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EuroScope Users Manual

For version 3.2.12

Gergely Csernák

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About EuroScope

Major updates since v3.2

v3.2.12 (https://www.euroscope.hu/wp/2026/04/05/v3-2-12/)

- Import aircraft from another scenario file
- Import aircraft from *.DAX file (HungaroControl scenario files)
- Simulated AC route from flight plan with altitude options

v3.2.11 (https://www.euroscope.hu/wp/2025/12/13/v3-2-11/)

- Introduction of LOOPBACK server. Selecting LOOPBACK server, simulator sessions can be run without external FSD server. Easier for self training.

v3.2.10 (https://www.euroscope.hu/wp/2025/06/22/v3-2-10/)

- AUTOMATIC server IP from http://fsd.vatsim.net/.
- Draw route on direct popup.
- Flight Plan list ordering – multiple columns.
- Pending Coordination list.

v3.2.8 (https://www.euroscope.hu/wp/2024/02/10/v3-2-8/)

- METAR is get using https://metar.vatsim.net/ and not the FSD server.

v3.2.7 (https://www.euroscope.hu/wp/2023/12/28/v3-2-7/)

- Aircraft performances are loaded from an external file (AircraftPerformance.txt).
- Multiple frequency text chats are moved to a single TAB in the chat area.

v3.2.4 (https://www.euroscope.hu/wp/2023/12/03/v3-2-4/)

- Secure token-based authentication when connection to VATSIM.
- Shift change support.

v3.2.2 (https://www.euroscope.hu/wp/2023/02/19/v3-2-2/)

- Multiple (up to 4) ATIS connections.

v3.2.1.33 (https://www.euroscope.hu/wp/2022/01/02/v3-2-1-33/)

- Detect and use ICAO format equipment codes in FP.

v3.2.1.27 (https://www.euroscope.hu/wp/2021/04/08/v3-2-1-27/)

- Ground states.
- New ground controller lists.
- Estimated ground times.

v3.2.1.24 (https://www.euroscope.hu/wp/2020/04/12/3-2-1-24/)

- All frequencies are displayed in 3 digits.
- Upgrade to Visual Studio 2019 and toolset 142. I included the necessary Microsoft DLLs to the ZIP file, but if you failed to start the new version install the latest redistributable package from Microsoft: https://aka.ms/vs/16/release/vc_redist.x86.exe
- Complete removal of the old VATSIM voice library.

v3.2.1.18 (https://www.euroscope.hu/wp/2018/10/14/v3-2-1-18/)

- Piloting list – New list for Pseudo Pilots.
- New simulator feature: Instructions.
- Departure/arrival dependent TAG background coloring.

Version 3.2 has arrived! Some highlights of the new release:

- Complete new simulator structure. More control over the planes, predefined taxi routes, artificial intelligence for ground traffic.
- Improved STCA and and a brand new MTCA tool - the CARD list is available.
- Flight plan separation tool.
- Probing tools - check conflicts before issuing the clearance.
- New radar antenna handling.
- TAG item coloring on departure/arrival.
- MSAW warning.
- Save tracking information on disconnect and restore them after reconnect.
- Plug-in environment: `CAircraft` class is deleted but `CFlightPlan` and `CRadarTarget` are introduced.
- And many-many more fixes and new features - well we got 5 years for them :)

Download the latest version of EuroScope and see for yourself.

Credits for v3.2

Once again, the new release was real teamwork. I should say thank you to all the members of the beta team. It is hard to pick individuals from the team. But surely there are some points:

- **János Bencsik** – For many new ideas about the probing tools and conflict detection.
- **Eric Bocaneanu** and **Alexandru Grama** – For building the company ATCOsim (http://www.atcosim.com/).
- **Todor Atanasov** – For the countless answers on VATSIM forums.
- **Juha Holopainen**, **Georg Lauenstein**, **Eric Bocaneanu**, **Zsolt Daniel** – For the WIKI page updates (that seems to be the biggest work for EuroScope).
- Old and new members of the beta team (without names) – To help me for five long years from 3.1 to 3.2.

Credits for v3.1

Once again, the new release was real teamwork. I should say thank you to all the members of the beta team. It is hard to pick individuals from the team. But surely there are some points:

- **Stephan Boerner** – Who updated extreme number of pages of this documentation. Without it the release date would not be in 2009.
- **Craig Phillips** – Who made the ASE repository available directly from EuroScope. He also modified the ASE editor to use the new features EuroScope is offering in the scenario file.
- **Arthur Bocaneanu** – For creating the default sounds set.

Credits for v3.0

Without the help of several supporters EuroScope would never become a public VATSIM radar client. Therefore, I would like to thank this help to:

- **Attila Ábrahám** - He inspired me to work on the new features and most importantly the ongoing Coordination. He always supplied me with all the information that was necessary to have it as close to the real-life system as possible. And I have to say that (among others) Attila has the most rigorous eye on functionality. He also created a full featured ATIS interpreter.
- **Todor Atanasov**, **Bernard Candela** and **Stephan Boerner** - They helped me a lot to finalize the documentation you are reading just now.
- **Sami Ylismäki** - for creating UNIAtis, the customizable ATIS interpreter (http://www.uniatis.net/).
- **Juha Holopainen** - for collecting and converting all the aircraft data for EuroScope.
- **Tobias Reimann** - for creating a EuroScope extract function from his ICAO airlines database (http://vatdb.tr-media.org/).
- All the beta testers - Once again they helped me a lot to fix bugs, implement the right functions you need for everyday controlling.

Credits for v2.9

- **Eric Bocaneanu** - Who always believed that we could make a client that can be accepted by VATSIM governors. He made all the discussions and advertisements to start the beta testing EuroScope. He also helped me a lot in testing, writing documentation and making suggestions.
- **Péter Selmeci** - Who created the initial WEB site, redesigned my awful WEB pages. He helped with testing, writing the documentation and also with lots of new ideas.
- **Péter Selmeci** and **Iván Radó** - For the name: EuroScope.
- **Attila Ábrahám** and **Ádám Orbán** - They made a really strong pressure on me to develop EuroScope to the good direction. They also helped me a lot in testing.
- **Dani Vértesy** - To help me write this page among others.
- **Iván Nagy** - Who registered euroscope.hu domain for me without any cost so far. UPDATE: It worked for 15 years for free. But I had to reregister it in 2019.
- **Todor Atanasov** - Who created the final WEB site. UPDATE: It was changed to WordPress later.
- **Ross Carlson** and **Ben Supnik** - They helped me a lot with how to make EuroScope VATSIM compatible. I received immediate support when I had any technical questions about the FSD protocol or VATSIM voice library. Ross made the beta test possible and updated my beta test members regularly.
- **Richard Stefan** and Navigraph FMS Data Support - They allowed me to pack the FMS data with the installer of EuroScope. If you need to update the AIRAC cycle visit

http://www.navigraph.com/ for the latest release. Always download the version for FSNavigator 4.X.

- All beta test members - They tested EuroScope in different environments and surely in different ways. Many things that I would have never thought of were discovered by them. And they also helped me write this documentation.
- All VACCHUN members - Who was not part of the beta test team still helped me a lot on testing VRC and ASRC compatibility questions.

Table of contents

Quick Start

Installation

The step-by-step instructions are available in the *Installation* page.

What You See

- *Profile file selection* - When you start EuroScope for the first time it will ask for the profile file to be used. Use the one for Hungarian Matias if you do not have any other or simply cancel it for an empty one. If you do not select profile file or your profile does not have a reference to a sectorfile then your radar screen will be completely empty. In that case load the sectorfile manually. Any ASRC or VRC SCT or SCT2 file can be used.
- *Radar screen configuration* - Normally EuroScope saves your display settings to files with **`*.ASR`** extensions. When you start EuroScope it will load the last opened **`*.ASR`** file. But if you start it for the first time then obviously no such file exists. In this case the default settings will be applied to your first screen. It will contain only the VOR symbols, airport names, high airway lines and ARTCC boundaries. Be sure to open the Display Settings dialog to switch on and off the individual items, modify the radar layout to your taste and save it into an **`.ASR`** file for your next session. If you do not like the default coloring or line styles just go to the Symbology Settings dialog and change.
- VATSIM servers' data - In the bottom message you can see that EuroScope collects data about the available servers in VATSIM. Every time you start EuroScope a random server will be selected to serve as server data feed and as statistical data feed.
- VATSIM statistics data - As you start EuroScope just wait for 10-30 seconds. After that period the radar screen comes alive and displays controllers and aircraft just as if you were connected and online. That is because EuroScope incorporates with VATSIM statistics data. It downloads data about the online members and starts simulating them while you are offline. But in this state, you can start analyzing the traffic, see who is online, what is next on VATSIM.

Tip: Open *Voice Communication Setup* and select any position as primary frequency. The radar screen will be displayed as if you were online with the callsign of the voice connection name and frequency.

Installation

If You Have Previous Release Installed

In case you are updating a version before v3.2.2, it highly recommended to save all your important files, uninstall the v3.2 version and make a clean install of v3.2.3.

There has been a change since v3.2.2 in the installation structure. All files that were stored in the Documents folder now moved to the **`AppData`** folder. The reason for that is that since win10 Microsoft treats the Documents folder as "Protected Folder" by default. This caused problems saving the downloaded files for EuroScope.

Download

You can download the latest MSI installer from https://euroscope.hu/install/EuroScopeSetup.3.2.11.msi

Installation

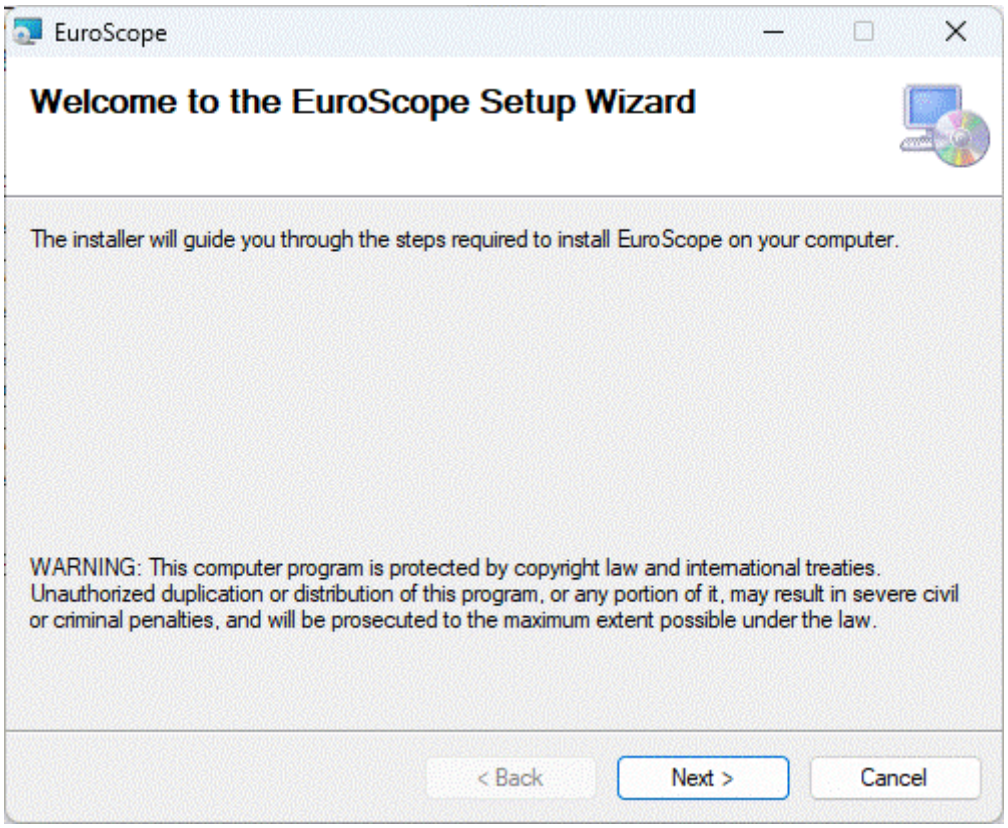
Installation of EuroScope is easy. Just follow the instructions of the installer. Well, the only thing you should specify is the folder you would like to put the files in.

Prerequisites

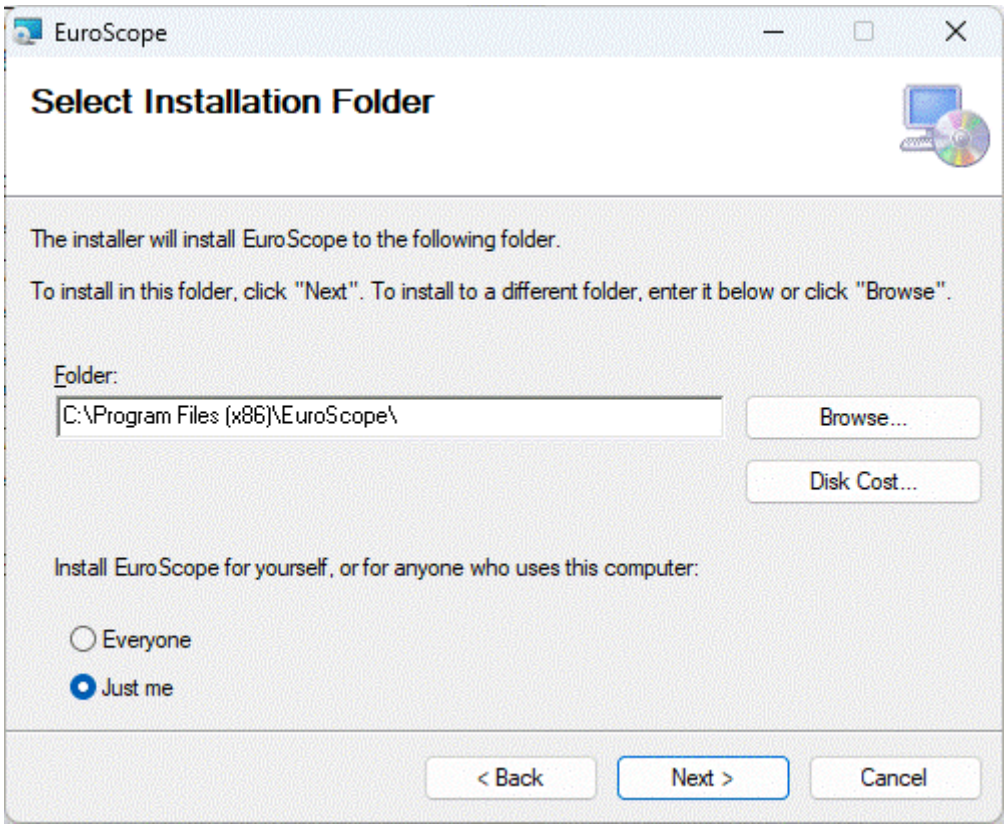
Before installing EuroScope v3.2.4 and later be sure to download and install the latest C++ redistributable package from Microsoft: https://aka.ms/vs/17/release/vc_redist.x86.exe

Installation Process

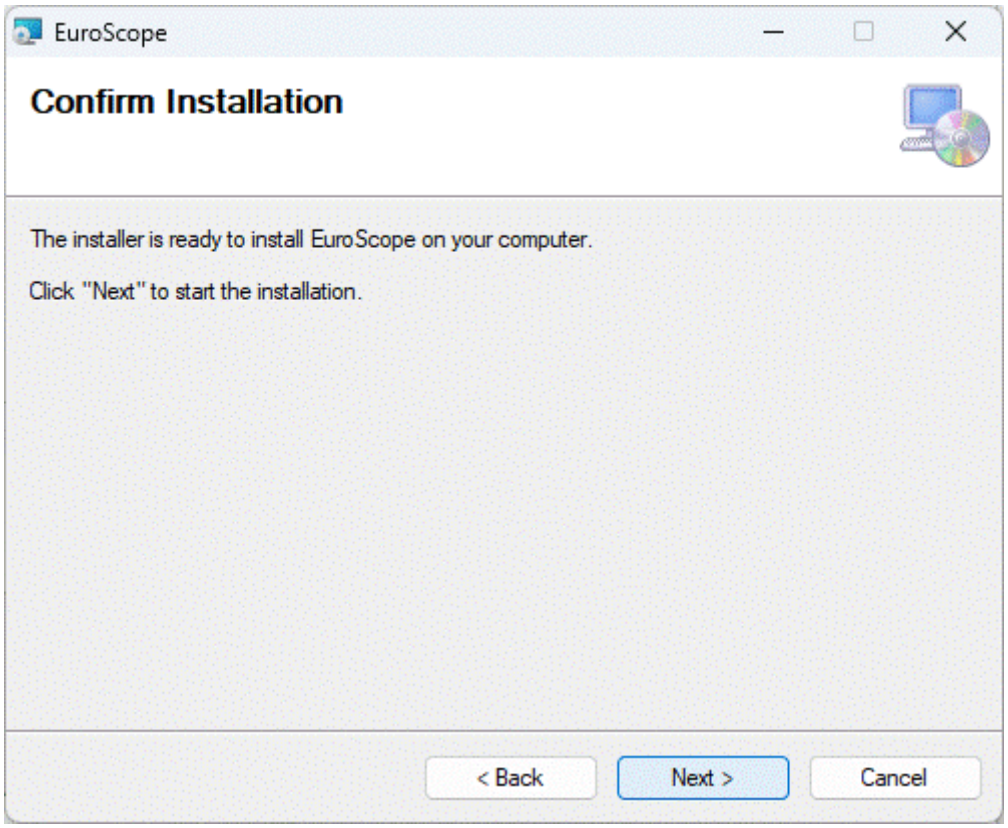
After some preparation seconds the installer's Welcome screen appears:



