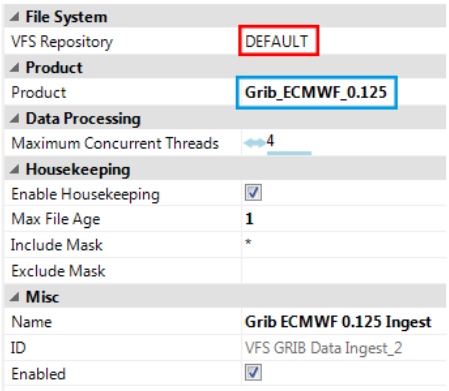
All data needs to be ingested before it can be released.



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 16 – VFS Explorer



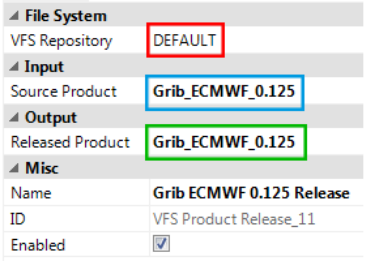
All VFS Ingest nodes require time-referenced files as input



Property ‘VFS Repository’ needs the name of the Repository defined in Weather Data Flow Settings (default: DEFAULT) -> red

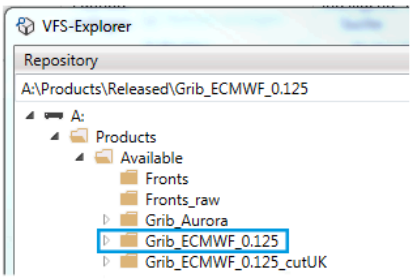
Property ‘Product’ is the definition of the name of the product (‘folder’) in VFS (available) -> blue

Housekeeping for product in VFS can be set

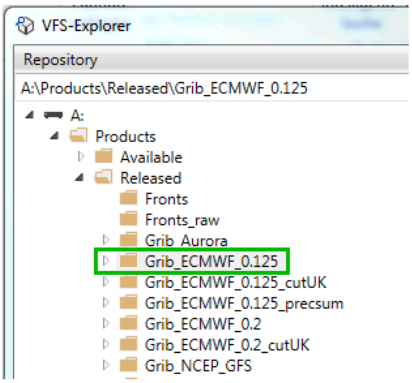


Release nodes also require information about VFS repository -> red

Source product (-> blue) and Released product name (-> green) needs to be defined



Same name for Source and Released product in most cases



Special Case: Grib data is saved in ‘Incoming’ folder when released -> only if number of ‘Minimum Files For Completed Run Folder’ of data download node is reached, it will be moved to Aggregated, Latest and Separated folders

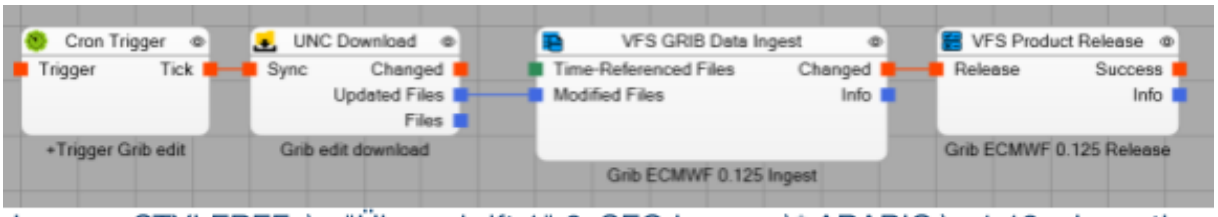
Example:

Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 18 – VFS Workflow in WSDS

Special case: Modified Files for Grib Data Ingest

If Grib data is edited in Weather Designer, it is possible to ingest these edits in VFS. The Grib edits are saved from Weather Designer in a defined (environment.xml) UNC Folder. Therefor the VFS Grib Data Ingest is able to handle Modified Files as Input

Example:



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 19 – Ingesting Moditfied Grib Data

Special case: VFS Product Merge

File System	
VFS Repository	DEFAULT
Input	
Observation Product	**Rad_UK_OBS**
Forecast Product	**Rad_UK_FCST**
Output	
Merged Product	**Rad_UK**
Misc	
Name	**Rad UK Merge**
ID	VFS Product Merge_1
Enabled	☑

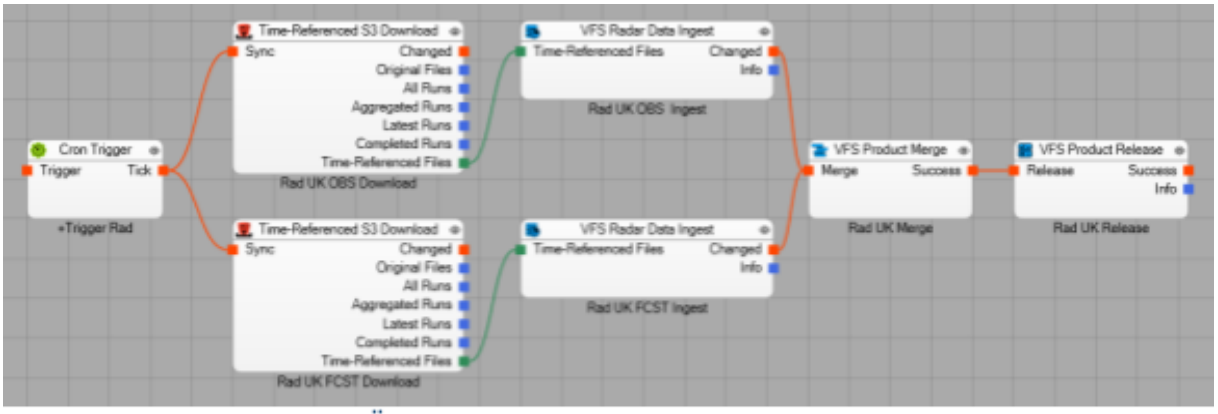
Usually data is either observation or forecast

But for some radar images MG calculates radar forecasts

To not store these two products in two separate folders the VFS Product Merge was created

It combines two products containing time-referenced files and creates a new product

Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 20 – VFS Product Merge



Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 21 – Product Merge Workflow

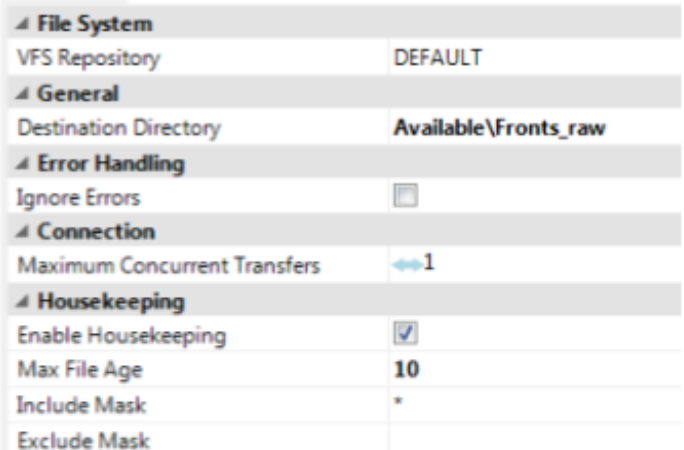
Special Case: Ingesting non-time-referenced files

There is a lot of different data, that might need to be ingested into VFS, that is not grib data or geoimages, therefore VFS Output Folder can be used.

There is no product defined, but a destination directory (should always be set in 'Available')

Example:

Lesson STYLEREF \s "Überschrift 1" 6. SEQ Lesson * ARABIC \s 1 22 – Ingesting Non-Time-Reference Files



VFS Download & Snapshots

VFS Download enables an operator to treat VFS as any other data source and so extract files from it to a specified location for example a UNC share or S3 Bucket.

Snapshots

Enables an operator to take a snapshot of a VFS or part thereof and save it. This enables an operator to archive their VFS in part or in whole. For example, capturing a particular weather situation. The idea is that it is triggered manually via the Web Interface (it can be done via the Tray, of course). A Snapshot node must be added to the productive Weather Data Flow configuration for this option to be available to the operator.

Lesson Activities

23 Questions

1. What is VFS?
   A. Chyron Weathers proprietary file data storage
   B. A versioned file system
2. It is possible to use more than one VFS with Chyron Weather. True or False?
3. Name the types of base directories available via VFS:
   A. Stored and archived
   B. Available and released
   C. inProgress and completed
4. You should always use the Available data. True or False?
5. What does the Product Merge node do?
   A. It merges two grib files with a given rule
   B. It merges “available” and “released”
   C. It merges two products with time-referenced files
6. Is it possible to ingest non time referenced files into the VFS?:
   A. Yes
   B. No
7. Why might you want to use the Snapshot node?
   A. To archive a weather situation
   B. To create an inventory of the file system
   C. To generate a preview for a weather briefing
8. What is VFS Explorer?

A. A tool to manually ingest and export files
B. A way to view the content of the VFS
C. A tool to create a new VFS repository

Answers

1. Both answers are correct.
2. True.
3. The correct answer is B.
4. False.
5. The correct answer is C.
6. The correct answer is A.
7. The correct answer is A.
8. All answers are correct.