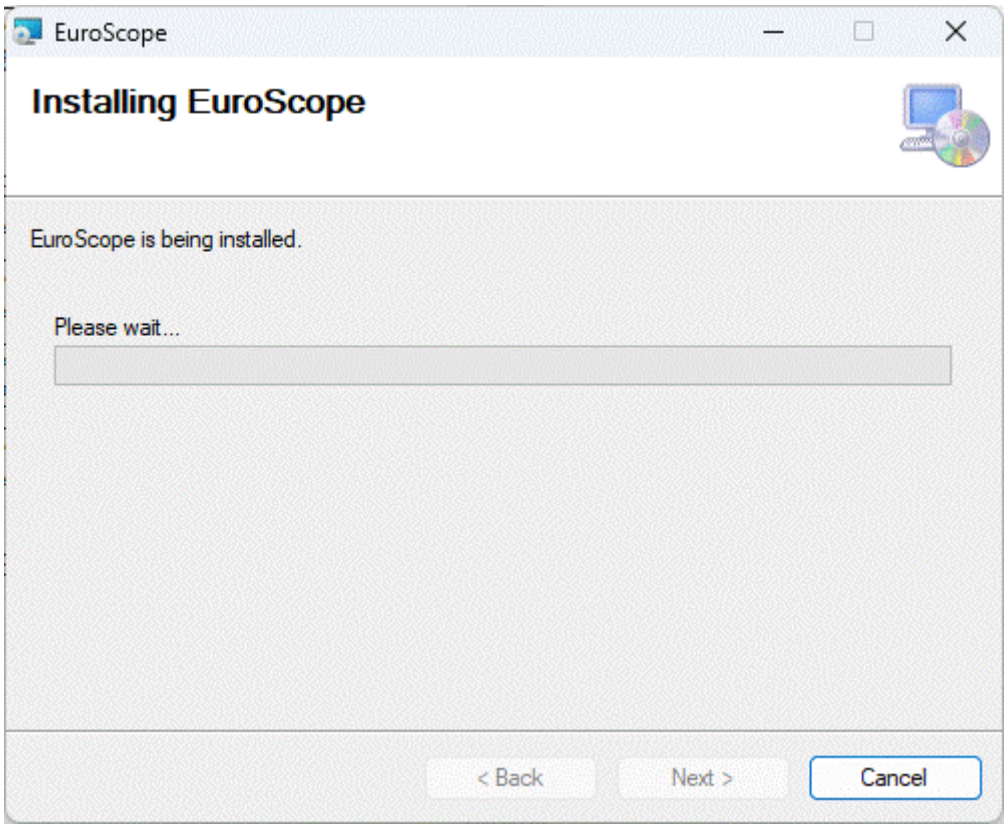
Just press Next to get to the location selector screen:



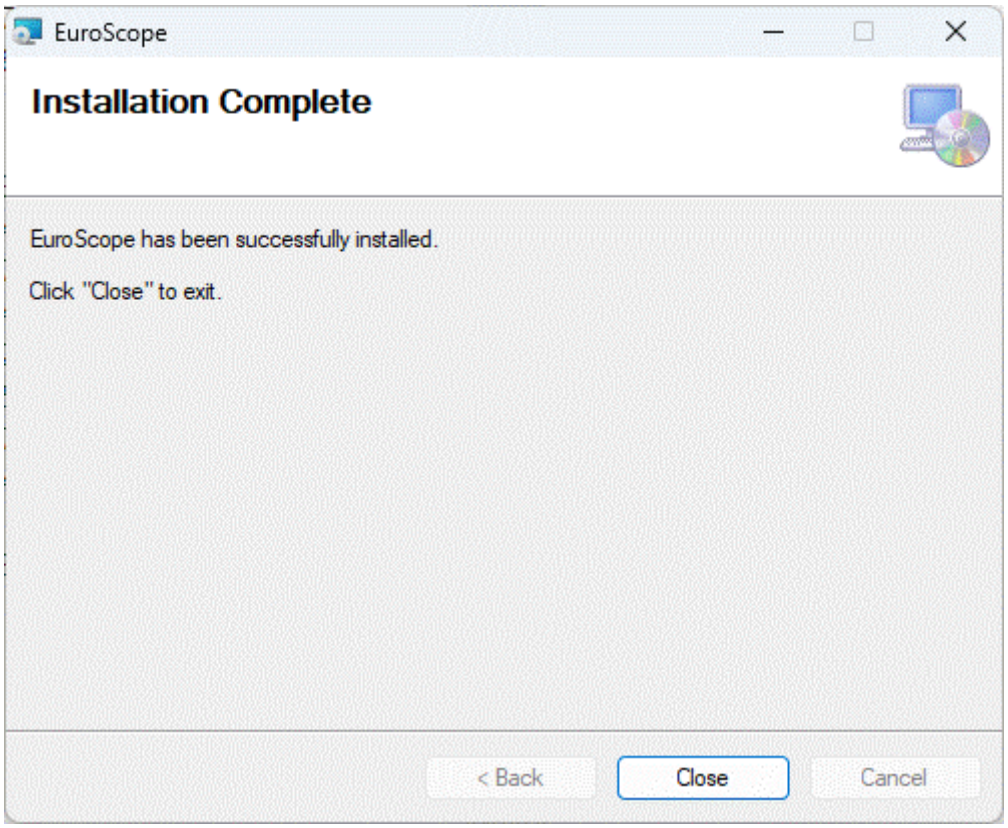
Select the appropriate folder where you would like to place EuroScope. Then press Next again to see the final confirmation screen:



Simply press Next if you are sure to install EuroScope. The rest is automatic. The progress bar will go from 0 to 100% several times then the installation is ready. You should get a system prompt if you wish to allow the installer to modify the system. Select "yes", to continue:



Note:' Sometimes it seems that the installation progress is freezing up or you get no response from the progress, but it works so be patient and wait until the progress is finished.



Press the close button and go to the Start menu and under Programs you will find EuroScope current version. Just start and enjoy using it.

If it is the first time you have installed EuroScope be sure to follow Quick Start page instructions. Furthermore, for more complex training or elaboration contact your VACC Trainings Department (TD).

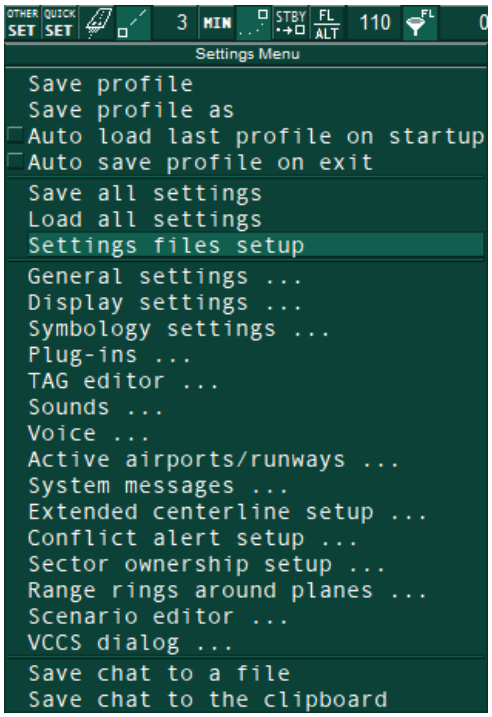
Another Important Note About TrueType Fonts

It seems that in some cases (mostly on Vista or Windows 7, depending on the user right) the installer is unable to install or overwrite the font set that was installed before. That will cause some symbols to be missing in the new release. If you experience this then go to the EuroScope installation folder and install the **`EuroScope.ttf`** font manually.

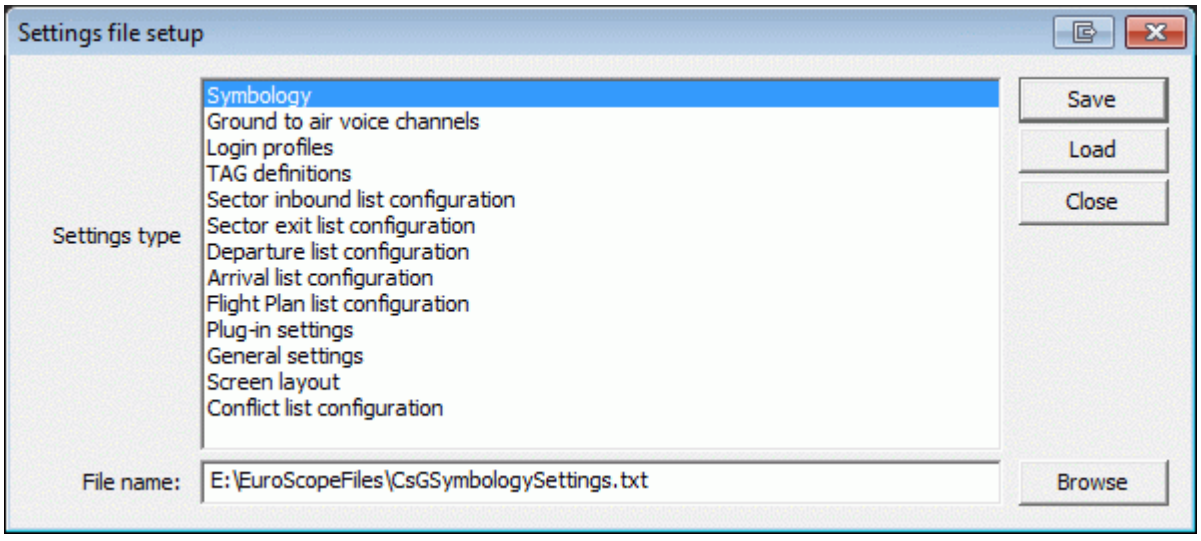
Where Are My Settings Saved

About Settings

In EuroScope you can specify all files to store the individual settings in. The dialog for this is in the *Other Settings* menu.



In the dialog you can specify the files including the paths to the files. You can combine several settings into one file, if you want them to be stored and loaded only in combination.



Settings Files

Those files contain several different kinds of settings. You can open them with a text editor to learn more since there are many parameters, most of them being self explanatory.

You can specify individual files for the following settings:

- *Symbology* - Here you can find the values from the symbology settings dialog. It describes what colors, sizes, and line styles to be used for the map display.
- *Ground to air voice channels* - You frequencies / voice channels from voice communications setup dialog.
- *Login profiles* - The login profiles from the connect dialog. It contains the callsign, facility, range and ATIS lines.
- *TAG definitions* - The user defined TAG families.
- *SIL, SEL, DEP, ARR, FP and Conflict list configuration*' - The definition of the advanced AC lists.
- *Plug-in settings* - any plugin specific settings.
- *General settings* - All lines beginning with m_ are the general settings. You can change them via the Quick SET menu or one of the settings dialogs. I suppose the names here are readable.
- *Screen layout* - all settings related to the screen layout, which are not stored in the ASR-file.

You can also combine some of those settings into one file, for example you can create a screen layout including lists by using the same file for list configurations and screen layout.

If you have a complete settings file from 3.0 then follow the steps to use them in 3.1:

- Open the **Settings file setup** dialog box.
- Enter the file name where your settings are into EVERY group.
- Press the LOAD button to load the values into memory.
- Then you can save them to individual files (if you want to) or just keep all your settings in one file.

The Profile Files

The profile files are created to store all installation or workstation dependent information. They are not intending to be moved from one workstation to another as there are full paths, video card size information there too. The profile files are just plane text files (it is quite common for EuroScope) with the extension PRF. You can put them in any place in your workstation.

The good thing about saving this data to a file instead of the registry is that you may have as many configurations as you need. All profiles are completely independent from the others (except if they are referencing to the same files). The name of the profile file can also be used as a command line parameter for EuroScope. In this way you can set up as many shortcuts and desktop icons as you need and start the right configuration with a double click.

Only the name of the lastly used profile file and two flags (to indicate auto load and auto save of the last profile) are stored in the registry.

Going into details about the profile file: As the data here came from the registry, it is structured like the registry entries. First the section names after that the key itself. In the file the following information is stored:

- **LastSessionsection** - It contains data about your last EuroScope session. They are one by one related to the fields in the *Connection Settings*. The only exception is the ATIS airport and letter that is used in *ATIS Connections* dialog.
    - **atis_airport0-3** - the four airports served by voice ATIS
    - **atis_letter0-3** - the last time used ATIS letters in your airports
    - **atis_url0-3** - the last time used ATIS extractor URLs for your airports
    - **atis_freq0-3** - the last time used ATIS frequencies for your airports
    - **atis2**, **atis3**, **atis4** - the text ATIS message lines (numbered from 2 for background compatibility)
    - **callsign** - the connect callsign
    - **certificate** - your VATSIM ID
    - **connecttype** - a code how you connected last time
    - **facility** - the facility of the last session
    - **nonvatsim** - indicate that last time you connected to EuroScope FSD server
    - **password** - the password entered - **Important**: your password is stored in this file without any encryption.
    - **playback** - the last playback file with full path name
    - **proxyserver** - the name of the proxy server computer
    - **range** - the visual range of the last session
    - **rating** - your rating
    - **realname** - your real name
    - **scenario** - the last use simulation scenario file with full path
    - **server** - the lastly connected VATSIM server
    - **simdatapublish** - how to publish the simulation data to the server
    - **SimFolder** - the folder of the last scan for FSX/P3D **SimObjects**
    - **tovatsim** - Indicates that last time you connected to a VATSIM server
- **RecentFiles** section - It is a simple numbered list of your lastly used ASR files. The files here will be displayed in the SCT menu.
- **Settings** section - In this section there are data about how your environment is set up. What configuration files do be loaded and what hardware elements do you use:
    - **aircraft** - full or relative path to the ICAO Aircraft file
    - **airlines** - full or relative path to the ICAO Airlines file
    - **airports** - full or relative path to the ICAO Airports file
    - **airways** - full or relative path to the FSNavigator database
    - **alias** - full or relative path to the alias file
    - **AselKey** - the aircraft select key code
    - **FreqKey** - the primary frequency key code
    - **ipaddr** - full or relative path to the VATSIM server descriptor file
    - **sector** - the main sector file (as it is from the last session it may be better to put to the Last Session section)
    - **SettingsFiles** - full path to the settings files (many installation independent data is stored there)
    - **LoadedPlugIns** - full or relative path to the DLL files
- **Sounds** section - Full or relative path of the file names used for voice messages. They are not self-explanatory, just numbered.

Important note: As you see from the above list, your last session username and password are in the profile file. **And they are there without any encryption**. Therefore, be very careful and **DO NOT** give, send, share your profiles to anyone else.

ASR Files

The ***.asr** file contains your current Display Dialog settings. It describes what items are to be displayed from the sector file. It also contains some screen-depending settings and the use of *Professional Radar Simulation*.

Once again without the complete description some notes about the lines inside:

- **`SECTORFILE`** - The path of your current sector file this ASR is used for. When you open an **`ASR`** it will look to see if the sector file is loaded or not. If not, then it loads the appropriate one.
- **`SECTORTITLE`** - Just quick access to the title to show in the popup list.
- **`DisplayTypeName`** - The name of the screen type. The default value is '*Standard ES radar screen*'. Others may be created by the plug-ins.
- **`DisplayTypeNeedRadarContent`** - It indicates that background SCT file elements are drawn for the screen or not.
- **`DisplayTypeGeoReferenced`** - It indicates if coordinates are latitude/longitude pairs or just pixels.
- **`SHOWC`** - (value if 1 if checked or 0 if unchecked) „Squawk C aircraft" option.
- **`SHOWSB`** - "Show Squawk STBY aircraft" option.
- **`BELOW – NNNNN`**. The value if you choose not to display aircraft below **`NNNNN`** feet altitude (your floor level). Zero indicates no filter at all.
- **`ABOVE – NNNNN`**. The value if you choose not to display aircraft above **`NNNNN`** feet altitude (your ceiling level). Zero indicates no filter at all.
- **`LEADER`** - The length of the leader line. Positive values are interpreted as NM, negative as MIN.
- **`SHOWLEADER`** - Indicates if the leader line should be shown as default or not.
- **`TURNLEADER`** - It indicates a route following leader line.
- **`HISTORYDOTS`** - The number of history trails appearing for each aircraft.
- **`TAGFAMILY`** - The name of the tag family used (generally MATIAS (built in)).
- **`WINDOWAREA – param1:param2:param3:param4`** - The geographic coordinates in degrees of the bottom left corner and of the top right corner of the scope. It is important that even if you do not change any settings, just zoom in and out and pan, this value is most likely to be updated. In this way it is quite normal that you will be prompted at nearly all ASR close to decide whether to save or cancel the update of the area.
- **`SIMULATION_MODE`** - The ID of the simulation mode (professional radar, easy radar and two ground modes).
- individual sector file elements - Then follows the list of all your checked items in the display dialog. You cannot save the **`SECTORLINE`** and **`SECTOR`** elements as they can be switched on just for debugging purposes and not for next session's display.