Tasks

1. Using available resources, set up a VFS. Hint: use the provided config.vfs to help you get started.
2. Launch VFS File Explorer. Using VFS Explorer, locate your VFS configuration and open it.
3. Review the 6_2_3_VFS_Download_&_Snapshots DSG. If you have access to a VFS, configure the nodes to interact with it.

Note:

```
{
  "VfsType": 1,
  "MaxRevisionAgeInSeconds": 43200,
  "LockTimeoutInSeconds": 300,
  "FilesDirectory": "Files",
  "RevisionsDirectory": "Revisions"
}
```

7 Using CMD Runner

Lesson Overview

This lesson introduces the CMD Runner. This is a very useful node and can extend the capabilities of Chyron Weather DataSuite.

Prerequisites

Lesson 2

Lesson 3

CMD Runner

This node gives the possibility to use the command prompt and set up simple commands or scripts, if there is a task, that is not initially implemented in Weather Data Flow

Execution	
Executable Path	The path of the executable, e.g. cmd.exe or example.bat. The optional placeholder [TOOLS] can be used for the Tools directory in the working directory. (e.g. [TOOLS]/example.bat)
Execution Timeout	task will be aborted after a defined time in seconds (0=infinity)
Execution Mode	if input pin ‘Files’ is used, following 2 options are selectable: -All files of input directory -> run executable for every file in the input directory -Input directory only -> run executable only once
Process Instances	The maximum number of concurrent process instances.
File Mask	Only file names matching this mask are passed to the executable.

Enable Caching	if ticked: don't process the same file multiple times and return cached results instead.
Logging	
Console Output	Specifies how the console output is redirected to the message logger: -Log errors and infos -Log errors as infos -Log only errors -Silent
Exit-Codes	
Success/Warning/Error-Codes	The return codes of the executable. (e.g. 1,2,3)
Default Exit-Code	Treat undefined exit codes as: Success, Warning, Error or Unknown
Arguments	
Arguments	any number of arguments for the executable (possible to set in Quotation Marks) Optional placeholders are: [IN_DIR_PATH] - the input directory path (e.g. C:\input) [IN_DIR_PATH_MASKED] - the input directory path (e.g. C:\\input) [IN_FILE_PATH] - the full input file path (e.g. C:\input\myfiles\test.txt) [IN_FILE_PATH_MASKED] - the full input file path (e.g. C:\\input\\myfiles\\test.txt) [IN_FILE_RELATIVE_PATH] - the full input file path (e.g. myfiles\test.txt) [IN_FILE_RELATIVE_PATH_MASKED] - the full input file path (e.g. myfiles\\test.txt)

	[IN_FILE_NAME] - the input file name without extension (e.g. test) [IN_FILE_EXT] - the input file extension (e.g. .txt) [IN_FILE_NAME_EXT] - the input file name with extension (e.g. test.txt) [OUT_DIR_PATH] - the output directory path (e.g. D:\output) [OUT_DIR_PATH_MASKED] - the output directory path (e.g. D:\\output)

Different input and output pins (different actions for different Exit-Codes are possible)

Actions (red) 

in: run executable

out: trigger next node if executable returns Success, Warning or Error

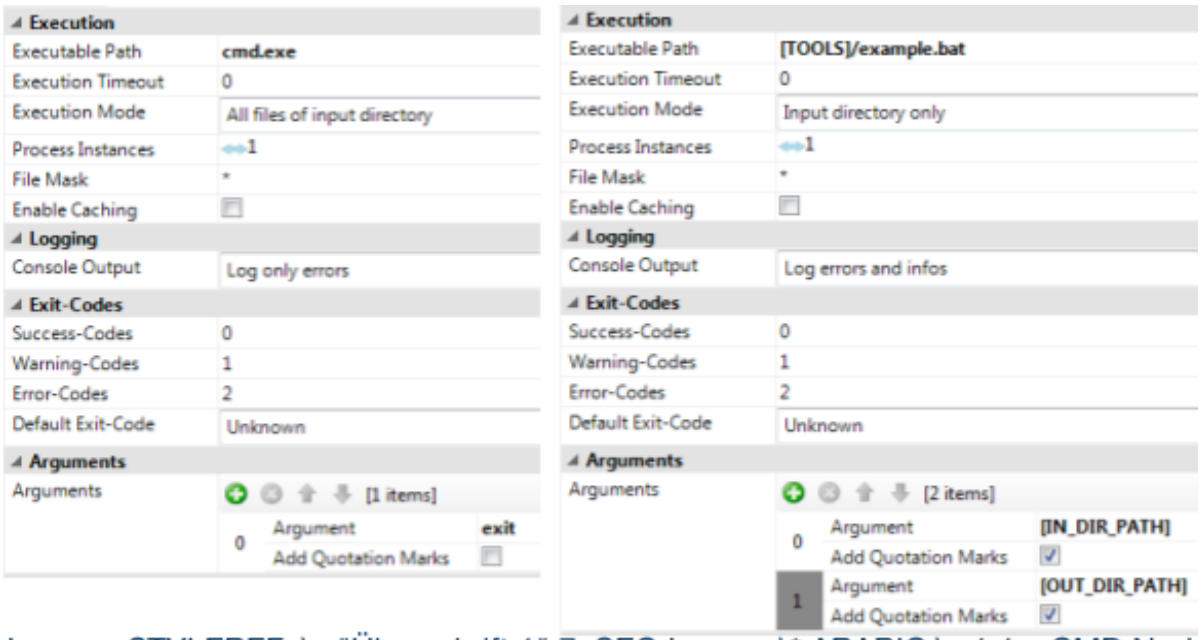
Files (blue) 

in: run executable with input files

out: trigger and hand over input or output files to next node, if executable returns Success, Warning or Error

file handling can be done with placeholders described in table above

Example:



Lesson STYLEREF \s "Überschrift 1" 7. SEQ Lesson * ARABIC \s 1 1 – CMD Node Argument Examples

External scripts and command line tools (e.g. Saxon, cURL) can be also be used. Example use cases are:

- Transform XML files using Saxon
- Download using cURL
- Run a PERL script using e.g. StrawberryPERL
- Use custom tools to e.g. search and replace nodes in Chyron Weather documents
- Use DOS commands

Lesson Activities

25 Questions

1. What is the CMD Runner node used for?:
   A. Implementing commands and scripts
   B. Downloading forecast data
   C. Ingesting into the DB.

26 Answers

1. The correct answer is A.

22 Tasks

1. Find and identify the CMD Runner node.
2. Open the supplied CMD Runner dsg file (7_1_DMD_Runner). Review its properties. What do you think it does? Trigger the Node. Observe the results. What happened?

8 Frequently Used Tools

Lesson Overview

This lesson introduces frequently used nodes and processing chains.

Prerequisites

Lesson 2

Lesson 3

Lesson 4

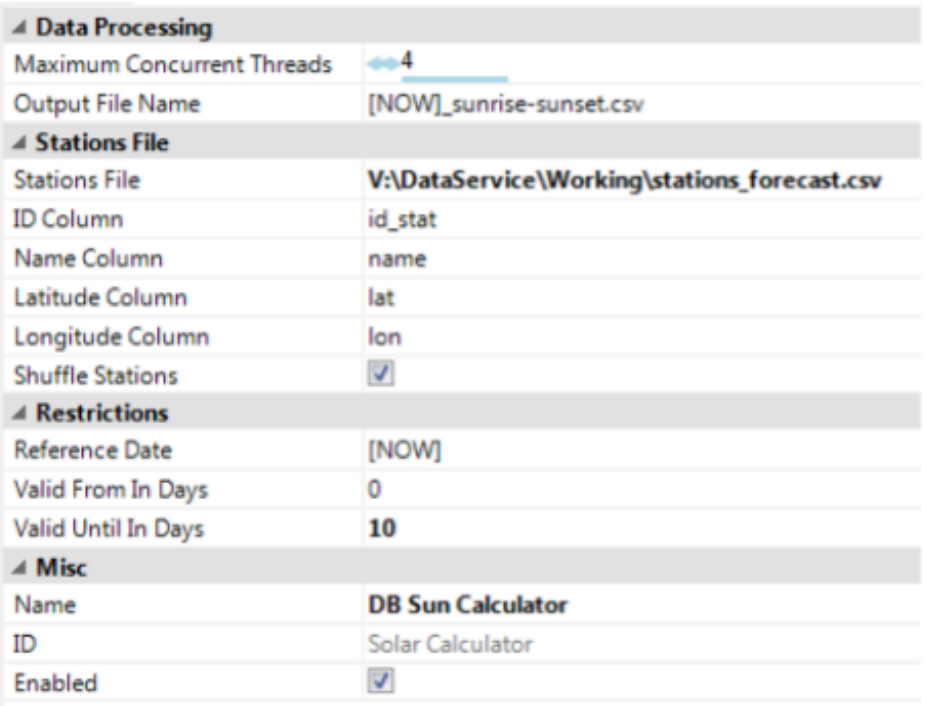
Lesson 6

Lesson 7

Solar Calculator

The Solar Calculator is a Weather Data Flow node, it can create sunrise and sunset times for a list of stations (in local time)

Usually a MySQL CSV Ingest is used afterwards to ingest this data into an appropriate database table.



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 1 – Solar Calculator Properties

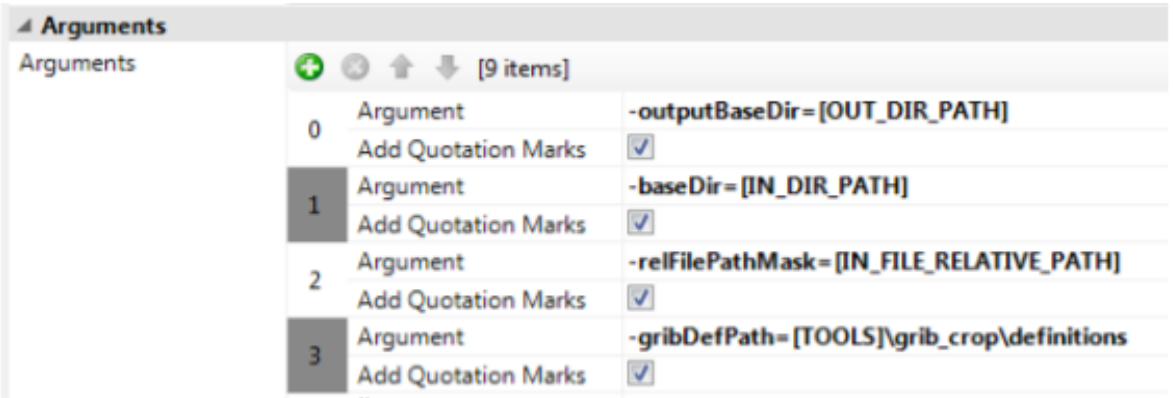
Grib Crop

Grib Crop is a tool to create a cut out regions from grib data or to down sample the spatial resolution. That is useful to improve loading times or same resources to avoid performance issues.

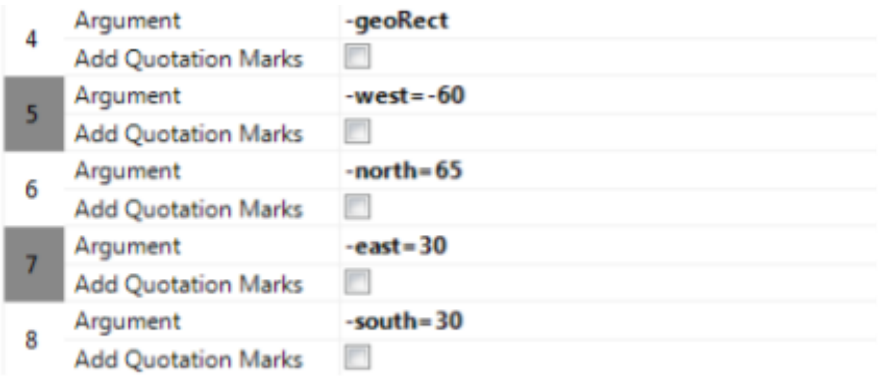
A folder with all the assets and tools needs to be copied to tools folder in Weather Data Flow working directory. The tool can be made available.

Executable Path: [TOOLS]\grib_crop\grib_crop_data.exe

This is used with the CMD Runner.



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 2 – General Arguments



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 3 – Cutout Arguments UK Example

Arguments for down sampling: add Argument ‘-downScaling’ (without Quotation Marks)

downscaling means the resolution will be halved (e.g. 0.125 -> 0.25)

downscaling can be done one node after another to get even stronger effects

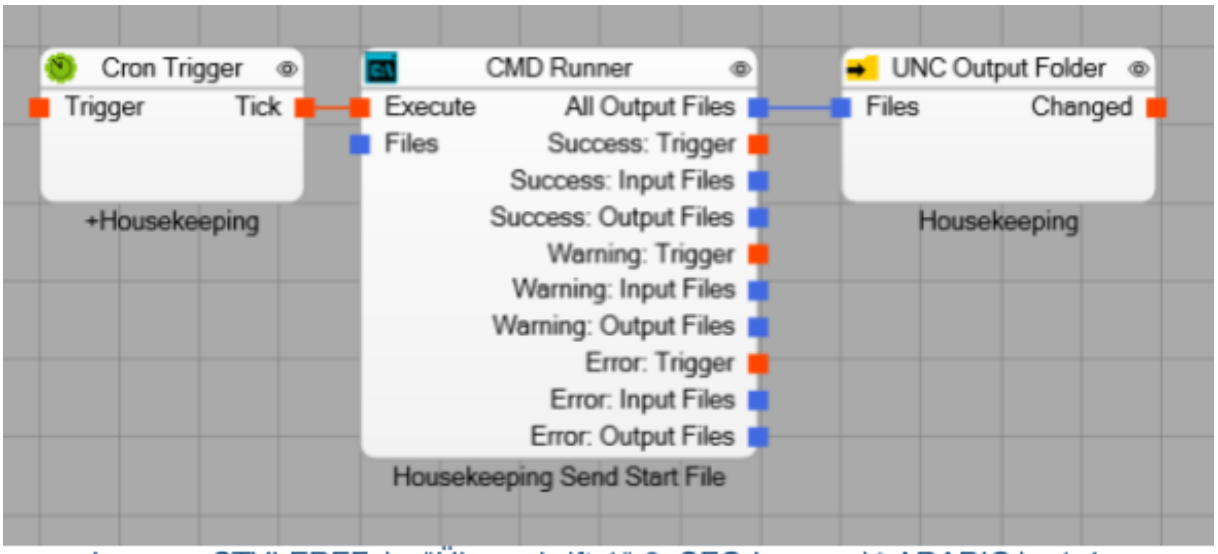
1st node: 0.125 -> 0.25

2nd node 0.25 -> 0.5

3rd node 0.5 -> 1.0

Housekeeping

Most of the time there is a housekeeping included in different nodes, but sometimes none of them are sufficient or you only need to housekeep a folder without any other task beforehand, therefore the following workflow can be used:



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 4 – Housekeeping

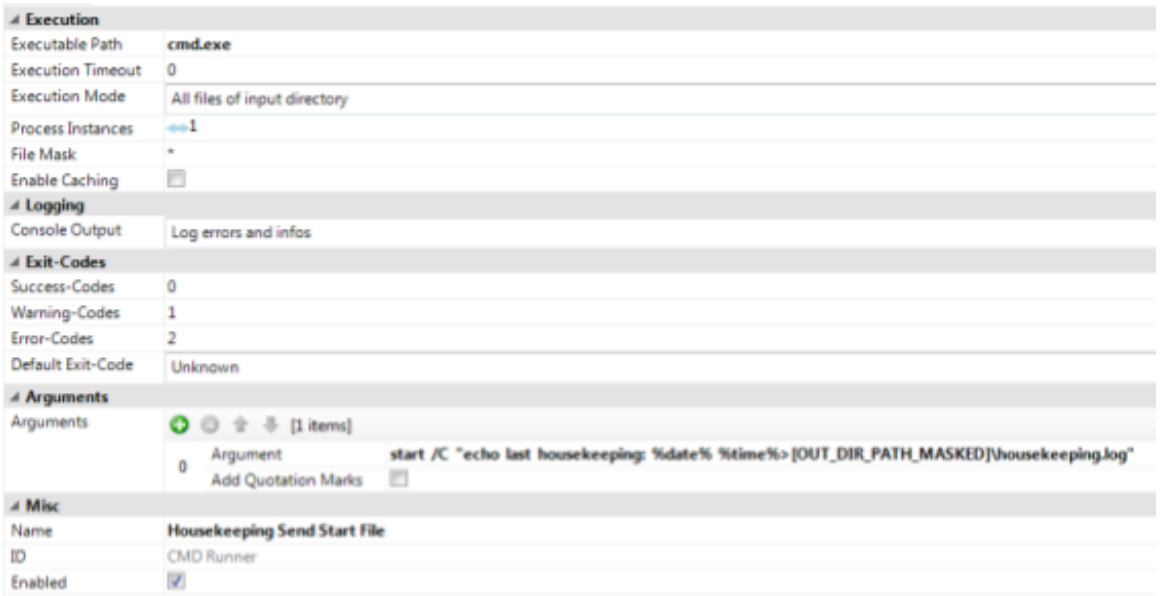
It works as follows:

A file with the text of "last housekeeping: [Date] [Time]" is send to the output folder (CMD Runner)

The housekeeping function of the output folder is used to clean up old files

In the housekept folder you will find a text file, which tells you when the last housekeeping was done

The dsg can be made available.