Sector Files

Sector files are the files which contain all information about the area you want to control. EuroScope can use the same sector files as ASRC or VRC. There are some places where you should or can modify them.

Runways

The first is the Runway section. It is described in the *Quick Start* page too. You should modify this to be able to display and use the runway data inside EuroScope.

Original:

```
[RUNWAY]
13L 31R 130 310 N047.26.43.520 E019.15.27.180 N047.25.22.620 E019.17.37.880
```

Modified to:

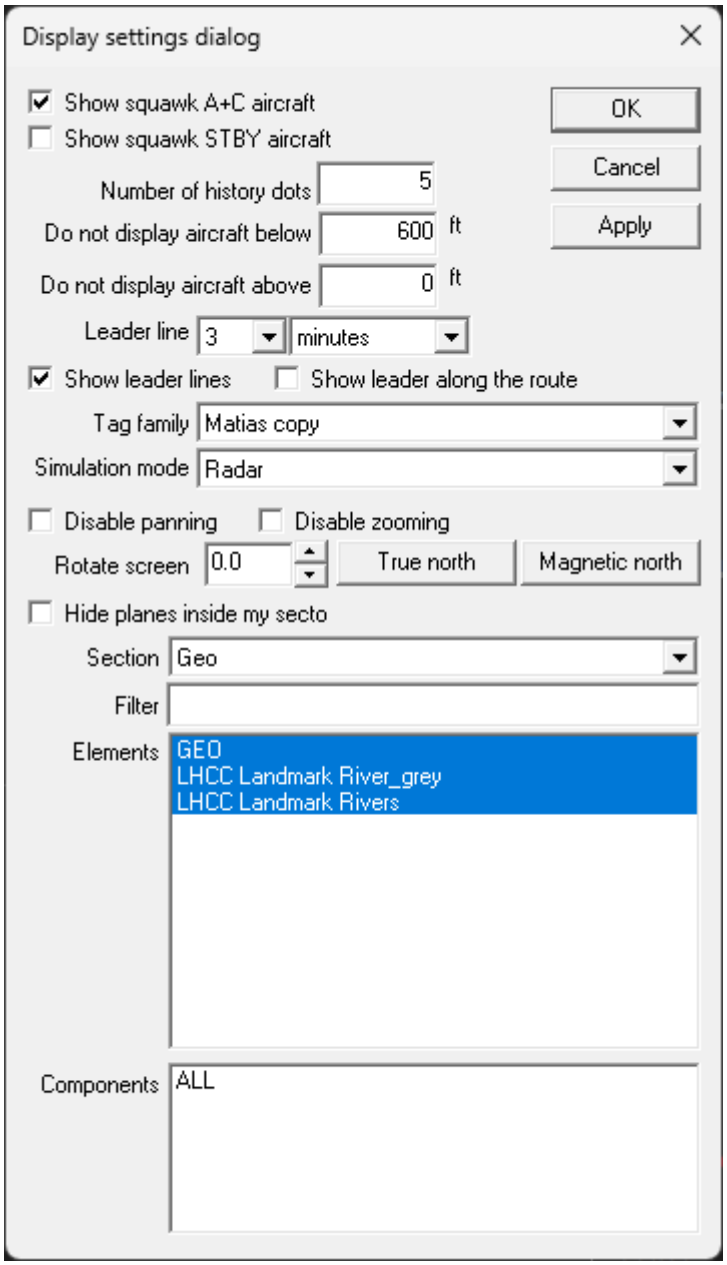
```
[RUNWAY]
13L 31R 130 310 N047.26.43.520 E019.15.27.180 N047.25.22.620 E019.17.37.880
LHBP Ferihegy
```

GEO section

There is another option for the GEO section. In a ASRC/VRC sector file, GEO lines appear like that: **N036.58.51.798 E008.51.32.509 N036.58.50.305 E008.51.32.422** white

So, in VRC, you can display GEO lines or not but always as a whole. You can display GEO lines or not, in the same manner as with VRC. But EuroScope allows us to define sub-categories in GEO lines by adding a category name at the beginning of each normal GEO line like the one below: **DTKA airport N036.58.51.798 E008.51.32.509 N036.58.50.305 E008.51.32.422 white**

And when all lines have been modified (that's done very easily with Excel) the Display Dialog appears like that:



So, you can easily filter which kind of GEO lines appear on your screen, and this avoids overwhelming screen with not useful features.

NOTE: When sector files have been customized for EuroScope, they can't be used anymore with ASRC or VRC. So, before customizing a sector file for EuroScope, don't forget to keep an original version for ASRC/VRC users.

In fact, the name is only needed in front of the first line of each subsection. For example, the following **`[GEO]`** section works fine:

```
[GEO]
Red  triangle  N000.00.00.000  E000.00.00.000  N000.00.00.000  E000.00.00.000
N060.00.00.000   E020.00.00.000   N070.00.00.000   E030.00.00.000   redcolor
```

```
N070.00.00.000   E030.00.00.000   N060.00.00.000   E030.00.00.000   redcolor
N060.00.00.000   E030.00.00.000   N060.00.00.000   E020.00.00.000   redcolor

Yellow triangle N000.00.00.000 E000.00.00.000 N000.00.00.000 E000.00.00.000
N062.00.00.000  E024.00.00.000  N066.00.00.000  E028.00.00.000  yellowcolor
N066.00.00.000  E028.00.00.000  N062.00.00.000  E028.00.00.000  yellowcolor
N062.00.00.000 E028.00.00.000 N062.00.00.000 E024.00.00.000 yellowcolor
```

In EuroScope you will get the two triangles selectable in the Display Settings. This section will also work with ASRC and VRC. The "**N000.00.00.000 E000.00.00.000**" coordinates in the lines where the names are would not be needed for ES but since both ASRC and VRC seem to disregard those lines completely it's better to put coordinates in there that aren't something you want to display.

If you pout the name in front of each line works in ES but it will not work with the other clients. But if you use the above way, then the same SCT file could be used with the other clients without any problems.

Regions

The third extension is for the SCT2 files for the very same reason. If you have regions in your SCT2 file, then they can only be switched on/off all together. If you would like to use them individually add a new line before the start of a new region: **REGIONNAME <the name of the region element>**

These lines are simply ignored by VRC and can be used to name your region elements.

Sector File Extension Files

This section is here just to make this page complete. The content of the "*sector file extension*" is described in the *ESE Files Description* page, and there is a *Tutorial* about how to build an ESE file from scratch.

Runway Files

The runway files are saved along with the SCT files, with the same names and the RWY extensions. They are also TEXT files. There you can find information about the active airports and runways of your last session when the SCT file was used as main sector file.

```
ACTIVE_AIRPORT:LHBP:1
ACTIVE_AIRPORT:LHBP:0
ACTIVE_RUNWAY:LHBP:31R:0
ACTIVE_RUNWAY:LHBP:31L:1
ACTIVE_RUNWAY:LHBP:31L:1
```

There are two different kinds of lines here:

- **ACTIVE_AIRPORT** - It describes if an airport was active in the last session. The last 0/1 digit means if it was active for departure (1) or arrival (0).
- **ACTIVE_RUNWAY** - The same for runways. It describes if a RWY of an airport was active in the last session. Of course, here you also have the airport name, and the final number means the same.

Starting EuroScope

Command line parameters

When you start EuroScope you can pass the following command line parameters:

- **`-numpad`** - This options forces EuroScope not to use the numpad number keys. You may assign them to other programs as shortcut keys.
- **`-noautolog`** - If you feel that the longer sessions use too much memory with the automatic LOG feature, you can disable it with this option.
- *name of the profile file* - If you specify a file name in the command line, then it will be used as profile file and there will be no prompt for it, nor the last saved is used.

Load profile

If you start EuroScope for the first time or if you opted not to load the last profile on startup, after starting the program it will prompt you for the profile file. It is strongly suggested that you always define here a valid, existing or non-existing file. If the file exists many computer related parameters are saved here and loaded on startup.

Initial messages

Some of the messages you may see at the bottom of the splash screen. But as the splash disappear all previous messages are moved to the "Message" TAB of the chat area. Here you can see the initialization activity LOG. First it loads the local files:

- Starting up message ...
- Loading of different kind of settings data ...
- Loading of AIRAC data with the loaded version ...
- Loading of ICAO files ...
- Loading of the last SCT and ESE files ...
- Loading the server description files ...

Then some other data from the Internet:

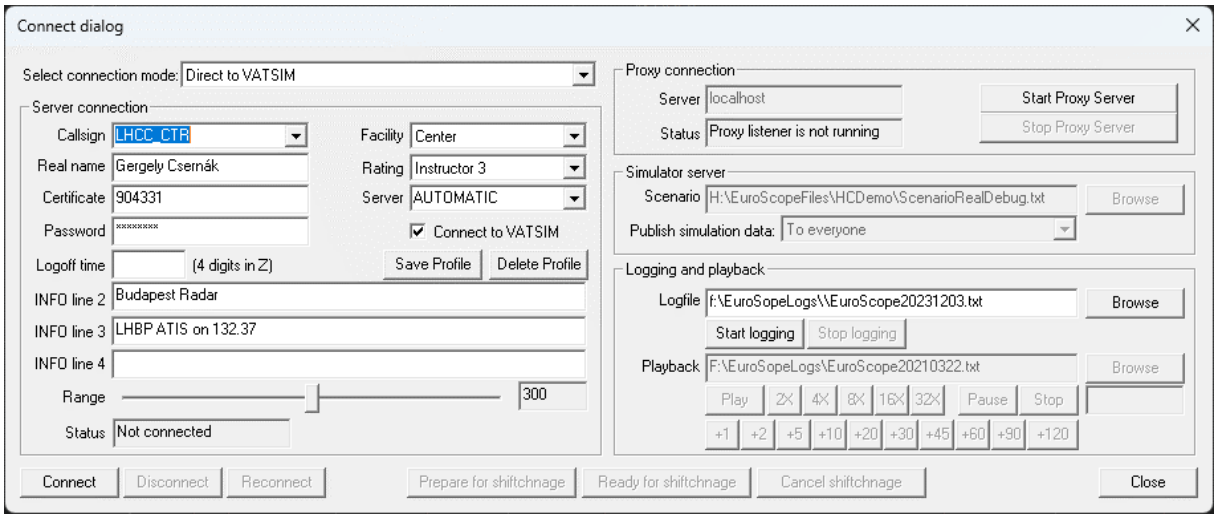
- Downloads the VATSIM status file ...
- It selects one server for server data and one for data feed ...
- It downloads the available servers, and if not disabled then the online pilots and controllers from the data feed ...
- Finally, it checks the EuroScope website to see if there is a newer version of the program available ...
- Time to time it loads sector file descriptions if auto update is enabled ...

Connection Settings

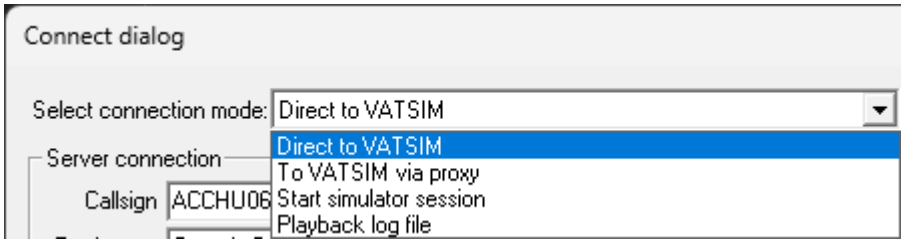
Connect Dialog

By clicking on CONNECT in the toolbar, the Connect dialog appears. First, it seems more complex than the ones we have been using so far, but shortly you will understand the advantages.

Please pay close attention, because this is one or the most important chapter of this essential guide to master the complex EuroScope.



Select Connection Mode



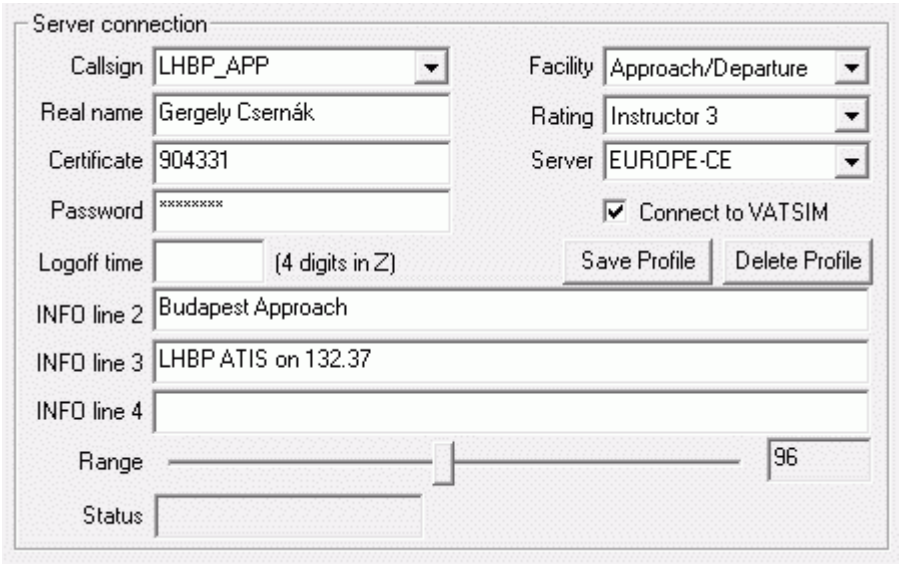
First, you must select a connection mode:

- *Direct to VATSIM* - connect to the VATSIM network. If you want to go online on the VATSIM network, then you will choose this one. Also use this option when you are connecting to any server as trainee.
- *To VATSIM via proxy* - connect to the VATSIM network using a proxy server. If you have more than one monitor to control, then you can set up here a better overview during your session as ATC.
- *Start simulator session* - connect to Sweatbox training or EuroScope FSD server. A tool for training purposes.
- *Playback log file* - playback a recorded ATC session. Like in the previous point most of this will be used for training purposes.

Important: when joining a simulator session as a client (as trainee) the connection mode has to be Direct to VATSIM - just like with a normal connection - and the simulator host has to be selected from the server list or its IP address can be typed directly.

Server Connection

The rest of the connect dialog is divided into these 4 sections. The first is used for server connections:



This part of the window has fields that must be filled in when controlling online:

- *Callsign* – The logging in controller callsign. There exists a naming convention: If you want go only online to observe other stations or listen to the frequency maybe for training purposes than take your name like: GC_OBS, PETER_OBS. Otherwise take always the callsign from the station like: LOWW_GND, LHBP_TWR, EURE_E_FSS, etc.
- *Real name* - your full name, as registered on VATSIM.
- *Certificate* - your VATSIM controller ID (6 digit numeric).
- *Password* - your secret password.
- *Logoff time* - your estimated logoff zulu-time (displayed in your controller info, format: 2000, the z is automatically added to the value)
- *Facility* - category of ATC service you are to provide (Observer, Tower, Flight Service Station, etc.). Note that certain functions are blocked when logged in as Observer!
- *Rating* - your VATSIM controller rating (Student1, Controller3, Supervisor, etc.).
- *Server* - list of servers (VATSIM and simulator host IP addresses are read from ipaddr.txt), when joining to a simulator session, simply the host IP has to be typed. Since the beginning of February 2023, it is highly suggested to select **AUTOMATIC** as your server.
- *Connect to VATSIM* - **This checkbox is new in v3.2**. When you are about to be connected to normal VATSIM servers or to SweatBox, let the box be checked. But when you are connecting to the local EuroScope FSD server, uncheck it. If you uncheck it but still connect to a VATSIM server, you will be disconnected with an error message.
- *INFO line 2 - 4* - This refers to your controller information line, not the _ATIS frequency of each airport. Since VATSIM limits the number of lines used for it, only 3 additional lines are available

(your voice channel is counted line 1 but it has been eliminated with new VATSIM voice). You may use aliases here in these lines. Check at *Built In Functions*.

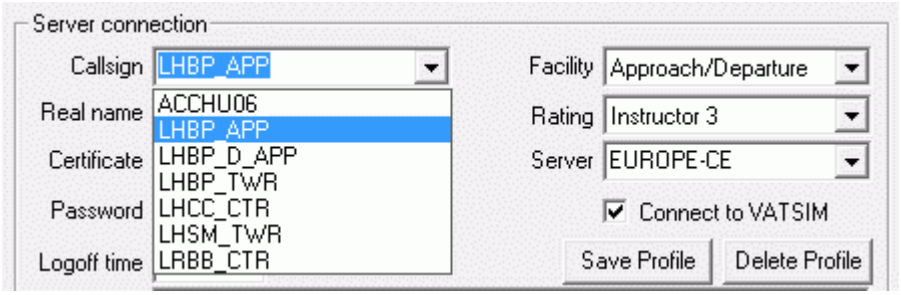
- *Range* - set your radar surveillance range from 1 NM to 600 NM but remember the limits:
  - DEL/GND: 10 NM
  - TWR: 30 NM,
  - APP/DEP: 150 NM,
  - CTR/ACC: 300-600 NM,
  - FSS: 1500 NM. That can EURE_FSS Shandwick or Gander oceanic with a very wide range.

EuroScope limits the maximum possible range setting based on the facility and the rating you are specifying. These data are still higher than the values above:

- Observer - 300 NM,
- Clearance/Delivery - 100 NM,
- Tower - 100 NM,
- Approach/Departure - 200 NM,
- Center - 600 NM,
- Flight Service Station - 1500 NM,
- Supervisors are allowed to set 600 NM range, independently from the actual facility.

Status - once successfully connected "Connected to VATSIM" is shown.

PROFILES



- *Save Profile* - You can save various connection profiles, which store your callsign, facility, range setting and ATIS information. So, the next time you start a session, it will take just a second to connect; you just click the callsign you wish to log in with (as shown in the screen shot above). Important: The changes in the profiles are not saved automatically. On exit you will be prompted to save them or use the “Save Profile button” or the “Save all settings function” to store the current profile.
- *Delete Profile* - delete selected profile.

Note: The name *profile* is a little ambiguous. It has nothing to do with the profiles stored in .prf files. Here we are talking about “connection profiles”, which only hold your connection data. These are stored in the “settings” file not in the “profile” file.

Proxy Connection

The proxy connection was originally designed to allow multiple instances of EuroScope to be started on the same computer and share the VATSIM connection between them. As it turns out, the implementation is so general that the two clients don't need to run on the same computer.

The proxy connection needs two parties to be set up: one primary and one secondary client. To start a primary client just press the *Start Proxy Server* button. That will make EuroScope listen on TCP port 6810 and accept incoming connections. To connect to a proxy server from another instance of EuroScope (the secondary client) select the *To VATSIM via proxy connection* mode; change the server if different from “localhost” and connect.

When connecting to a proxy server the secondary client does not need any authentication setup as it uses all the data from the primary client. The primary client then can be connected to VATSIM, and both clients will work with the same rights and under the same callsign. When you have a proxy connection the two clients are sending special messages to each other (e.g. when you type something in one client command editor it will appear in the second as well, when you select an aircraft, it will be selected in the other as well etc.). To disable this feature, uncheck the *Enable advanced proxy communication* menu item.

Since release 3.1 you also have an option for automatic proxy connection. This is really a handy tool. When your first EuroScope instance starts then it will start the proxy server immediately. Any additional instances will find that the proxy server is already running and connects to it immediately. When you regularly use multiple instances (e.g. in a multi-monitor environment) then it is easy to connect them due to this option. The option can be enabled in the *General Settings* dialog with the check box *Auto proxy connections*.

Simulator Server

To start a simulation session, select *Start Simulation Connection* mode, select the appropriate server (SweatBox or local EuroScope FSD).

To select the scenario file, you have two options:

- Click *Browse* and Select a local scenario file.
- Leave it empty. It is possible to get the scenario file from the FSD server or just connect as pseudo pilot without simulating planes.

The *Publish simulation data* is also a new combo box in version 3.2. This option tells the simulator server how much data should be sent to the connected clients, most importantly to the pseudo pilots:

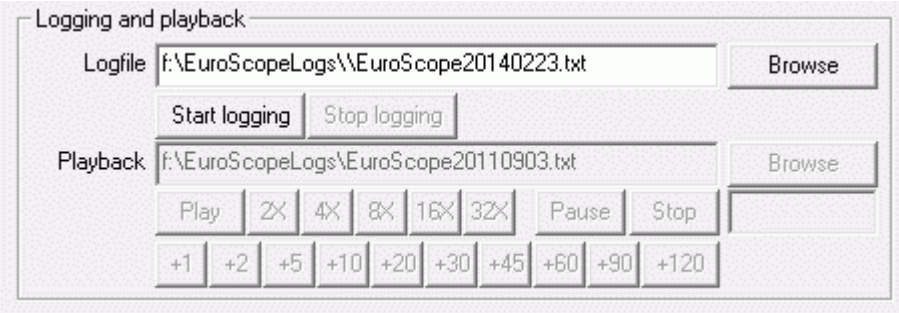
- *None* - This option creates less network traffic, but the pseudo pilots will not have access to the states of the planes. Use this option when the lonely pseudo pilot runs the session.

- *To pseudo pilot only* - This option sends the state data of the simulated planes to the pseudo pilot who is flying the plane, but not to the others. This requires a bit more bandwidth, but still manageable by SweatBox.

- *To everyone* - This case all simulation data is sent to all connected controllers. That is a huge amount of traffic, and tests shows that **SweatBox cannot handle** it. Use this option only when the session is based on the local EuroScope FSD server.

For more detailed information see the *Built In Simulator* section.

Logging And Playback



To save your current session and play it back later is just as easy with EuroScope as pressing two buttons. Enter the file path and name of the log-file to be created or browse for it. Then press *Start logging*. From that moment all data around your session is saved to the selected file. When finished just press Stop logging.

You can change the default log-folder that EuroScope proposes in the Logfile field by setting the Windows environment variable ES_LOG_FOLDER with the folder you normally use.

Important: Your authentication information is never stored in the file so that you can send it to others without compromising your password. But beware: Everything else is stored in the log; even your private chat communications can be played back later!

If you want to review a logged session, just select connection mode *Playback log file* and select the file name in the Playback edit box. When you press the *Connect button* the file will be played immediately. With the speed buttons you can choose the playback speed. You can pause and restart the playback with the Pause and Stop buttons.

In v3.2 EuroScope automatically saves your session log into memory. When you exit you will be prompted if you would like to save it to a file or not. The automatic session LOG does not hold your voice communication data.

The buttons are really self-explanatory:

- *Play* - It starts playing a paused or stopped playback and also returns to a normal 1x playback after fast forward.
- *2x-32x* - Increase the playback speed.

- *Pause* - Suspends the playback. During the suspended playback the timeout checking is disabled, even position update for airplanes are halted.
- *Stop* - Stops the playback, and reverses the file pointer back to the beginning of the logfile.
- *+1-+120* - Jump the given number minutes forward. Be patient when skipping longer time intervals. EuroScope must still executes all entries in the logfile and compute all necessary data along with it. Hence, a one hour skip operation in a busy session may take a few minutes to be executed.
  Since v3.2.4 the theses buttons work asynchronously. It allows you use EuroScope during the advance operation, including pausing the playback.

Bottons - changed in 3.2.4

The connect button connects to the selected server and via the entered user credentials. It automatically closes the connect dialog and returns to the main screen.

Not visible, but since v3.2.4 the connection is made in two separate steps. First your name and password are authenticated via a secure connection to VATSIM, then the actual connection to the server is made using the token received. It is a slightly slower and you may see four messages in the *Message* TAB:

```
[10:06:06] Authenticating on VATSIM …
[10:06:06] Authenticated on VATSIM
[10:06:06] Connecting to server …
[10:06:06] Connected to server
```

You stay connected until you either press Disconnect or terminate EuroScope from the main screen.

The Close button closes the Connect dialog without changing the connection status.

Normal shift change

You can use the normal shift change in the following case:

- There is another controller online in the desired position.
- You are online as observer - you can see the traffic, but all planes are unconcerned.

You can use the following steps:

- Press the *Prepare for shiftchange* button in the connect dialog.
- It makes it possible to change your callsign in the *server connection* part. So select the desired new position.
- Your screen will change immediately. You will see the radar as you were online as the target controller. All TAGS are colored and shown as the other controller sees. Only the pending coordinations are not visible as these messages are controller to controller and other clients have no access. Even if you see the TAGs as the other controller, you have no chance to manipulate as you are still just an observer.
- When ready, press the *Ready for shiftchange* button. In this case EuroScope is monitoring when the other controller goes offline.
- When the other controller goes offline, your client saves all states, disconnects immediately and waits for about 4 seconds to ensure both disconnects are published along the network. Then it tries to reconnect you as the shift change controller.

- When successfully connected your client starts tracking all the planes that were tracked by the other controller before disconnecting.
  Note that prior versions of EuroScope may send drop target messages before disconnecting. Because of that it might happen that not all the planes are assumed automatically.
- Do not forget to connect/disconnect your audio connection as **AudioForVatsim** connection is independent from EuroScope.

Hot shift change

You can use the hot shift change in the following case:

- There is another controller online in the desired position.
- You are online in different position.

You can use the following steps to interchange your positions:

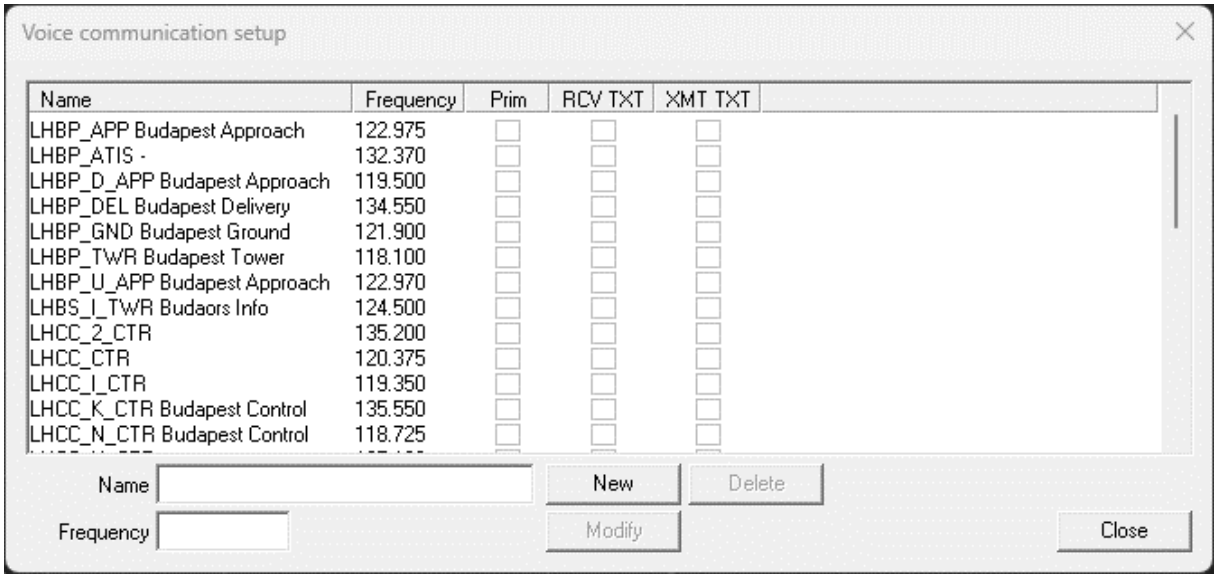
- Both parties must press the *Prepare for shiftchange* button.
- Both parties must select the new to be callsign (I select the other callsign, while the other controller selects mine).
- Both parties must press the *Ready for shiftchange* button.
- Then only one of you press the *Reconnect* button.
  The one pressed the *Reconnect* button disconnects and after 4 seconds it tries to connect as the desired callsign.
  From the point of view of the other controller, it is the same as the normal shift change.

Note: Try to do the shift change at a moment where there is no pending coordinations. v3.2.4 will refuse all coordinations before the disconnect, but older versions and different clients may work differently.

Voice Communication Setup

The Voice Communication Setup Dialog

All settings related to voice communication can be set up using the following dialog:



The main part of the dialog is the list on top. Every line here describes one ground-to-air voice connection and its status. The left two columns (Name and Frequency) are the description part, while there are three check boxes on the right (Prim, RCV TXT, XMT TXT) that can be used to indicate and to modify the actual status of the voice connection.

Note that since v3.2.2 the ATIS connection data has moved away from this dialog to the *Voice ATIS dialog*.

When you select an item from the list its detailed information will be displayed in the controls below, where you can modify them. By clicking on the check boxes you can change the actual status.

Important: This dialog box never saves its modifications automatically. You must do an explicit "Save all settings" or save the settings when closing EuroScope and when asked for confirmation to save the voice setup data.

Dialog Controls

- *Name* – In this text box the actual name of the ground-to-air connection is displayed and can be modified. The name is just a symbolic name and not used for anything, but for user information. Therefore, you can enter freely any arbitrary text like "*Budapest Radar*" or "*Ferihegy Tower*".
- *Frequency* – Here you can define the associated radio frequency. The value entered here will be sent to the network if the definition is selected as primary frequency.
- *New button* – By pressing this button you can create a new entry to the ground-to-air communication list. All the data will come from the edit controls; therefore they must be filled in.

- *Modify button* – With this button you can change the description of one communication line. You cannot update a communication line if that line is active, i.e. any of the check boxes are marked.
- *Delete button* – It is used to delete one line from the table. Just like the Modify button, you cannot delete a communication line that is active.
- *Close* – It closes the dialog.

The Check Boxes

In the top area there is a list control with all the ground-to-air communication definitions. Every line contains six check boxes that let you manage the status of your text and voice connections.

- *Prim* – as Primary frequency – By clicking any of the checkboxes in this row will select your primary frequency. This frequency along with the voice channel definition will be published via the network so pilots will be able to find your text and voice channels.
- *RCV TXT* – Receive text messages – By checking it you will receive text messages from this frequency. You cannot switch it off for the primary frequency. Important: When you are connected to VATSIM via a proxy in the secondary client you should set up the text receive in each client as they are independent from each other.
- *XMT TXT* – Transmit text messages – Your text messages will be sent to all frequencies that are checked. You cannot switch it off for the primary frequency.

Some notes:

- When you select your primary frequency the *text send* and *receive* check boxes are set automatically and you cannot deselect them as long as this is the primary frequency. You can select another primary frequency by just clicking it, and the old primary frequency check mark will be removed. You can also deselect your current primary frequency by clicking on the check box again. This will not deselect the *text send* and *receive* flags, but now you can deselect them manually.
- The primary frequency description line is highlighted in yellow, even when not selected.
- If you select your primary frequency when offline, then EuroScope will assume that you are logged in with the name of that communication line and with its frequency. Thereby all sectors associated with that position will be assigned to you and you can see the offline simulated traffic arrival estimates.

Download Sectorfiles

Manual or Automatic Sector File Download

Searching for and downloading the latest up-to-date sector files has always required searching around the vACC's websites. With the new innovative sector file publication and download feature, it becomes far easier for controllers to find the latest sector files. And it also makes it easier for sector file creators to supply the latest versions to their users. It only takes a few steps to prepare the files to be downloaded via EuroScope, and to setup EuroScope for the automatic download.

The Mechanism of Sector File Distribution

Of course, you can still download sector and ESE files with your web browser and install them manually. But once you have used EuroScope's new download mechanisms you probably don't want to go back to the manual method.

The new sector file distribution mechanism is a decentralized system and is based on multiple *sector file providers*, each of which publishes one or more sector files. That lets each vACC or other VATSIM organizational group create and publish their own sector files.

First, somehow EuroScope needs to know the web addresses of the sector file providers. There is, however, no central list of all sector file providers. Instead, each sector file provider publishes, next to sector files, also a list of its neighbor providers or its subgroups. In this way, EuroScope learns about new sector file providers in a step-by-step manner. This system is very flexible and avoids the need to have a central registry for all sector file providers.

All the information EuroScope learns about sector file providers it records in a so-called *sector file provider descriptor* file, or for short the descriptor file. At first the descriptor file just contains a single entry pointing to **URL:** http://www.euroscope.hu/sectorfile/euroscope_sector_providers.txt. This default provider contains an initial list of sector file providers. After downloading it, the descriptor file will contain all these entries. Each of these entries represents a sector file provider and the web address, where its so-called *provider file* can be found. Such a provider file contains two groups of entries:

- Links to neighboring or subordinate providers.
- Links to sector files that this provider offers.

Either part is optional or might be missing.

For example, the German sector file provider *VATGER_sector_file_provider* just contains a list of sub-providers like Berlin, Langen, Bremen, and München FIRs and even no links to the sector files. After downloading the provider file of VATGER, EuroScope learns about these four sub-providers and adds their data to the descriptor file.