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 5 – CMD Runner Properties for Housekeeping

Precipitation Sum

Precipitation sums: this workflow was created to show (animated) precipitation sums (ECMWF) in Weather Designer (for Weather Panorama this is not working)

It works as follows:

- all precipitation grib files are downloaded
- all files with a forecast interval that is available more than once in a run are saved to a separate folder (precsum_all)
- all files with forecast interval that is available just once in a run are saved to the target folder (precsum_final)
- the precsum.bat script is looking into the folder precsum_all and selecting the first timestep of each temporal resolution (3, 6, 12, 24) and saving the files to target folder (precsum_final)
- all files in precsum_final are picked up by the time-referenced file renaming node and formatted to time-referenced files, so they can be picked up by Grib data Ingest node
- data is ingested and released

The dsg and batch file can be made available.

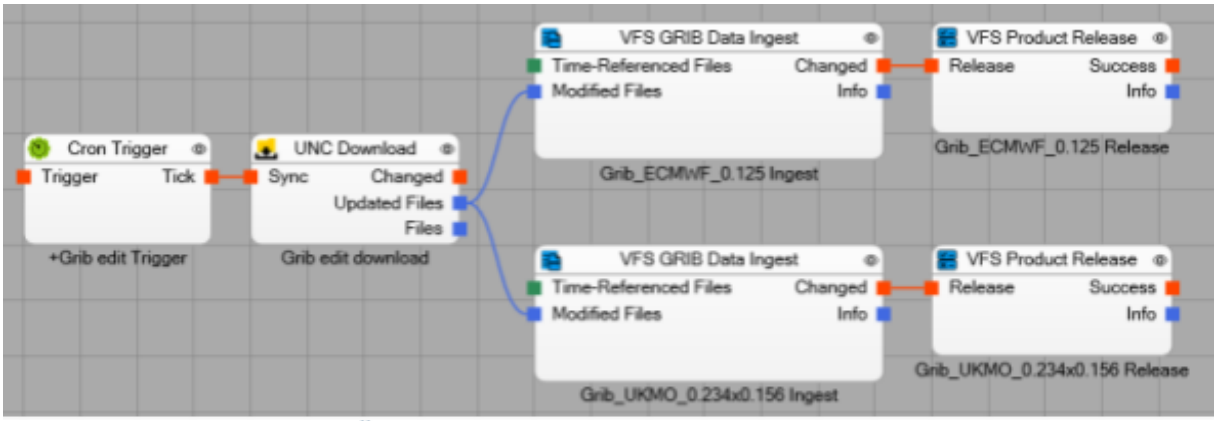
Model Edit workflow

If Grib data is edited in Weather Designer, the adjusted files are saved within a defined folder, when clicking on ‘export Modification’. This folder is set up in the _environment.xml (Key: GribModifications)

Weather Designer is automatically creating a folder structure that is needed by Weather Data Flow to ingest time-referenced files (run folder, model, parameters, timesteps etc.).

These grib files can be downloaded with a UNC download in Weather Data Flow and handed over to a VFS Grib Data Ingest Node. Because of the folder structure the

Ingest Node understands which files are needed for which Model, so it is possible to simply hand over the files from Download to Ingest



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 6 – Model Edit Workflow

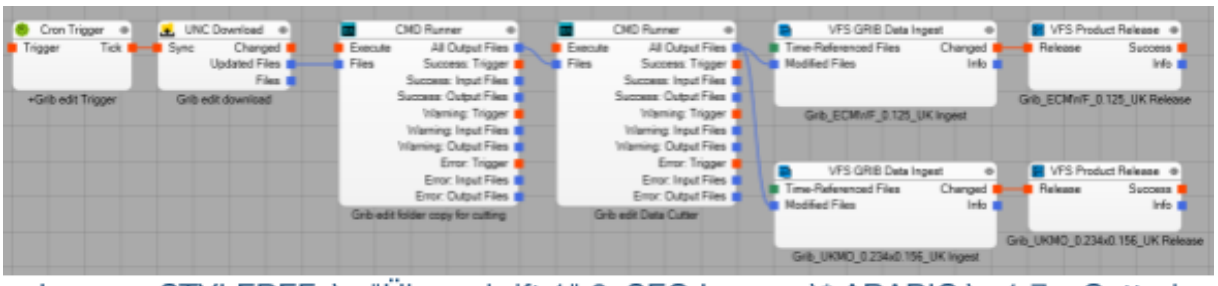
Special Case:

If there is a cutted or downscaled product in parallel to the original product and both are in use, the customer of course doesn't want to edit both products (e.g. ECMWF_0.125 and ECMWF_0.125_cutUK)

That means the customer needs to edit the original product (EMCWF_0.125) and we need to implement a workflow to also ingest the edit data for the cutted product (ECMWF_0.125_cutUK)

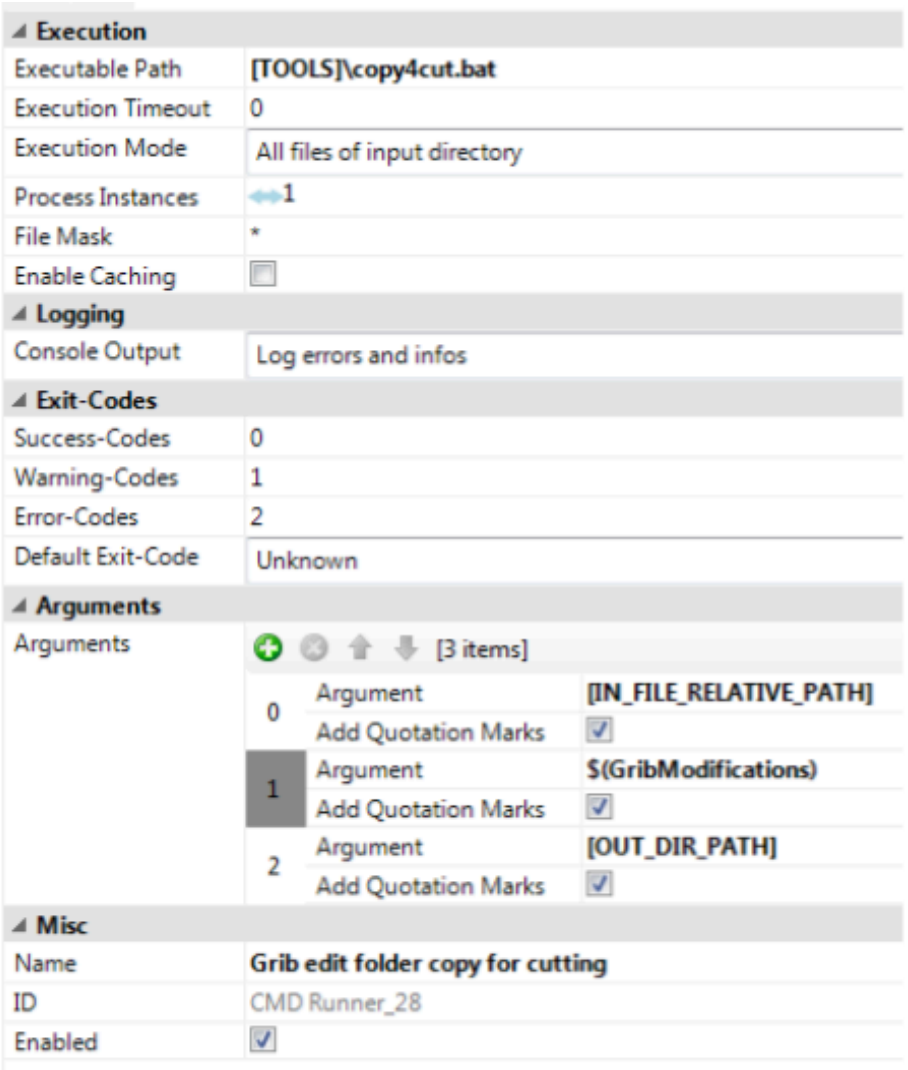
This can be done in 2 steps:

- coping the edit data from the original product to a folder with the name of the cutted product (otherwise the Ingest Node will not accept this data as input)
- cut this data with the grib crop tool



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 7 – Cutted Work Flow

The Script for copy and renaming folder can be made available.



Execution		
Executable Path	**[TOOLS]\copy4cut.bat**	
Execution Timeout	0	
Execution Mode	All files of input directory	
Process Instances	1	
File Mask	*	
Enable Caching	☐	
Logging		
Console Output	Log errors and infos	
Exit-Codes		
Success-Codes	0	
Warning-Codes	1	
Error-Codes	2	
Default Exit-Code	Unknown	
Arguments		
Arguments	[3 items]	
0	Argument	**[IN_FILE_RELATIVE_PATH]**
	Add Quotation Marks	☑
1	Argument	**$(GribModifications)**
	Add Quotation Marks	☑
2	Argument	**[OUT_DIR_PATH]**
	Add Quotation Marks	☑
Misc		
Name	**Grib edit folder copy for cutting**	
ID	CMD Runner_28	
Enabled	☑	

Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 8 – CMD Runner Properties for Copy for Cutting

Model runs

For some customers it is important to know which model run (Grib data) is already released and which is not. Furthermore, it's interesting for us to log the times when the model runs where ingested for monitoring and recognizing when a run is late.

Unfortunately, there is no native node/function in Weather Data Flow to get information about which model run is released, so a workaround was created.

Customer Example:

As this is an example from one customer the naming convention is not the same as our standard.

For other customers the standard naming should be used and please consider that more or less models will be in use, but should be sufficient to explain the general workflow.

3 output files are created:

a) *model*_log_*year*.txt

   This is for logging, so you can see at which time model runs were released.

   One file for each product (not model). Example:

   ECMWF_HRES_SURF_log_2019.txt

   Run: 20190101T000000Z Release: 01/01/2019 07:44:31.75

   Run: 20190101T120000Z Release: 01/01/2019 20:01:58.69

   Run: 20190102T000000Z Release: 02/01/2019 08:01:46.73

   Run: 20190102T120000Z Release: 02/01/2019 19:47:24.00

   Run: 20190103T000000Z Release: 03/01/2019 08:19:15.51

   Run: 20190103T120000Z Release: 03/01/2019 19:48:11.88

   Run: 20190104T000000Z Release: 04/01/2019 08:10:58.09

   Run: 20190104T120000Z Release: 04/01/2019 19:59:10.10

   …

b) *model*.xml

   This was created as reference for comparing model runs when running the script. The string 'dummy' is important for search function in script. It needs to be created before script is running the first time (with fake data)

Example:

ECMWF_HRES_SURF.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<Modelrun>
  <Model>ECMWF_HRES_SURF</Model>
  <Run>dummy 20190513T000000Z</Run>
</Modelrun>
```

c) latest_model.txt

This file contains the information the customer wants to know: all available models and the according latest run.

It needs to be created before script is running the first time (with fake data).

Example: latest_model.txt

ECMWF 20190513T000000Z

UKMO_global 20190513T000000Z

UKMO_EURO4 20190513T000000Z

UKMO_UKV 20190513T060000Z

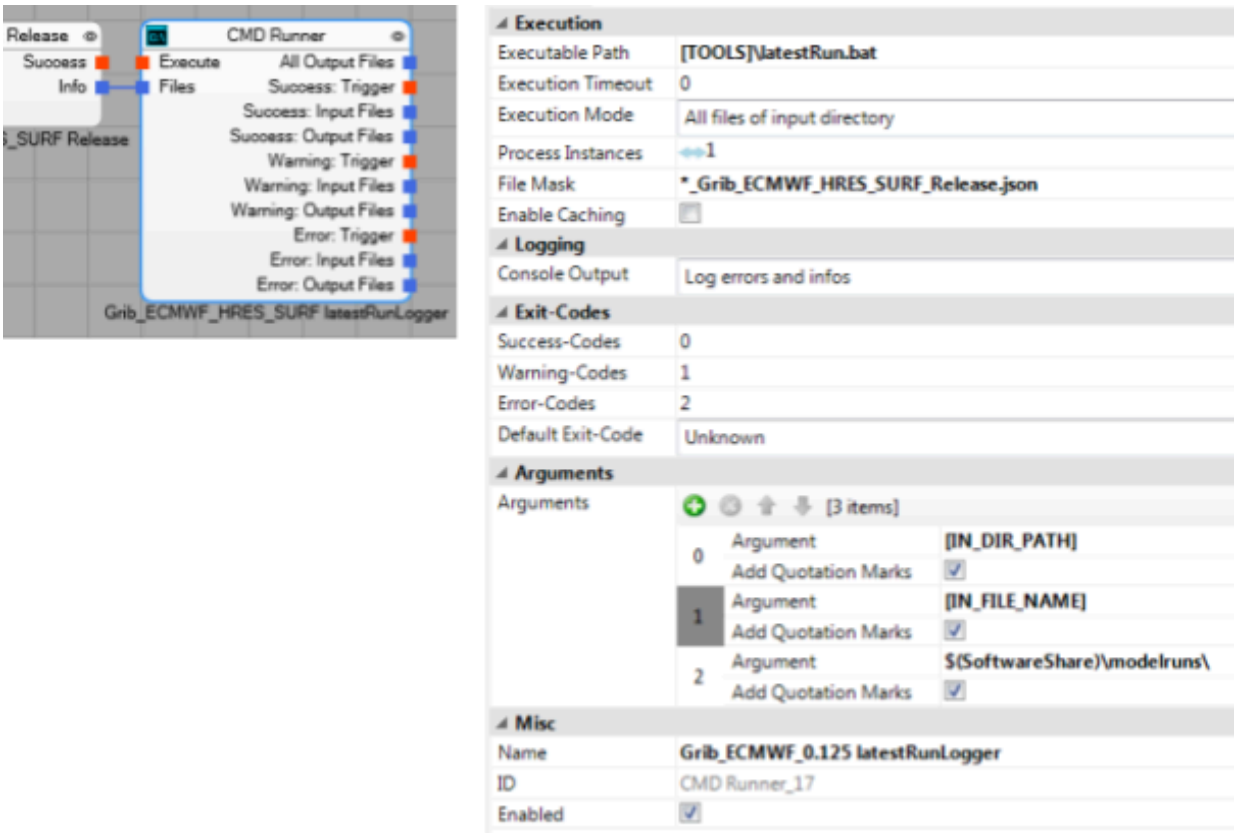
How does it work?

There is the possibility to create info files from the release node. Within this info file there is also the information which is the latest model run

The relevant information is then extracted using a batch script. The process is as follows:

- Set Model from infile name (-> script is working for all models)
- Copy info file from json format to txt file (because batch cannot search in json)
- Search in info file for latest run
- Compare latest run from info file with latest run from reference file (-> 2) *model*.xml)

If new run is available it's written in all 3 output files



Lesson STYLEREF \s "Überschrift 1" 8. SEQ Lesson * ARABIC \s 1 9 – CMD Runner Properties for lastestRun

Script can be made available.

Lesson Activities

27 Questions

1. What data does the Solar Calculator node provide?
   A. UV Levels
   B. Sun position at any time
   C. Sun rise and sun set times.
2. A MySQL Ingest of the data downloaded by the Solar Calculator node is required. True or False?
3. What is the Grib Crop tool used for?
   A. Downscaling spatial resolution
   B. Cutting out Regions from Grib data
   C. Data for crops

28

29 Answers

1. The correct answer is C.
2. The correct answer is False.
3. The correct answers are A & B.

30

31 Tip

By default, Weather Data Flow tools are located in the tools directory contained in the working directory of the Weather Data Flow directory. The location of this is defined in the Weather Data Flow settings dialog. Remember you can access the settings dialog via the Weather Data Flow Tray icon > Right Click icon > Settings > Working Directory

23 Tasks

1. Find and identify the Solar Calculator node.
2. Open the 8_1_Solar_Calculator DSG file. Assuming access to a MySQL server, configure the MySQL CSV Ingest node to ingest the data downloaded by the Solar Calculator node.
3. Find and identify the Grib Crop tool on your system.
4. Open the 8_2_Grib_Crop DSG file. Assuming access to a VFS, configure the nodes to ingest some files and crop them. What might you do if you want to retain the original resolution data as well?
5. Find and identify the Curl tool on your system.

6. Open the 8_8_Curl DSG file. Assuming access to a VFS, configure the nodes to ingest the file. If you do not have access to a VFS, use a UNC Output Folder to output the file(s) to your system.

9 Failover Concepts

Lesson Overview

This lesson discusses the failover concepts in Weather Data Flow.

Prerequisites

Lesson 1

Lesson 2

Failover Trigger

This node is used to trigger actions you only want to happen in event of a system failover.

It is normally placed inside a Failover Group which becomes active in event of a system failure.

You can specify what happens if a Failover occurs and when a Switchover occurs so you can manage the process more precisely.

Failover Group

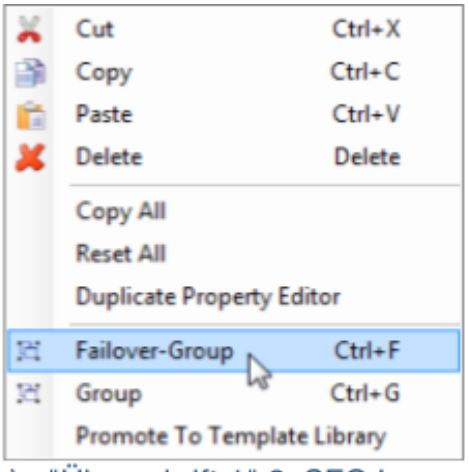
As of March 2020 the Failover Group is officially not supported.

The idea of failover groups is to run two (or more) Weather Data Flow, but only one is executing the tasks in the failover group. In case this one machine stops working for any reason, the other one takes over.

All Nodes in a failover group that are not active are white in the Weather Data Flow Dashboard. (see Lesson 11)

A failover is triggered if the master Weather Data Flow is not longer reachable or if it produces an error.

If you select one or more nodes and right click, you get the option to move all to a failover group.



Lesson STYLEREF \s "Überschrift 1" 9. SEQ Lesson * ARABIC \s 1 1 – Failover-Group

Failover-Cluster	
Cluster-ID	All cluster nodes of a Failover-Cluster have to use the same Cluster-ID.