Now you can download the Bremen-FIR provider file. EuroScope learns about the EDWW sector file that is published by this provider. Sector files are published in form of compressed 7-Zip archives to reduce download times. EuroScope automatically unpacks these files.

All entries in the descriptor file contain a next-download time or a download interval. At start-up, EuroScope automatically scans the descriptor file and performs a download for all files that are overdue and which you have marked for auto-download. As an alternative, you can at all times manually force EuroScope to download any of this file. If a sector file has been updated and it is used in an ASR-file, EuroScope is so smart as to propose to automatically substitute the new sector file.

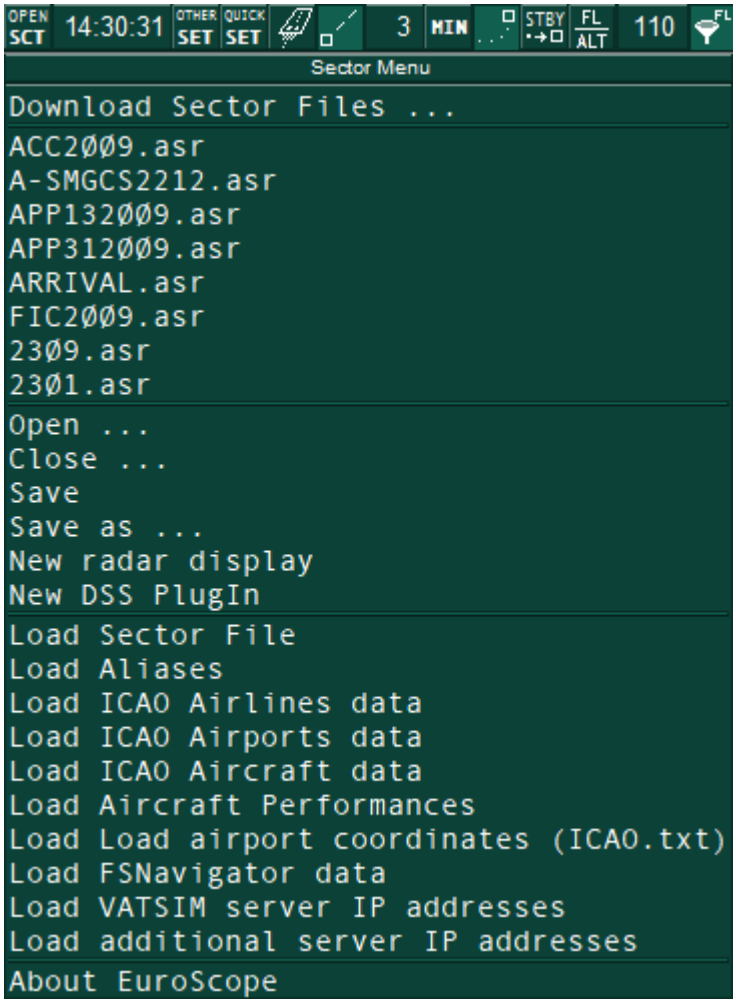
In summary, VATSIM sector file providers form a network that can be arbitrarily expanded without having a centralized registry. There is just one central node that helps to learn about the majority of the larger sectorfile providers, and which is consulted automatically when installing EuroScope. Most important, once you have set up automatic downloads, EuroScope takes care of everything else. It downloads new versions of sector files, unpacks them and even replaces them in ASR-files. The next section explains the *Sector File Providers* dialog and how to set up automatic downloads.

Note about sector files: Before stepping into the next chapter here are some information about sector files and how we can use them in our EuropeScope client. In the aviation or specific on the navigation site there exists a cycle for data that is called AIRAC. In every period of time there are different changes that can be: changes in procedures, sectors (FIR, CTA, TMA etc.) or just information about RWY specifications like length and so on. This data comes from different source providers like Air Navigation Service Provider (ANSPs: NATS, DFS, AENA etc.) In the virtual world the providers are Navigraph or Navdata from Aerosoft. There ensure that we have always the newest data in our Flight Managment Computer (FMC) for different Aircrafts. That means they have agreements with real source providers.

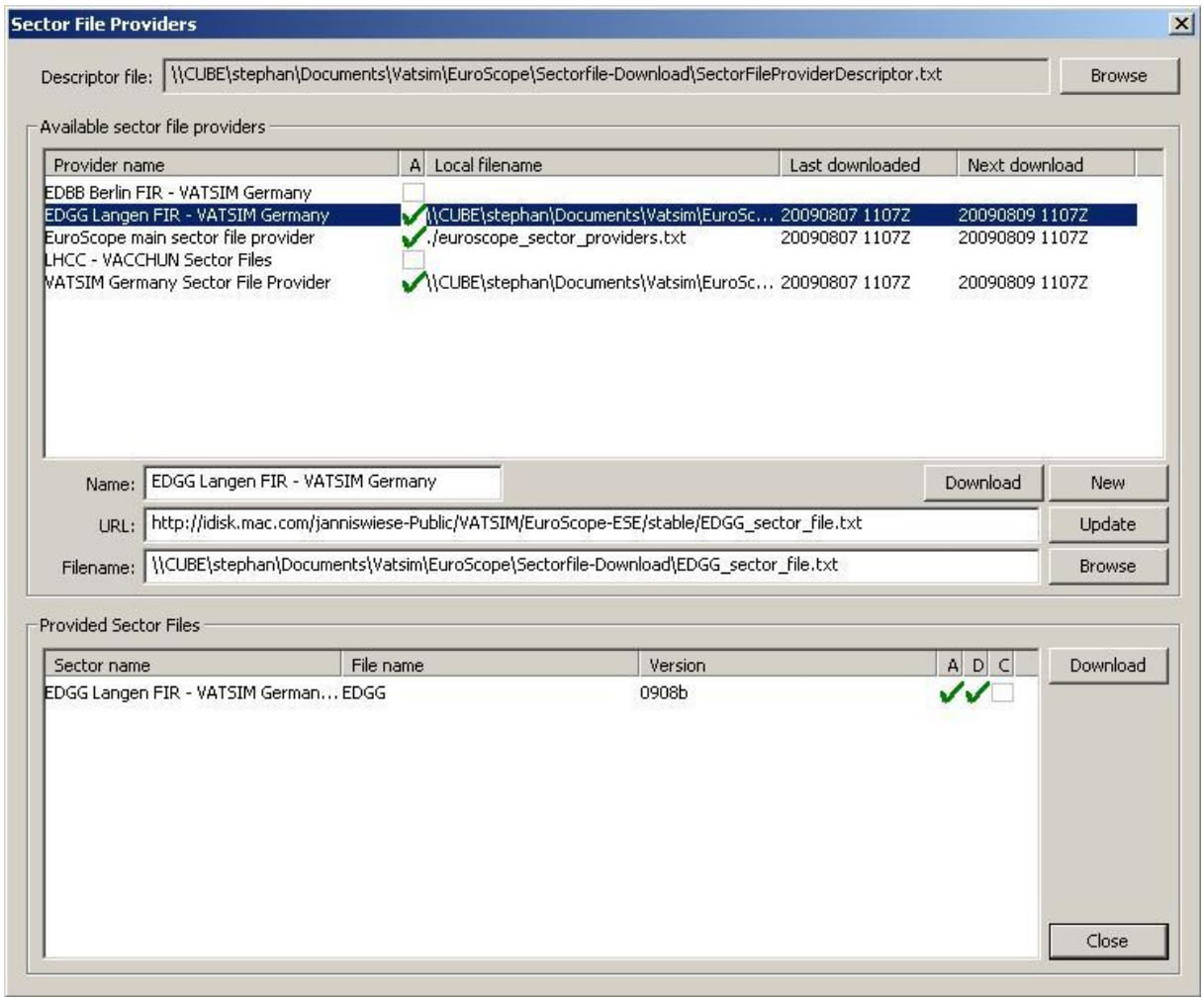
It needs much time to analyse the data and put it the relevant sector therefore you need manpower in the VACCs and it is sometimes not possible to keep all the staff up to date.

Setting-up EuroScope

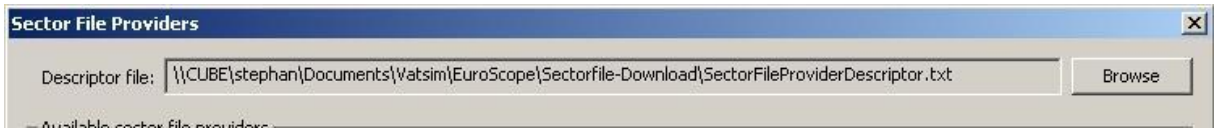
To open the *Sector File Providers* dialog, click the *Open SCT* menu ...



and there the *Download Sector Files ...* entry. In the *Sector File Providers* dialog, you can download provider and sector files manually and configure the automatic download of these files.



The Sector File Provider Descriptor File



EuroScope manages the links to all sector file providers in a single text file, called the *Sector File Provider Descriptor File*, or for short the *Descriptor File*. This file contains the information where the sector file provider files are located (URL and local filename) and what provider data and sector files are to be loaded automatically. Only data for active providers with a specified local file name are stored here.

In the first field of this dialog, you define the name and storage location of the descriptor file. The default is SectorFileProviderDescriptor.txt and the default location is the EuroScope working directory. The name and path of the descriptor file is stored in the profile. That means you may have several completely different sector file download lists if you use multiple profiles. For most users, however, a single descriptor file will suffice.

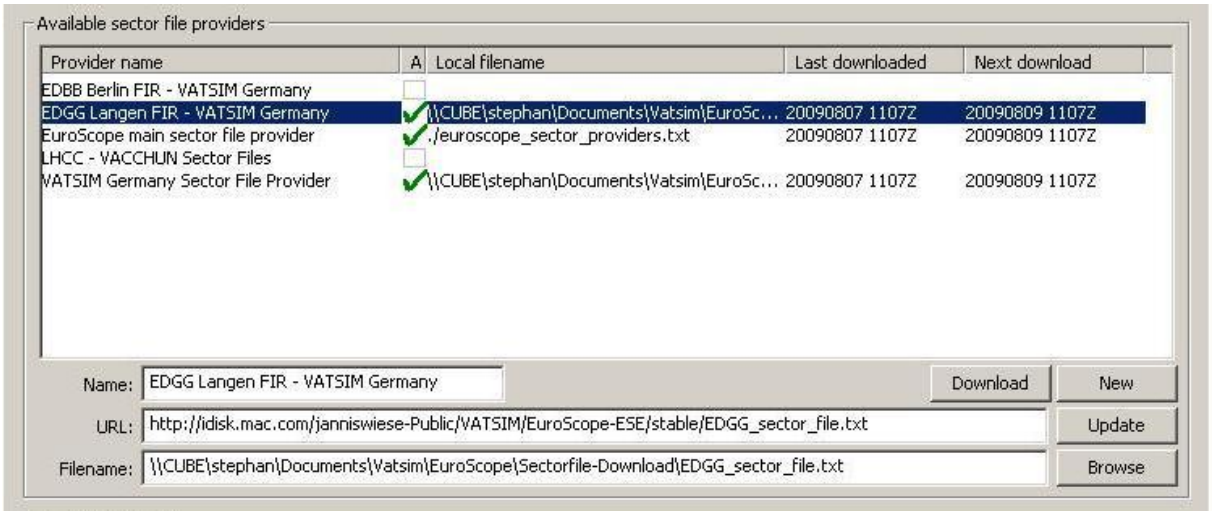
The content and the structure of the descriptor file is used by EuroScope as a database of sector file provider information, and you never need to edit it manually.

When the descriptor file is loaded and found to be completely empty, one default provider is added automatically with the following attributes:

- *Name*: EuroScope main sector file provider
- *URL*: http://www.euroscope.hu/sectorfile/euroscope_sector_providers.txt
- *File name*: ./euroscope_sector_providers.txt
- *Download automatically*.

This is the default provider. It fills your descriptor file with a list of the major sector file providers of VATSIM, so you have something to start with. This default provider is maintained by the author of EuroScope and kept up to date as good as possible.

Sectorfile Providers



The second part of the dialog is the *Available sector file providers list*. This is basically a display of all the sector file providers that are contained in the descriptor file. By clicking an entry in this list you see the sector files that this provider publishes.

The individual columns in this list are:

- *(Provider) Name*: The name of the sectorfile provider.
- *A*: The check box in the column activates the automatic download of the provider file.
- *(Local) Filename*: The local file name where the downloaded provider file is to be stored. It can be a relative or absolute path. The sectorfiles of a provider are downloaded to the same path. Currently it is not possible to store the downloaded files somewhere else than with the provider file. EuroScope will extract all files from the downloaded 7z file to the folder to this path. All files will be extracted and after that the SCT file is checked for availability. If the packed SCT file does not match the _.SCT naming convention, then the extraction is treated as failed and the files will not be used.
- *Last Download*: The Last Download field indicates the date and time of the last download of the provider file.
- *Next Download*: The Next Download files field indicates the date and time of the next planned download of the provider file.

The fields below the list reflect the currently selected list entry:

- *Name*: Same as the Provider Name field of the list.
- *URL*: The URL field contains the web address of the provider file. This is the identifier for the providers and must be unique.
- *(Local) Filename*: Same as the Local Filename field above.

With several buttons you can start a manual download and also edit the entries in the descriptor file.

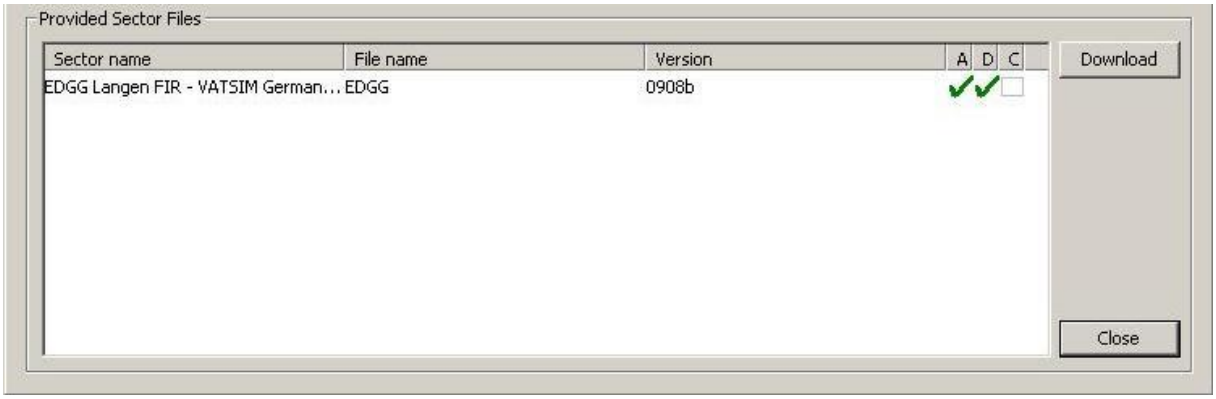
- *Download*: The Download button allows you to manually download the selected provider file.
- *New*: The New button creates a new entry for a provider that is not supplied by one of the other provider files. It usually should not be necessary to manually create an entry as all files are supposed to be published via the network.
- *Update*: The Update button allows you to update the selected provider entry.
- *Browse*: The Browse button allows you to browse through the directory structure of your disk and choose a location for the selected provider file.

If you want to delete an entry, un-check the *A*-field and delete the Local Filename from the entry.

So far for the functions behind the buttons and fields of this section. What can you do if the sector file provider of your desired area does not show up on the list or if it does not seem to publish any sector files?

- Desired sector file provider is not on the list: In this case your provider might be relatively new, so that does not appear in the default provider's list yet. Or it might be referred to by a neighboring provider. So, you might first want to download one of the neighboring provider files. If they contain an entry for your provider, it will afterwards show up in the provider list. If all fails, you might be able to find the web address on the Internet and enter it manually via the edit fields and the Update button.
- Provider seems not to publish any vector files: This is for example the case when you click a sector file provider who has delegated the sector file publishing to subgroups. The VATGER provider is an example of this category. Download its provider file by clicking the download button and afterwards the subgroups will appear in the providers list. Their entries will finally show the sector files you are looking for.

Provided Sectorfiles



This list shows the sector files that the provider publishes that have been selected in the providers list above. The columns of this list are:

- *Sector Name*: The Sector name field contains the name of the sector described by this sector file.
- *File name*: The file name field contains the designation of the sector, which is the first part of the file name. The full file name consists of this designation and the version identifier.
- *Version*: The Version field displays the current version of the provided sector file. It is the second part of the file name.
- *A*: The *A* check box is used to activate the automatic download of the sector file.
- *D*: The *D*-check box indicates that the sector file has been downloaded.
- *C*: The *C*-check box indicates that you confirmed to replace all occurrences of the sector file with the latest version without further questions.

There is just one button in this section:

- *Download*: The Download button allows you to manually download the selected sector file.