Priority	In the case of a failover, cluster nodes with a small priority value are preferred. There is also a Priority in Settings, which is used first and only if it's the same like in the second Weather Data Flow the priority of failover group is used
Auto-Switchover	Automatic switch back to the cluster node with the highest priority.
Delay	Time in seconds the active cluster node can be unreachable or pending until a failover case is triggered.
Wait for Pending Nodes	When deactivating, wait until all containing nodes become idle.
Cluster-Nodes	List of host names of all cluster nodes.

All content of a dsg can be in one failover group, but it is also possible to only have parts of the dsg in one or even more than one failover groups.

That would mean, that everything that is not in the failover group is always executed and everything that is inside of the failover group is only executed if the Weather Data Flow is the active one.

Designmodel Sync

The approach described in this section enables a simple failover and failback scheme. It is not 100% fail save and not every edge case is covered. However it seems to be sufficient for most customers.

Powershell files can be found here:
\\berdatafs01c.de.meteogroup.net\MGDEWSFS01\Software\Weather Data Flow_Tools\DMSync

The idea is to find a way to check automatically which system is the master (most recent) system and contains the latest DesignModel and do a synchronization of the DesignModel to the other system.

The default Master is host01. Failover is host02.

Initialization

On both systems sits a help file (e.g. D:\Software\checkDMsync.txt). The last modified time is used to compare systems.

In the environment.xml a remote node is created:

On host01: <Directory Key="remote" Path="\\host01"/>

On host02: <Directory Key="remote" Path="\\host02"/>

For first setup the files (checkDMsync.txt) needs to be created on both systems. File on host01 needs to be newer than File on host02.

Scenario 1: Normal use (no failover)

Check which file is newer. As long as the file on host01 is newer synchronization to host02 is up and running. After each synchronization process the file on host01 is updated.

If host02 is not available for some reason, obviously no synchronization is done, but file on host01 is updated.

Scenario 2: Master is down

If for some reason host01 is down, host02 has the latest DesignModel. Failover is done automatically by Chyron Weather (environment.xml). As host01 is not reachable, no synchronization is done, but file on host02 is updated.

If host01 comes back, the help file there is older and synchronization from host02 to host01 is triggered. After synchronization file is updated at host01, so it becomes Master again.

Attention! Special case: Network connection gone.

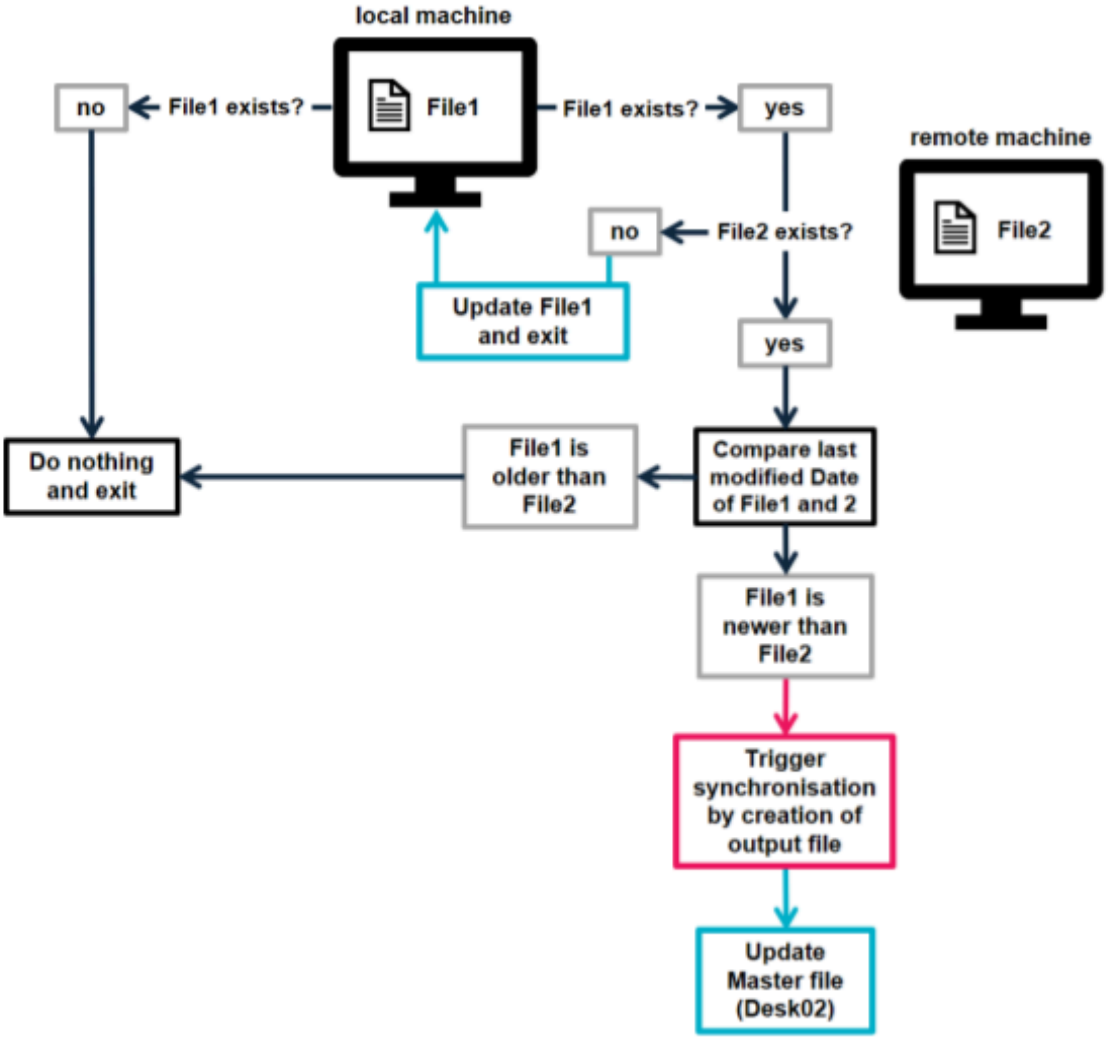
If both machines are working but the network connection is down, the whole process is not working. Both systems will update the help file and if network is restored, there is a 50-50 chance that the correct system wins.

You need to manually do the following (respect the order, it is important!):

1) Delete the help-file on the 'slave' system

2) re-establish network connection

3) Copy an old help-file to the 'slave' system



Lesson STYLEREF \s "Überschrift 1" 9. SEQ Lesson * ARABIC \s 1 2 – Slave Model

Lesson Activities

32 Questions

1. What is a Failover Trigger?
   A. Triggers a failure
   B. Tells everything to shut down in the event of a failover.
   C. A node that takes action in the event of a failover.
2. How do you create a Failover Group?
   A. Select the group node from the palette
   B. Highlight the nodes, right-click and select failover group
   C. In the properties editor
3. Do all nodes have to be placed inside a Failover Group?

33 Answers

1. The correct answer is C.
2. The correct answer is B.
3. The correct answer is No.

24 Tasks

1. Create a new DSG file and add one or more nodes to a Failover Group.
2. Building on the DSG you created in (1), add a Failover Trigger. Think of something that you might trigger in event of a system failover.
3. Convert the Group back to a non Failover Group

Hint: Use the 9_2_Failover_Group DSG for reference

10 Various Topics

Lesson Overview

This lesson will go over various topics in Weather Data Flow.

Prerequisites

Lesson 1

Lesson 2

Rename Product Name

The node is used to rename a VFS product. Only Original Product Name and Modified Product Name are needed.

VFS Sync

It is possible to use this node to sync files stored in a VFS with another store. This is typically used to create a backup. The node can also be used to sync a VFS in whole or in part.

General	
Source VFS Repository	Source VFS Repository for Synchronization (default: DEFAULT)
Source Directory	Directory (Product) in Repository, that should be synchronized
Destination VFS Repository	Destination VFS Repository for Synchronization (default: BACKUP)
Destination Directory	Directory (Product) in Repository, to where data should be synchronized

Environment.xml

The environment.xml file contains configuration information for Chyron Weather. For example, the path to the data, DesignModel and common resources such as textures for use in Weather PresenterGlobe and Weather Panorama and so on.

And it can be used to define variables for use in Weather Data Flow so called “keys”.

This is very helpful if you want to use same dsg on different machines with different paths (e.g. Lesson 9.3) or just for failover reasons.

Example:

_environment.xml:

```
<Directory.Path>
        <Path>\\host01</Path>
        <Path>\\host02</Path>
        <Path>D:\Software</Path>
</Directory.Path>


<!--design model root directory-->
<Directory Key="DesignModels" Path=".\DesignModels"/>
```

In Weather Data Flow:

$(DesignModels)

Lesson Activities

34 Questions

1. What is the VFS Sync node used for?
   A. Syncing files from one VFS to another
   B. Syncing VFS files to a Database
   C. Syncing database info the a VFS
2. What types of actions can be performed using the VFS Sync node?
   A. Download data
   B. Sync data
   C. Backup Data
3. It is possible to use the VFS Sync node to housekeep the destination folder. True or False?
4. What is the environment.xml file?
   A. Defines the environment in Weather Data Flow
   B. Configures the Weather PresenterGlobe environment
   C. Contains the configuration information for Chyron Weather
5. It is possible to define Keys in the environment.xml file and reference them using Weather Data Flow. True or False?

35

36 Answers

1. The correct answer is A.
2. The correct answer is B & C.
3. The correct answer is False.
4. The correct answer is C.
5. The correct answer True.

25 Tasks

1. Review the 10_2_VFS_Synv DSG. Assuming you have access to a VFS, configure it to synch a folder to a location of your choice.

11 Dashboard

Lesson Overview

This lesson shows you how to use the Weather Data Flow Dashboard/Web Interface.

Prerequisites

Lesson 1

Lesson 2

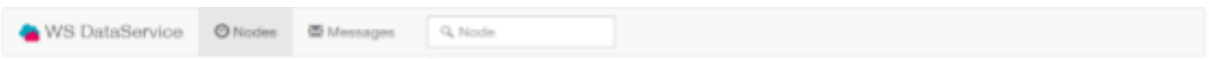
Lesson 3

General

- The ‘Web Interface’ and ‘Weather Data Flow Dashboard’ are used as synonyms.
- To use the web interface the ‚Enable Web Interface‘ in Weather Data Flow Settings needs to be set to ‘true’
- It’s accessible via http://localhost:44700 (HTTP-Port can be changed in Settings).
- The Username and Password is by default ‘admin’ (can also be changed in Settings).
- There are two modes in Web Interface; Nodes and Messages.
- It is recommended to use Chrome.

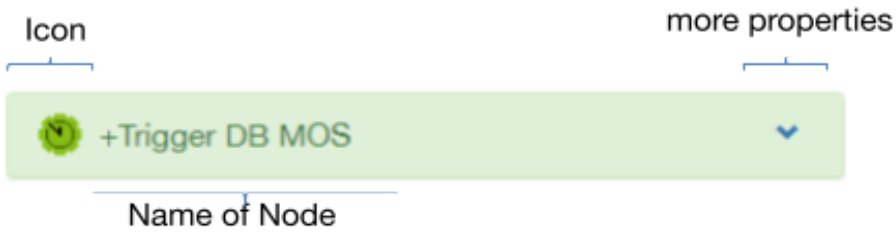
Nodes

‘Nodes’ Mode is selected by default if open the dashboard:



Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 1 – Dashbaord Modes

It shows a list of all Nodes. Each Node is represented with a colored rectangle, a small icon that indicates the type of node and the given name in the dsg



Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 2 – Example Node

Colors of rectangle stand for:

Blue -> not executed so far

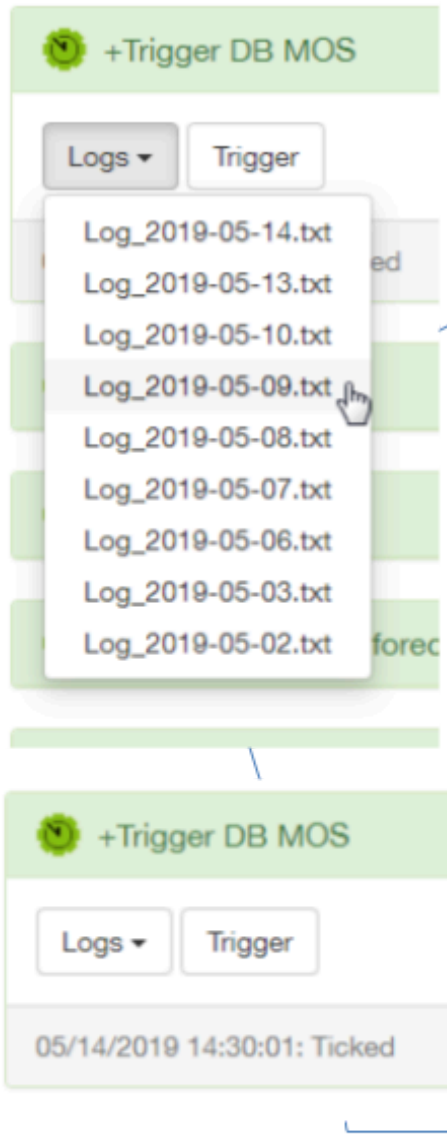
Green -> executed successfully

Yellow -> executed with warning

Red -> executed with error

White -> deactivated (because of another active failover group)

To see more information, click on the arrow on the right



If you click on a log file, a new tab opens with the logfile for this node and the according date and time

trigger-button for manually trigger the node (available for nearly all nodes, not only for triggers)

information about when the node was running the last time and some short information

(ticked for Triggers, how many updates for folder syncs etc.)
for Triggers, how many updates for folder syncs etc.)

Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 3 – Logs and Tigger Explanation

Visibility

If there is a Nodes that you do not want to see in the list of the web interface, you can switch it off.

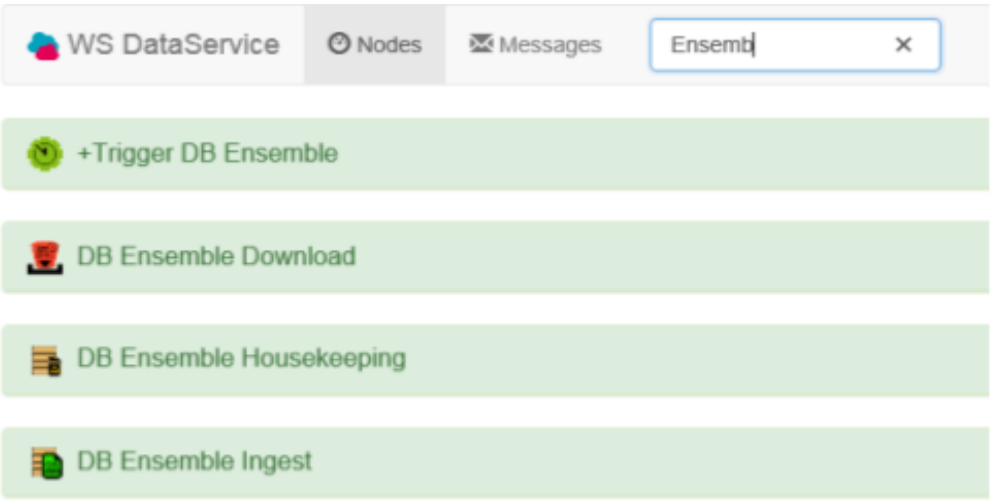
In the dsg there is a small icon of an eye on the right of the head of the node. If you click on it, the eye gets light grey and the node will not be visible anymore in the web interface

Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 4 – Changing Visibility in WSDS

Filter

If you are working with complex configurations, you will recognize that it is just not user friendly to work with the whole list of nodes, but you cannot make all nodes that you don't want to see at this very moment invisible in the dsg, because that would be even more intricately, therefore you can use the filter option:

If you enter a string in the text field, only nodes containing this string will be shown

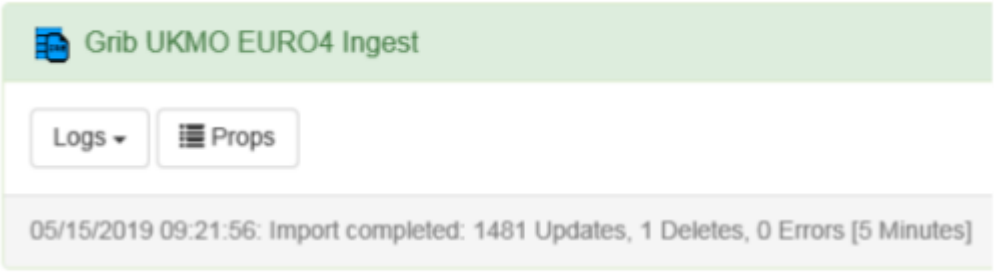


Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 5 – Node Filtering

Following a solid and thought through naming convention for your nodes will enable you to use the filtering more effectively (e.g. to filter for all the nodes of one processing chain). See Lesson 12

Disable Modelrun/Geoimage

If you click on an ingest node, you will not see the trigger option but ‘Props’



Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 6 – Props

If you click on ‘Props’ you will see a list of all released Objects (Images or Runs). You can disable one if you click on the blue button on the right and confirm with clicking on ‘OK’.

Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 7 – Disabling Objects via Props

Messages

If you click on the messages tab on the menu bar, you see all messages.

Lesson STYLEREF \s "Überschrift 1" 11. SEQ Lesson * ARABIC \s 1 8 – Message Bar

You can filter by selecting Infos, Warnings or Errors.

Furthermore, you can filter and search for strings in ‘Sender’ (Node Type) or in Message

Lesson Activities

37 Questions

1. What is the Weather Data Flow Web Interface?
   A. Online Weather Data Flow Editor
   B. Dashboard
   C. Settings for Weather Data Flow
2. What information does the Weather Data Flow Web Interface provide?
   A. Warnings
   B. Info
   C. Errors
3. What tasks can you perform using the Weather Data Flow Web Interface?
   A. Triggering Nodes
   B. Set Trigger times
   C. Housekeeping
4. What options are available for filtering messages using the Weather Data Flow Web Interface?
   A. By date and time
   B. Selecting the type of messages, you would like to see
   C. Search for a keyword in Sender or Messages
5. How do you access Logs using the Web Interface?
   A. http://localhost:44700
   B. It is defined in the Settings
   C. Access through the Weather Data Flow tray
6. How do you manage Model Runs using the Web Interface?
   A. In the Logs
   B. It can't be done
   C. In the Props menu

38 Answers

1. The correct answer is B.
2. The correct answers are A & B & C.
3. The correct answer is A.
4. The correct answer in B & C.
5. The correct answer is A.
6. The correct answer is C.

26 Tasks

1. Check that the Weather Data Flow Web Interface is configured for use on your system. (Hint: check Weather Data Flow Settings via the Weather Data Flow Tray)
2. Launch Weather Data Flow Web Interface. Review the Nodes and Messages options. Use the supplied shortcut. Credentials are stored in accompanying README.
3. Assuming a valid DSG is available, review the actions you can perform via Nodes.
4. Assuming a valid DSG is available, review messages. Filter them.

12 Naming Convention

Lesson Overview

This lesson will guide you through naming conventions proposed for Weather Data Flow. The naming convention is not only important for giving nodes a proper name but mainly for maintenance and support.

For more complex configurations you cannot see the entire list of nodes in the dashboard (web interface) at once without using the filter option.

If a filter is used, all nodes of a process chain should be visible -> goal of naming convention.

The following formatting conventions are used for this lesson:

- *italic* text is used as a placeholder
- a * (star) marks a text as optional

The naming convention is not mandatory but recommended. It is a good practice to adopt and stick with it.

Prerequisites

Lesson 1

Lesson 2

Products