All sector files are downloaded to the same folder that the provider's provider file resides in.

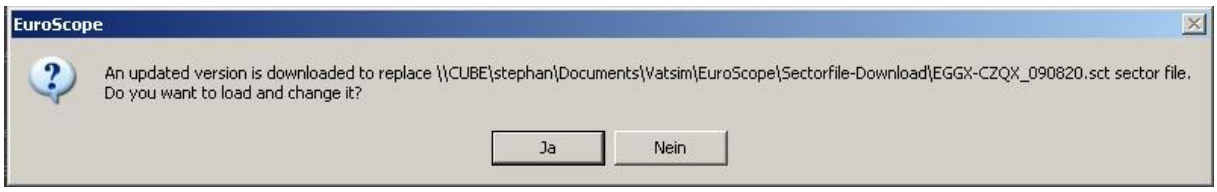
Once an ASR-file is linked to a particular version of a sector file, EuroScope can automatically detect links to outdated files and correct them with the latest downloaded version.

The Automatic Download

Once everything is set up for automated download, EuroScope checks for updates on the files as scheduled in the provider files. When a newer version of the sector file is downloaded, either manually or automatically, this new file is first just saved on your hard disk. As the version number is part of the file name, there is no risk that the new file will overwrite the old file. EuroScope saves the fact that a new version is available in the descriptor file.

From this moment on, every attempt to use any older version of that sector file will lead to a prompt whether you want to use the newer version instead. Such attempts may happen in two situations:

- when trying to load the sector file specified in your profile,
- when trying to load an ASR file, which specifies an obsolete sector file:

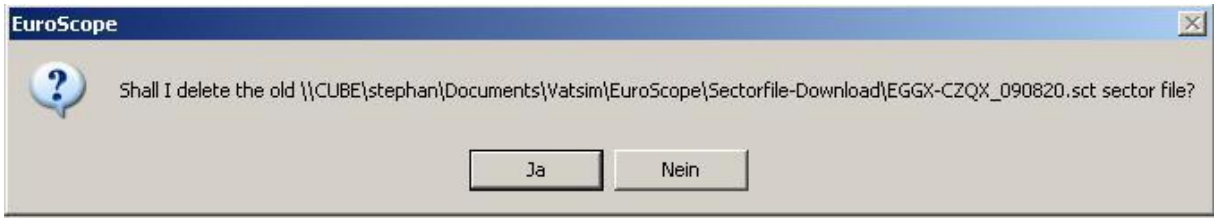


After you agreed to substitute the newer sector file in an ASR file, EuroScope will furthermore asks, whether you want to replace that newer version also in all other ASR files:

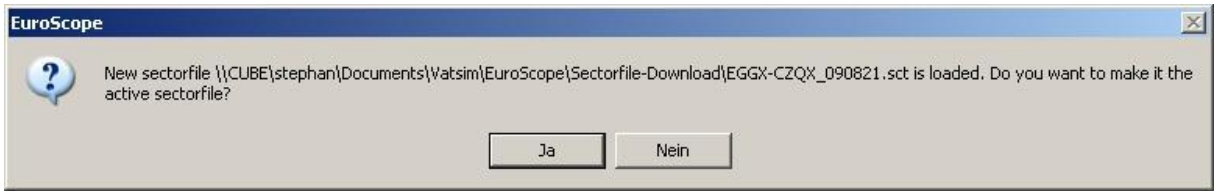
When you accept, EuroScope will substitute the newer sector file version in all ASR files that are currently open. It also saves your answer and will henceforth substitute it also in other ASR files as soon as you open them.

Note: It is important to keep in mind that EuroScope will change all the references to the new sector file in memory only until explicitly saved. When saving a modified ASR or PRF file, you will be prompted to save the memory update to the file on disk.

Finally, EuroScope asks you whether you want to delete or keep the old version of the sector file:



If the update happened while you were using a different profile not using that particular sector file, EuroScope will ask on the next occasion you load the affected profile whether it should use the new version of the sector file.



Publishing Sector Files

The following section describes the file formats and procedures of the EuroScope sector file download mechanism. They are intended for VATSIM groups who want to publish their sector files via the download mechanism of EuroScope; we call such groups so called *sector file providers*. If you oversee sector file maintenance and you want to support the automatic download by EuroScope, this section is for you.

Preparing your sector files for the EuroScope download mechanism is relatively easy. There are two types of files that you must provide:

- A *Sector File Provider File*,
- One or more 7-Zip packed archives containing the sector files, that is .sct, .ese and associated files.

Keep in mind that all text files intended to be used by EuroScope must be encoded as ANSI (or ANSII). UTF-8 encoding will cause errors loading the files.

The Sector File Provider File

Your sector file provider file contains a list of the sector files you are providing and also references to other sector file providers in your neighborhood. These neighbor links are intended to form a worldwide network of all available EuroScope sector file providers without establishing a central registry.

Once EuroScope has got knowledge about the URL of a sector file provider file, it can download it, either manually or automatically. The file itself is downloaded and stored in the user's local file system without any modification. The content is loaded into memory at every start-up of EuroScope.

The format of this file is the following:

- First line: "EuroScope Sector File Provider File" - the first line must contain this text. It is used to identify a valid provider file.
- Self-description:
    - NAME:<the name of the provider> - it is just an update of the provider's name, for example the name of the vACC.
    - URL:<the URL of the provider file> - it is once again just an update as EuroScope can not download the file without the URL. You can also use it to change the URL to another place.
    - NEXTDOWNLOAD:20090720 – the next expected download time with the format YYYYMMDD. If set, the automatic download will look for an update only after this date has passed.
    - DOWNLOADINTERVAL:48 – the regular download interval (if NEXTDOWNLOAD is not specified or already passed). The value is in hours, the default value is 48.

Example:

```
NAME:LHCC - VACCHUN Sector Files
URL:http://www.vacchun.hu/es/vacchun_sector_files.txt
DOWNLOADINTERVAL:72
```

- Links to other providers - by linking to other provider files, you can build a peer-to-peer network of sector file providers, independent from the default provider list. Of course, you should keep any links that you include up to date. Otherwise, if a URL has changed, an outdated link would create a duplicate entry of the provider and would not be working any longer.
    - PROVIDER_NAME:<the name of the provider>
    - PROVIDER_URL:<the URL of the provider file>

Example:

```
PROVIDER_NAME:LHCC - VACCHUN Sector Files
PROVIDER_URL:http://www.vacchun.hu/es/vacchun_sector_files.txt
```

- Sector file descriptions
    - SECTOR_NAME:the user's readable name of the sector file>
    - SECTOR_FILE_NAME:<the base name of the sector file>
    - SECTOR_VERSION:<the version number of the sector file> - be sure to make version numbers in a way that newer versions have an *alphabetically* higher version number; and here the term *alphabetically* is important. Consider that in alphabetical ordering the string *V3* is higher than the string *V21*!!!

- SECTOR_URL:<the URL of the packed files> - see below for more details about the packing

Example:

```
SECTOR_NAME:LHCC - Hungary (complete)
SECTOR_FILE_NAME:Hungary
SECTOR_VERSION:2009_05_08_v70
SECTOR_URL:http://www.vacchun.hu/es/Hungary_2009_05_08_v70.7z
```

Packed Sector Files

The vector files are packed together with their associated ESE files, and possibly further helper files that you want to distribute, for example PRF files. All these files are packed together with the help of the 7-Zip command line utility. 7-Zip is freely available under the GNU public license and comes with the EuroScope installer.

EuroScope uses 7-Zip to unpack the downloaded sector files. It is not necessary, but highly recommended, to use the very same utility for packing. This way you avoid any compatibility issues.

EuroScope simply calls the 7za.exe utility without specifying a full path. Therefore, it is necessary to have this program either in one of the directories that are listed in your PATH environment variable or have it resided in the current working directory of EuroScope. If you start EuroScope from the installer-created shortcut then it is not a problem as it sets the current folder accordingly. But if you create your own links (e.g. using different profiles) then do not forget to set it.

Example:

```
7za a Hungary_2009_05_08_v70.7z Hungary_2009_05_08_v70.sct
Hungary_2009_05_08_v70.ese
```

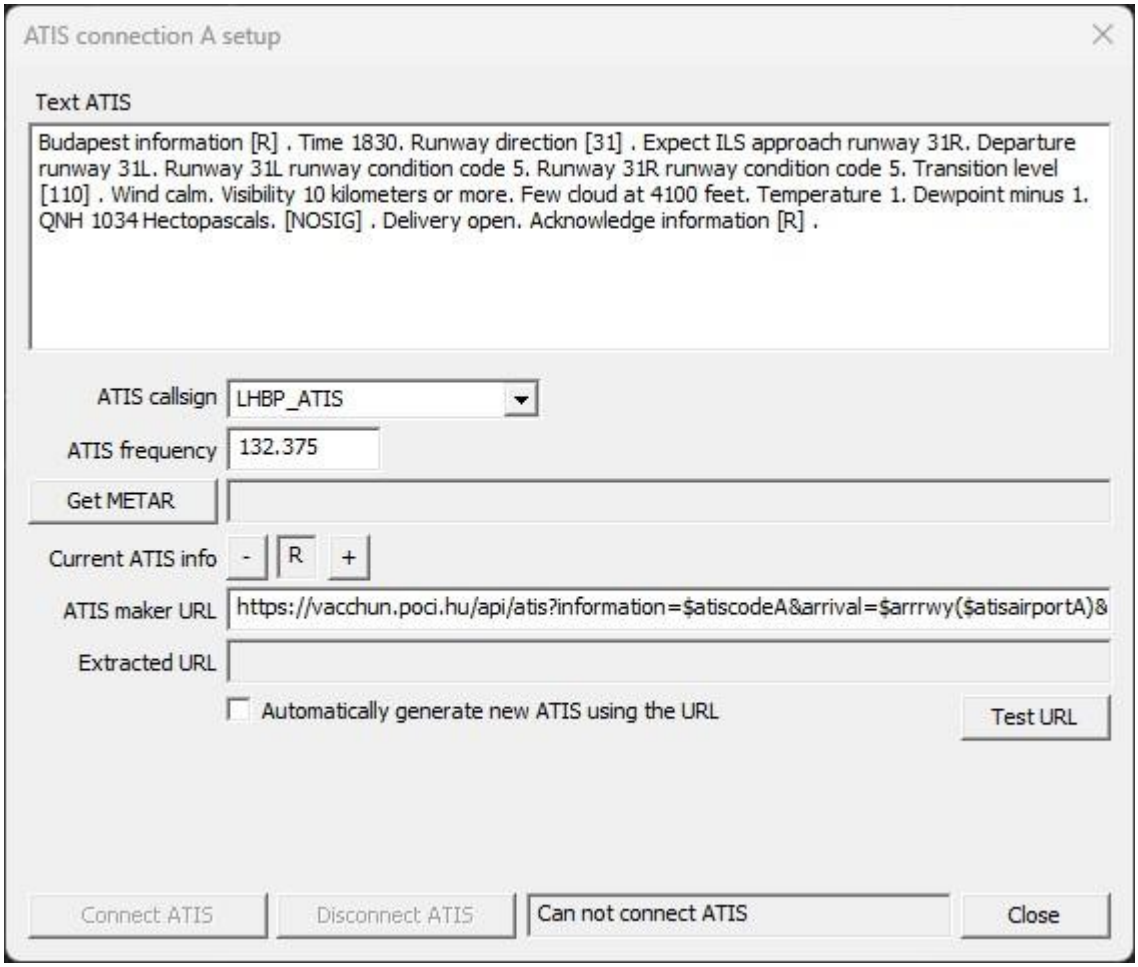
Note: The SCT and the ESE file names MUST have the format _.SCT/ESE. No other file names are accepted as sectorfile.

You can put as many files to the 7z archive as you like. The SCT file is a MUST, the corresponding ESE file is recommended. Additional files (like PRF or alias files) can optionally be included in the archive. They will be extracted to the client machine but will not be used automatically. Only the SCT and ESE file pair will automatically be recognized by EuroScope, as described in the previous section.

ATIS Connections

ATIS connections make it possible to serv up to 4 stations with voice ATIS, Actually EuroScope just provides the ATIS message, the actual text to voice synthesis and the serve to pilot voice connection is done on server side.

Dialog Fields



In the title of the dialog, you can see the ATIS connection named A, B, C and D for the four stations a controller may serve. Note the ground and tower controllers are allowed to server only their home airport, while approach/departure and enroute controllers may server four.

- *Text ATIS* - The actual ATIS message that is sent to servers for voice synthesis. You are free to manually edit it.
- *ATIS callsign* - The ATIS connection callsign. The first four letters must be the airport code, and the last five must be *_ATIS*. If you enter only the airport code here then the callsign will be expanded automatically. When you leave this field the position data is searched in the ESE file, and the frequency is updated automatically.
- *ATIS frequency* - The primary frequency for this ATIS connection.
- *Get METAR button* - This button requests the METAR of the selected ATIS airport. When you press it the first time, it may happen that nothing is displayed momentarily as it may take a short time to receive the METAR information. If necessary, press it a second time some seconds later.

- *Current ATIS info and + and - buttons* - By pressing the + and - buttons you can change the current ATIS letter. The current ATIS letter is also displayed in the toolbar of the main window. These buttons also change the ATIS letter in the *Text ATIS and multiple record ATIS* box. EuroScope looks for the ATIS letter in that box by searching for a space-letter-space combination and replaces all such occurrences of the old ATIS letter by the new one.
- *ATIS maker URL* - This is the URL that will be called every time a new METAR is available for the served station. This URL might contain function names that will be extracted just before calling it. The return of the URL will be filled into the *Text ATIS* filed and will be published to the servers.
- *Extracted URL* - Same as the above, but all functions are replaced with their final value.
- *Automatically generate new ATIS using the URL* - Using this checkbox whenever a new METAR is received the URL is called, the result is inserted to the *Text ATIS* field, and the ATIS letter is increased by one.
- *Test URL* - Use this button to call the URL and test its result.
- *Connect ATIS button* - This button is used to create your ATIS connection to the VATSIM server and to the voice server. This ATIS connection is a separate connection; VATSIM regulations restrict the use of such a second connection for the use as ATIS channel. The button is enabled only when you have a live, direct connection to VATSIM. The ICAO code that you entered in the ATIS airport field will be used to form the callsign of that connection. EuroScope will find the air frequency of this connection by looking the callsign up in your Voice Communication settings. There it will automatically check mark the ATIS check box and the RCV and XMT voice check boxes.
- *Disconnect ATIS button* - Use it to disconnect the ATIS connection. It is enabled only when you are connected.
- *ATIS connect status* - Just next to the Disconnect ATIS button there is a status field. It shows the status of the voice ATIS connection.

Advanced Techniques

When you enter the text form of the ATIS, you can simplify things a little by using functions. EuroScope has a couple of built-in functions that are particularly useful in the ATIS text, for example:

- **`$atisairport`** - airport code of your ATIS airport,
- **`$altim()`** - the altimeter setting,
- **`$deprwy()`** - active departure runways,
- **`$arrrwy()`** - active arrival runways,
- **`$wind()`** - wind from current METAR of this airport.

But working with these built-in functions in the ATIS text has the disadvantage that it will be more difficult for you to read the ATIS text while you are recording, as you can't see what the functions expand to.

External ATIS Interpreter

If it was just for the functionality described up to this point, the multiple-recording mode would not be a real time saver. Putting all the fragments together to form a complete ATIS might even take longer than doing a single recording of the entire ATIS. The real clue comes in by automatically building the

segment list from the current METAR and all the things EuroScope knows about active runways and the ATIS-letter you have chosen in the dialog. This is in fact not a trivial task considering the complexity of the METAR message. EuroScope has not yet built that functionality in but can make use of external web services that accomplish the task instead.

To configure the use of such an external ATIS interpreter, we use the *ATIS maker URL* field. Enter here the web address of the service you want to use and all the parameters that the service needs to perform its task.

After you have set up your *ATIS maker URL*, press the *Test URL* button and observe two things happening:

- In the field *Extracted URL,* you see how EuroScope has expanded the built-in function calls in your URL. That is the exact web request as is being sent out to the external service. Originally thought of as a debugging tool, it is a nice instrument to see what exactly is being sent.
- In the fragment list you see the result that came back from the external web service, namely a complete fragment list for your new ATIS. You can edit this result by hand, although in most cases the returned result will be totally satisfactory.

If you have checked the *Automatically generate new ATIS using the URL* check box, EuroScope will automatically update the ATIS for every new METAR report that is being received. It also increases the ATIS letter automatically at that time. To let neighboring controllers know that the ATIS code has changed, EuroScope sends ATIS change message to all other EuroScope clients in range, containing the new ATIS letter and airport code. If a neighboring controller has specified the same ATIS airport, the ATIS letter in his client is automatically updated and immediately visible in the menu bar.