As VFS and Weather Data Flow are intimately connected with each other, we will first explain the naming convention for VFS products.

Product Name

Product names are the names of the products in the VFS. To give same or similar products at different customers the same name will make it easier to maintain Weather Data Flow/VFS. Even for products that are unique to one customer it is good to adhere to the same principles. That way anybody familiar with Weather Data Flow (e.g. support) will be able to quickly comprehend the new data products and processing flows. It is useful to give the product in VFS and node in Weather Data Flow the same name

Product-Name = Product-Type_Product-Description

Attention!

All **Product names** in VFS do not contain any space characters, only underscore characters.

All **Node names** do not contain any underscore characters, only space characters

Product Types

The Product-Type gives general information about which kind of data we are dealing with.

List of all Product Types (May 2019):

- DB (Pointdata that is inserted into the Database)
- Grib (Gribdata)
- Rad (Radar images)
- Sat (Satellite images)
- XML (XML files)
- JSON (JSON files)
- IMG (Images that are not Radar or Satellite)

Product Description

The Product-Description gives more detailed information about the kind of data

Database

As the data is not ingested into the VFS, there is no need of giving the node the same name as the product in VFS (because there is none). To be consistent product is named after table in the database.

Example:

- DB_MOS (for t_data_mos)
- DB_OBS (for t_data_obs)
- DB_pollution (for t_data_pollution)

Sometimes the table names are very long and a shorter name makes sense

Example:

DB_lightning (for t_data_lightningtiles_weighted)

Grib

Information about the provider and model/spatial resolution, sometimes also about the area (cutout) or downscaling.

List of frequently used models (May 2019):

- ECMWF_0.125 (fcst-nwp.ecmwf.hres.sh.s3.mg/0125x0125/derived)
- ECMWF_0.2 (fcst-nwp.ecmwf.hres.sh.s3.mg/02x02/derived)
- UKMO_0.234x0.156 (fcst-nwp.ukmo.global.sh.s3.mg/0225x0156/derived)
- UKMO_EURO4 (fcst-nwp.ukmo.euro4.sh.s3.mg/004x004/derived)
- UKMO_UKV (fcst-nwp.ukmo.ukv.sh.s3.mg/002x002/atomized)
- NCEP_GFS (fcst-nwp.ncep.gfs.sh.s3.mg/025x025/derived)

Downscaling

If the model is downscaled, information will be added with 'down' and the resulting resolution. This processing step can be useful to speed up loading time or to save resources (memory) and thus avoid performance issues (See Lesson 8).

Example:

- Grib_ECMWF_0.125_down_1.0
- Grib_UKMO_0.234x0.156_down_0.468x0.312

Cutout

If the model is cut, information will be added with 'cut' and a representative abbreviation for the location in capital letters.

Example:

- Grib_ECMWF_0.125_cutEU
- Grib_UKMO_0.234x0.156_cutUK

Downscaling + Cutout

If model is downscaled and cut, both information will be added in fixed order: first cutout, secondly downscaling.

Example:

- Grib_ECMWF_0.125_cutEU_down_1.0

Radar

Naming convention covers information about the extent of the radar image (area) and the type – e.g. intensity (default), precipitation type or other specifics

Example:

- Rad_EU
- Rad_PL_prectype

If forecast radar is available, two separate products with OBS and FCST in the end of the product name will be ingested and via product merge released as one combined product.

Satellite images

Naming of satellite images should hold the following information: provider, channel (visible008, infrared108, ...), area covered (if cut) or other specifics.

Example:

- Sat_Meteosat_vis008
- Sat_Meteosat_ir108_cutNH
- Sat_Meteosat_hrv
- Sat_MG_ir108_fullearth

XML

Information about the data or other specifics.

Example:

- XML_Pollen
- XML_Warning_modified
- XML_Shipping_areas_latest

JSON

Json or geojson files can be used for various data types. Currently the format is used for fronts or hurricane tracks.

Example:

- JSON_Fronts
- JSON_Hurricanes

Images (geoImages)

Images that are not Radar or Satellite images, like Weather PresenterGlobe Cloudforecast or Monsoon images, prerendered lightning or flooding data, or any other image based data.

Example:

- IMG_ME_CldFcst_ECMWF
- IMG_ME_CldFcst_UKMO
- IMG_ME_Monsoon

Nodes

All nodes within a processing chain should start with the same name (for filter option in dashboard), but each node needs have a unique name.

Trigger

To see all triggers at the top of the list of the dashboard (see Lesson 2), a plus ('+') is used in front of the name

+Trigger *Product-type Product-description**

- Product-Type and Product-description are the same as for products
- Product-Description is only needed if there is more than one Trigger for one kind of data

Examples:

+Trigger	*Product-Type*	*Product-Description**
+Trigger	Grib	
+Trigger	DB	MOS
+Trigger	XML	Pollen

Data related Nodes

Including all Nodes that handle data:

- Time-Referenced S3 Download, VFS Product Release, MySQL CSV Ingest, …
- all other nodes that are used in the data processing chain

Product-Type Product-Description Product-Description2* Node-Type/Task

- Product-Type and Product-description are the same as for products
- In Case the processing chain divides in two or more different tasks (Processing chain -> Processing tree), it's necessary to add even more detailed information (Product-Description2)
- In the end there is a short explanation of the task the node is doing, often it's the same as the Node-Type, but for special Nodes (like CMD Runner or Time-Refereced File Renaming) another buzzword is useful

Examples:

Product-Type	*Product-Description*	*Product-Description2**	*Node-Type/Task*
Grib	ECMWF 0.125		Release
Radar	DE FCST		Ingest
XML	Warning		Download
Grib	ECMWF 0.125	cutUK	Cutter

Housekeeping

For reasons of clarity housekeeping should be handled like a product.

Examples:

+Trigger DB Housekeeping

DB MOS Housekeeping

Other Nodes

All Nodes that are not connected to weather data (e.g. folder synchronization, custom workflow, etc.).

Process-Name Process-Description* Task

Example (DM-Sync)

+Trigger DM Sync

Process-Name	*Process-Description**	*Task*
DM Sync	check files	
DM Sync	trigger sync	
DM Sync	folder sync	
DM Sync	update check file host1	

Example (Render-Job)

+Trigger Render Job

Process-Name	*Process-Description**	*Task*
Render Job		copy files

Example (ME Cloudforecast Workflow)

+Trigger ME Cloudforecast

Process-Name	*Process-Description**	*Task*
ME Cloudforecast	ECMWF	Watch
ME Cloudforecast	UKMO	Watch
ME Cloudforecast	ECMWF	Image Magick
ME Cloudforecast	UKMO	Image Magick

Lesson Activities

39 Questions

1. Why follow a naming convention? What are its advantages?

40 Answers

1. It helps with maintenance and support. It helps with filtering or allowing you to see the most important node at the top in the Weather Data Flow Dashboard.

27 Tasks

1. Create a new DSG file. Add some nodes and name them in a consistent manner.
2. Load the new DSG.
3. Review the configuration using Weather Data Flow Web Interface. What do you notice about the names you used?

Glossary

Dashboard

The web interface that allows you to trigger events and check for error.

Palette

The palette contains all of the nodes.

Pins

Pins connect the nodes together.

Property Editor

Show the properties of the node.

View Port

Shows the schematic illustration of configuration.

List of Figures