Connection Features

There are just a few things to be set up to ensure a successful connection to the network without any problem. However, if you miss them, you will not be able to use all the features of EuroScope.

- *Outgoing connection* - When you are connecting directly to the VATSIM network or any simulated session hosted by EuroScope, EuroScope will call out on **port 6809**. You should allow outgoing connections at this port to reach external servers.
- *Built-in Simulator* - When you are hosting a simulator session then EuroScope binds **port 6809** and waits for incoming connections. In that case you should open this port to make incoming calls. When you are behind a router, you should forward this port to your workstation. **Note**: The tower view feature uses this port also. If you are trying to run the Flight Simulator on another machine you need to open this port.
- *Proxy server* - Normally you use the proxy server for internal communications only. That does not need any additional settings. But if you would like to allow controllers from an external machine to be connected, open **TCP port 6810** for incoming requests. When you are behind a router you should forward this port to your workstation.
- *Proxy client* - Once again, normally you use the proxy client feature internally and you do not need any additional settings. But if you would like to connect to an external proxy server, open the **TCP port 6810** for outgoing requests.
- HTTP requests - Several features are using standard HTTP requests (e.g. VATSIM servers, statistics data, sector file downloads) - They need **TCP port 80** to be open for outgoing requests. Normally it should work if you have a proxy server. But if the proxy needs authentication, EuroScope will fail so far (or it needs a third party SW that makes it invisible for the clients).

Multiple Sector Files

In the first public release, version 2.9a only one sector file could be loaded per session. The reason for this restriction was that the sector file and the extension file (.ese) contain information that must be global for the entire session, for example the sector hierarchy and the automatic sector assignment. It would be very confusing if things like active handoff areas were presented differently in each view.

Active Sector File

The above statement is still true. We still have only one sector file that is used to extract these essential data items, and we call it the *Active Sector File*. However, additional sector files can now be used by ASR files, which then are merely utilized to provide geographical and object data for those views.

When you start EuroScope, it first loads the sector file that has most recently been the active one.

Then it starts loading any ASR files. If EuroScope has no information about the most recent active sector file or that file does not exist, you will be prompted for it.

Whenever you load a new sector file by *Open SCT -> Load sector file* command, it becomes the active sector file.

One of the most important pieces of information taken from the active sector file is the projection center. This point is where the scale in horizontal and vertical direction is equal and the representation is most precise. Anything north of that point appears slightly horizontally stretched, while anything south appears horizontally squeezed. You can easily notice that when you load a new sector file, the projection parameters of your screen might be changed, and your active radar screen looks a little stretched or squeezed.

When you load a sector file, then all already loaded ASR files referencing this sector file will be refreshed automatically. But the ones not referencing it will not be changed at all. Therefore, if you are loading a sector file that is not referenced by the currently visible ASR, then it is quite normal that you don't notice any change in the display at all.

ASR Files are Connected to Sector Files

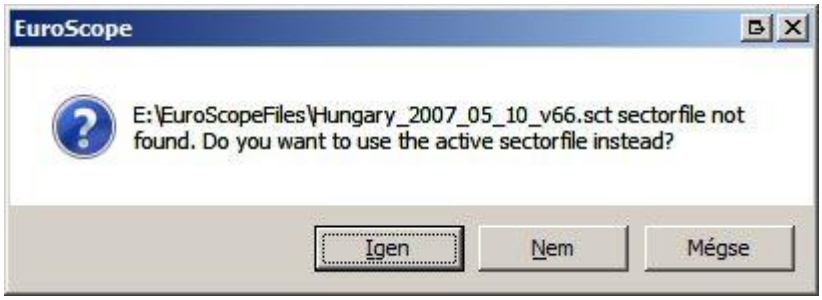
One change since version 2.9a is that the ASR file now holds a reference to the underlying sector file (see the *Where My Settings Are Saved* page for more about it).

When you load an ASR file that was created by V2.9a or earlier and which therefore does not contain a reference to a sector file, it will be connected to the active sector file automatically. When you close the ASR file you will be prompted to save this newly added reference.

When you load an ASR file, EuroScope looks for the referenced sector file. If the sector file has already been loaded, then nothing will happen, it will use the already loaded information. Otherwise, EuroScope will load the sector file automatically. After the successful load you will be prompted to decide whether you wish to use the newly loaded sector file as the active sector file:

You can answer *no*, in which case the current active sector file remains active and the sector file referenced by the ASR file is used only for the contained object data.

When you load an ASR that references a sector file that does not exist, EuroScope will prompt you, whether you would like to use the active sector file as reference or if you would like to browse for a suitable sector file:



If you agree to use the current active sector file, then this sector file will henceforth be associated with the ASR file. If you refuse, you will be given the chance to browse for a suitable sector file to be used with this ASR file.

Also check the *Download Sectorfiles*. The automatic sectorfile download has effect on opening an ASR file that has a newer version of sectorfile downloaded.

There is no function in EuroScope that allows you to change the sector file reference of an ASR file, except the prompt that comes up if the sector file does not exist. If you need to modify it, delete the reference using Notepad or any other text editor, or rename the referenced sector file. In both cases you will be prompted to a new sectorfile, the next time this ASR file is loaded.

Professional Radar Simulation

Concepts

The VATSIM environment makes radar identification all too easy for us. All the radar targets are generated by virtual pilots and hence the identification of each target is well known from the very beginning. In real world radar systems this is unfortunately not the case. When a radar target appears in the system for the first time it is just that, a spot on the screen. Such a target can be a primary target, i.e. a simple reflection of the radar beam off the airplane, or a secondary target, which means the airplane's transponder has sent an active answer back to the radar antenna. This transponder signal may contain

- *Mode A*: A four octal digit squawk code (0000 to 7777)
- *Mode C*: In addition to the squawk code, the pressure altitude (read-out of an altimeter always set to 1013 hPa, respectively 29.92 inches of mercury)
- *Mode S*: All that plus a 24-bit unique aircraft code and optionally the call sign of the aircraft

Associating that radar blip with an aircraft identification must either be done manually or automatically. And that requires special procedures, like having the pilot report his position, requesting him to *squawk ident* (a special signal of the transponder), or letting the airplane fly a turn to verify that this radar blip really is what the controller believes it is.

When a new flight comes into our airspace from an uncontrolled area, many of us are tempted to answer *identified* without having done all necessary steps to really identify that radar blip. It's so tempting, because we see the aircraft's identifier in the radar tag. It's already there, so why do additional identification? Professional Radar Mode tries to simulate this additional complexity of aircraft identification by *forgetting* some of the data that EuroScope receives from the VATSIM servers.

Basic Elements of the Simulation

- *Radar stations*: There is a new section in the ESE file. You can define where radar stations are located and the range where primary and secondary responses are visible for the radar. Also a linear slope can be added to raise the floor of the radar visibility in longer distances.
- As Hungary is one of the testing areas of the S-mode receivers EuroScope treats S-mode aircraft differently from A+C-mode aircraft and can represent them by different symbols on the screen. Of course you can disable the S-mode features if it is not used in your area.
- *Radar holes*: You can also define radar hole areas, where no radar responses can be seen, even though the aircraft is in range of a radar antenna. Those holes can for example simulate canyons and other areas with topographic conditions that make the reception of radar responses impossible.
- Complete separation of the radar targets and the flight plans. They are maintained separately and will be correlated only when certain criteria are met. You can manually correlate and de-correlate the radar targets and the flight plans.
- *Flight plan tracks*: All known flight plans are moved (just like hypothetical planes) if there are no correlated radar positions. You can define estimates for uncorrelated flight plan tracks. That way they are moved back/forward along their route.

There are already some improvements planned for future versions, so the current implementation is not what we expect to be the final state of professional mode.

How it is implemented

Enable/disable

In the *General Settings* dialog you can configure several aspects of the Professional Radar Simulation mode:

- *Correlation mode*: With this setting you can define how radar targets are correlated with the flight plans:
  - *Easy*: This is the old method used by older EuroScope versions and all other radar clients available. In this mode, radar targets are always automatically correlated with their flight plans.
  - *A+C-mode*: Only the squawk code is used for correlation. A radar target is correlated with a flight plan only when the aircraft is squawking the assigned code and it is within correlation distance to its calculated position according to the flight plan.
  - *S-mode*: S-mode transponders transmit not only mode A+C signals, but also the call sign; so, S-mode aircraft are correlated simply by matching the call sign; but this correlation still requires that the aircraft is within correlation range of the calculated position. S-mode correlation takes precedence over A-mode correlation, so an S-mode radar track for aircraft *MAH123* will be correlated with the flight plan for *MAH123* even if it is squawking a code assigned for some other aircraft.
- *Correlation distance*: The maximum allowed distance between the radar position and calculated position according to the flight plan for a correlation to take place. If the distance is larger, no correlation will take place even if the aircraft is transmitting the correct call sign. Setting the value to 0 makes the correlation distance unlimited.
- *S-mode transponders*: Unfortunately, there is no support for S-mode in VATSIM and most importantly in the pilot clients, so we must use some other information to simulate a mode-S transponder. EuroScope does this trick by using the equipment code in the flight plan's remark section. Check the SB3/SB4 documentation about the codes. In case you are using FAA equipment codes, then the default value of this field is *IEFGRWQ*. For ICAO equipment codes use EHILS as default. Any aircraft using any of these letters in its equipment code will be regarded as mode-S equipped. That includes nearly all RNAV capable aircraft. To disable all mode-S features, simply clear this field.
- *Simulate radar coverage and outage*: Check this box to enable radar position simulation according to the data from the ESE file.

After enabling the radar coverage simulation, you may switch on and off the radar antennas individually. Check the **`.antennaoff`** and **`.antennaon`** commands at *Command Line Reference*.

Symbology dialog

This dialog is extended now. It contains an editor where you can draw your own symbols on the radar. Among others there are several symbols for the aircraft positions:

- *Aircraft standby*: It is used only in easy mode when you choose to show stand-by aircraft, too.
- *Aircraft primary radar only*: When a position is within the radar coverage area and the transponder is disabled.
- *Aircraft uncorr. A+C mode sec. radar only*: Secondary radar return only from uncorrelated radar target with A+C mode transponder.
- *Aircraft uncorr. S mode sec. radar only*: Secondary radar return only from correlated radar target with S mode transponder.

- *Aircraft uncorr. prim. and A+C mode sec*: Primary and secondary return from target with uncorrelated A+C mode transponder.
- *Aircraft uncorr. prim. and S mode sec*: Primary and secondary return from target with uncorrelated S mode transponder.
- *Aircraft uncorr. A+C mode indenting*: Primary and secondary return from target with uncorrelated A+C mode transponder while indenting.
- *Aircraft uncorr. S mode indenting*: Primary and secondary return from target with uncorrelated A+C mode transponder while indenting.
- *Aircraft corr. A+C mode sec. radar only*: Secondary radar return only from correlated radar target with A+C mode transponder.
- *Aircraft corr. S mode sec. radar only*: Secondary radar return only from correlated radar target with S mode transponder.
- *Aircraft corr. prim. and A+C mode sec*: Primary and secondary return from target with correlated A+C mode transponder.
- *Aircraft corr. prim. and S mode sec*: Primary and secondary return from target with correlated S mode transponder.
- *Aircraft corr. A+C mode indenting*: Primary and secondary return from target with correlated A+C mode transponder while indenting.
- *Aircraft corr. S mode indenting*: Primary and secondary return from target with correlated S mode transponder.
- *Aircraft flight plan track*: To display the position of an uncorrelated flight plan simulation.
- *Aircraft coasting*: When no radar position (neither primary nor secondary) is received for 30 seconds up to 1 minute. Whenever an aircraft is coasting within the last 10% of your visual range, after 1 minute the target is not deleted but changed to be a flight plan track, which is used the very same way as all the other flight plan tracks originating from statistical data.
- *Ground aircraft*: It is a new ground view, not related to the radar simulation.
- *Ground vehicle*: Nonflying vehicle.
- *Ground rotorcraft*: Rotor aircraft on the ground.

Display settings dialog

This dialog is also extended with a Simulation mode combo:

- *Radar*: Use this mode for not ground positions. This mode uses the correlation mode set in the *General Settings* dialog. It displays:
  - *Flight plan tracks*: for uncorrelated or no radar position aircraft. This is used for the far away (statistical data) traffic too.
  - *Primary only radar*: Just TSSR and GS without any identification method.
  - *Secondary A+C or S mode*: For secondary positions only.
  - *Primary and secondary*: When both are received.
- *Ground with S-mode radar*: This mode is a bit old and not from real life. It displays TAGs with S mode ground setup if the target is S-mode equipped. Id does not require the transponder operating.
- *Ground without radar*: It display the TAGS with airline name and aircraft type only – that is visible from the tower.
- *Easy ground*: All planes displayed with all information available. Best use for pseudo pilots.
- *Ground with transponder only*: It displays additional information only for planes with active transponders.

TAGs

The list of the TAG types is extended:

- *Primary only*: It is used for primary only radar positions.
- *Uncorrelated A+C mode*: It is used for uncorrelated A+C targets.
- *Uncorrelated S mode*: It is used for uncorrelated S targets.
- *Correlated A+C mode*: It is used for correlated A+C targets.
- *Correlated S Mode*: It is used for correlated S targets.
- *FP track*: When showing a plane just by using its FP estimation, we can define some more information (like destination).
- *Ground*: To show the airline and the plane type.
- *Ground with S-mode radar*: To show the callsign with the plane type.

Whenever you select a TAG on the screen, the plane itself is selected. You can use the ASEL plane with many functions. In the new version, when an unidentified TAG is selected (primary only or uncorrelated radar TAG) then the plane itself is selected, but its data is not displayed. Nearly none of the functions will work with that kind of ASEL. One important exception is the **`.contactme`** command. It is sent to unidentified planes, too.

In case of an unidentified radar TAG, you can only see the untagged version. There is no way to tag it up. The flight plan tracks can be tagged up and even coordinated and be issued a or be accepted as handoff. But it works only for those flight plan tracks that have real data behind server. The flight plans that are outside your range and are only displayed from statistical data cannot be manipulated (even though it is not easy to see the difference).

The ESE file extension

There is a completely new section in the *ESE Files Description*: **`[RADAR]`**.

In this section you can define the radar stations and radar holes. The mode to define the radar areas are upgraded to v3.2. Check the new radar antenna definitions.

Estimations

When there are no radar response and a plane is displayed by the flight plan track only, you may enter some estimation when the plane will arrive to a certain waypoint. This is available as command line function, as TAG item and in the flight plan dialog. The command itself is the following:

```
.est <waypoint> <time> ASEL
.est <waypoint> <time> <click on AC>
```

- *waypoint*: A waypoint along the route. It can be any waypoint, even one that was already passed. But only points along the route can be selected.
- *time*: The ZULU time in four letter formats (e.g. 2235 for 22 hour 35 minutes). The time is limited. It must be in the future and maximum two hours later.

Sectors And Aircraft States

Sectors

What is a sector? A sector is a piece of airspace with a polygon boundary as lateral limits and with defined bottom and top altitudes/levels as vertical limits. The airspace controlled by the controller is his/her sector. (e.g. LHBP_APP sector covers the Budapest TMA, LHCC_CTR covers all Hungarian airspace, or after a division, LHCC_E_CTR can cover the Eastern part of Hungary).

NEW in EuroScope: An important feature of EuroScope is that it can make the airspace you are controlling visually appear, and on top of that, since it "knows" the vertical and horizontal limits of the airspace you own, it can handle aircraft differently. Suppose you log in to control the Netherlands as EHAA_CTR, the territory between the North Sea to the German and Belgian borders (practically the "FIR") lights up. Further suppose that heavy traffic makes it necessary to split up this sector and your colleague comes online as EHAA_W_CTR to deal with the London inbounds in the Western part, that part of your earlier *lit-up* will *go blank*, since it is not owned by you anymore.

Another nice example is controlling multiple-sector airspaces, like the VATSIM Eurocontrol positions: with EuroScope the controller's work becomes much easier - it will be discussed below in detail.

You may ask, how does EuroScope know all this? The programming is surely very sophisticated, but the division and handling of sectors is always the competency of VACCs and controllers. So, once they are agreed on (and most VACCs have been smartly using airspaces), it must be loaded to the software so that it knows all the vertical and horizontal sector information. Since other VATSIM controller clients did not have this airspace handling capacity, technically these sector definitions are put in separate ESE files. (So EuroScope uses two files to determine your sector: (1) the earlier SCT files and (2) the new ESE files.)

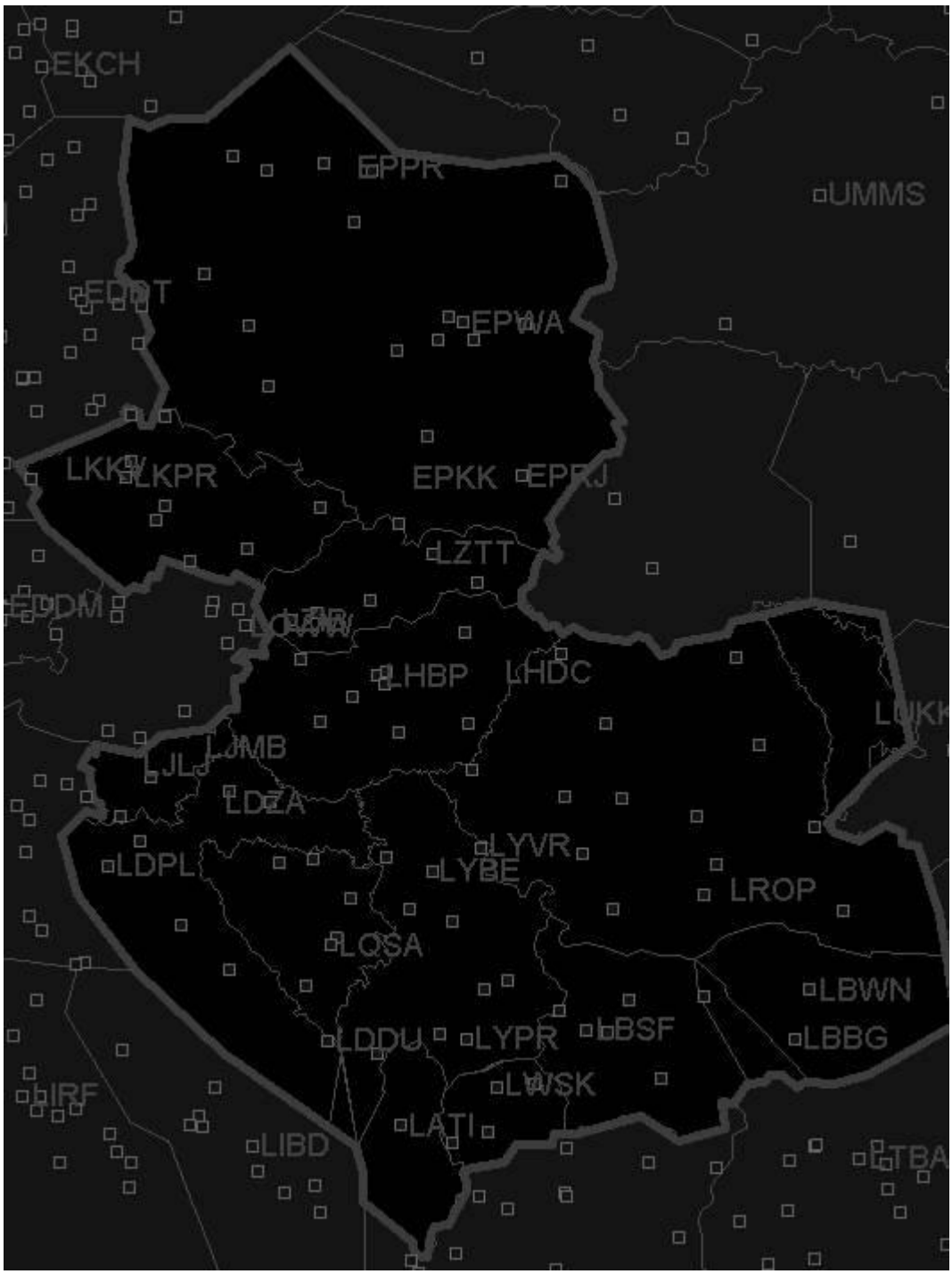
This may sound complicated, but don't get scared: it is a one-time issue (or only at AIRAC changes), and in fact it makes life easier! The philosophy of EuroScope is to integrate all airspace information of a VACC into one SCT and ESE file; if you switch controlled sector in your VACC, a different airspace is lit up, and you don't have to reload SCT files! Therefore, VACCs are expected to take care of updating the sector information so that controllers can use them easily.

The complete definition can be found in the Airspace section of the *ESE Files Description* page. Please, consult it on how you can define your sectors.

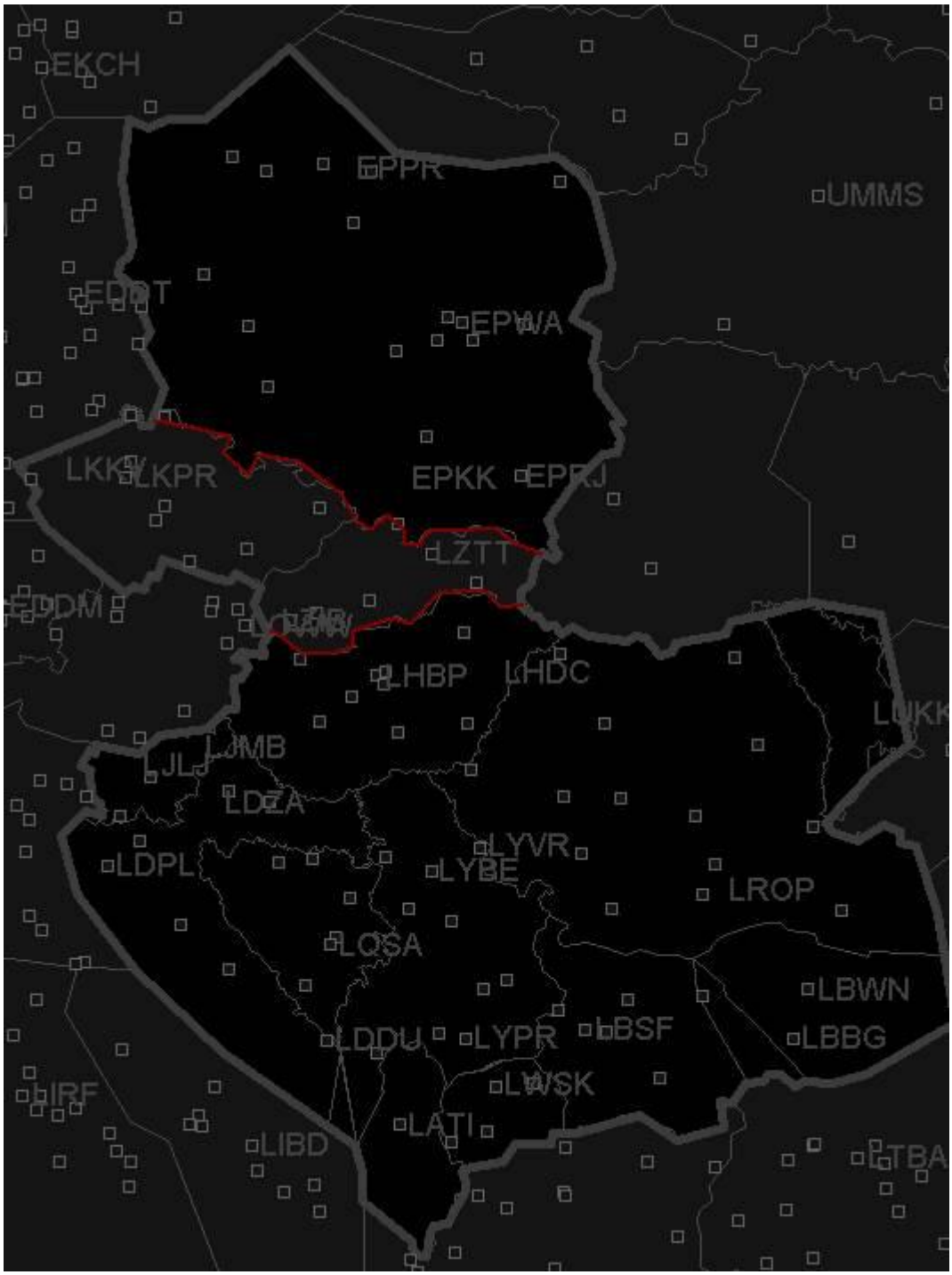
You can define any number of sectors for one sectorfile. Each sector may have a hierarchy list that defines which controller will control that individual sector. In this way every logged in controller will be assigned by one or more sectors to be worked within. These are completely dynamic in EuroScope. When another controller logs in who has higher priority for a sector, it will be reassigned immediately. On the other way a leaving controller's sectors may be inherited by the online ones. The hierarchy makes it possible to define the sector e.g. for a tower with the hierarchy list that assigns the sector first to the tower controller, then to the appropriate approach and finally the control. In this way if tower is online the sector belongs to him even if approach is online. But if tower controller quits the sector will be assigned to the approach immediately.

The sectors owned by you and not owned by you are displayed with different background colors. That way it is easy to notice where you are controlling. This feature probably helps best for the Euro Control position controllers, who can see immediately when a FIR controller comes online or leaves the system.

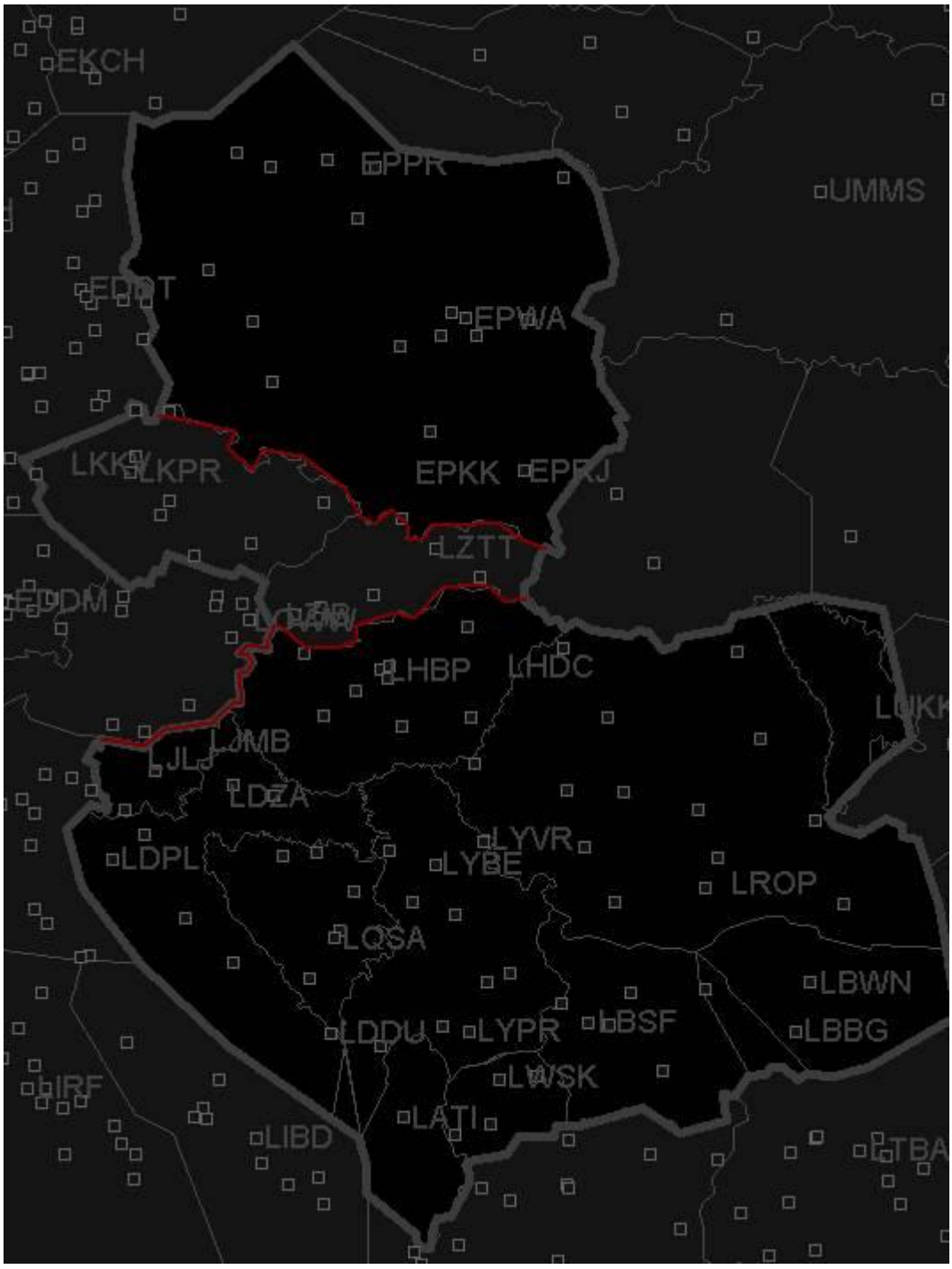
In this picture I am controlling the Eurocontrol East sectors from Poland to Bulgaria. No other controller is online and the whole area belongs to me.



Here you see that Praha came online. Therefore, his FIR no longer belongs to me. Its color has changed. And you also can notice the red line indicating an active handoff area where I should pass the aircraft tracking by me to the next controller.



We have now one more controller. Wien Radar is online. It does not change my sectors as Austria does not belong to Eurocontrol East. But the red line indicating the active handoff area is visible.



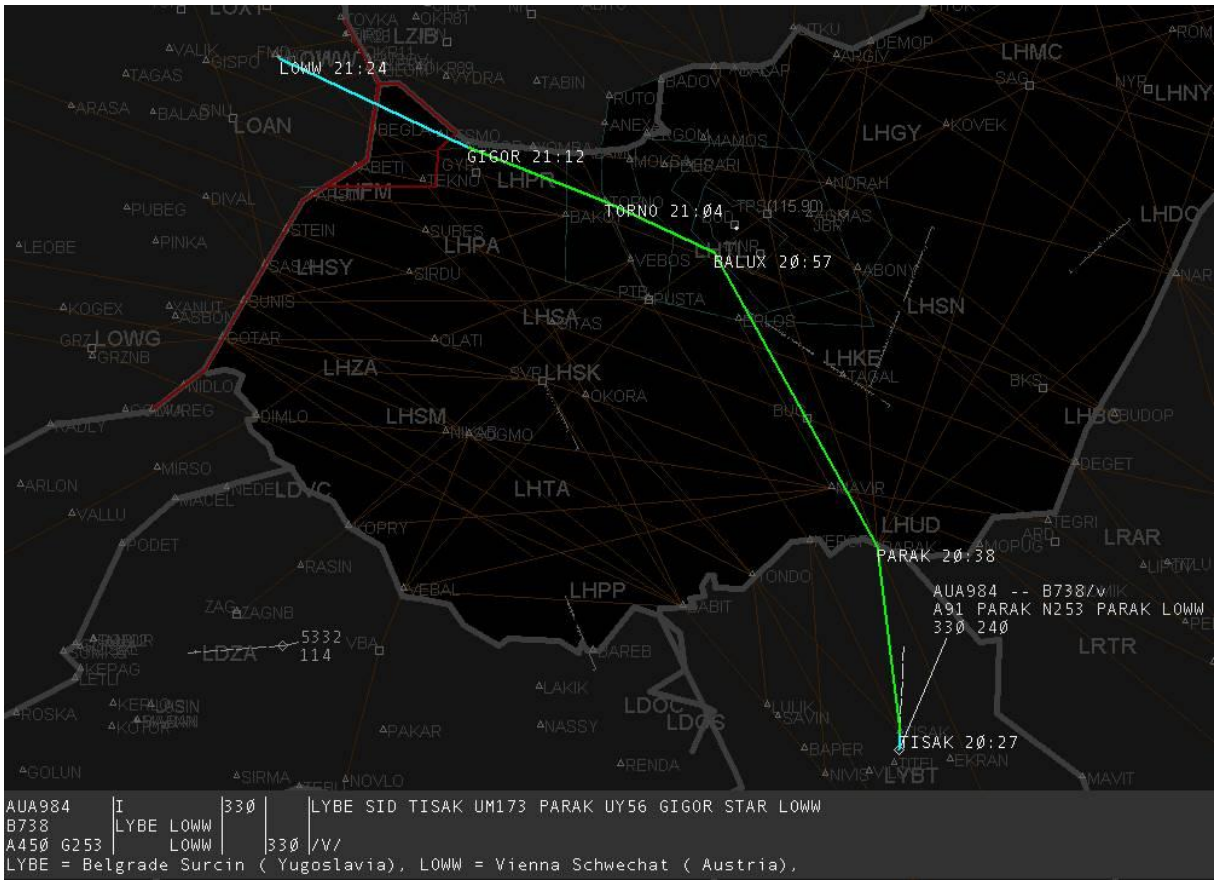
Flight Plan Extraction

We can say that EuroScope puts flight plan analysis into a new level. It incorporates the FSNavigator database and uses all point and airway definition information to decide the exact route an aircraft will follow. (This requires pilots to file valid flight plans (WAYPOINT (AIRWAY) WAYPOINT, e.g. TORNO Y56 GIGOR for a LHBP-LOWW flight. EuroScope still can handles *slightly invalid* routings, but on the other hand we must see that since the route section of the flight plan is a free text data, it is simply impossible for a software to understand all that a pilot has filed if it is not a validated flight plan. That

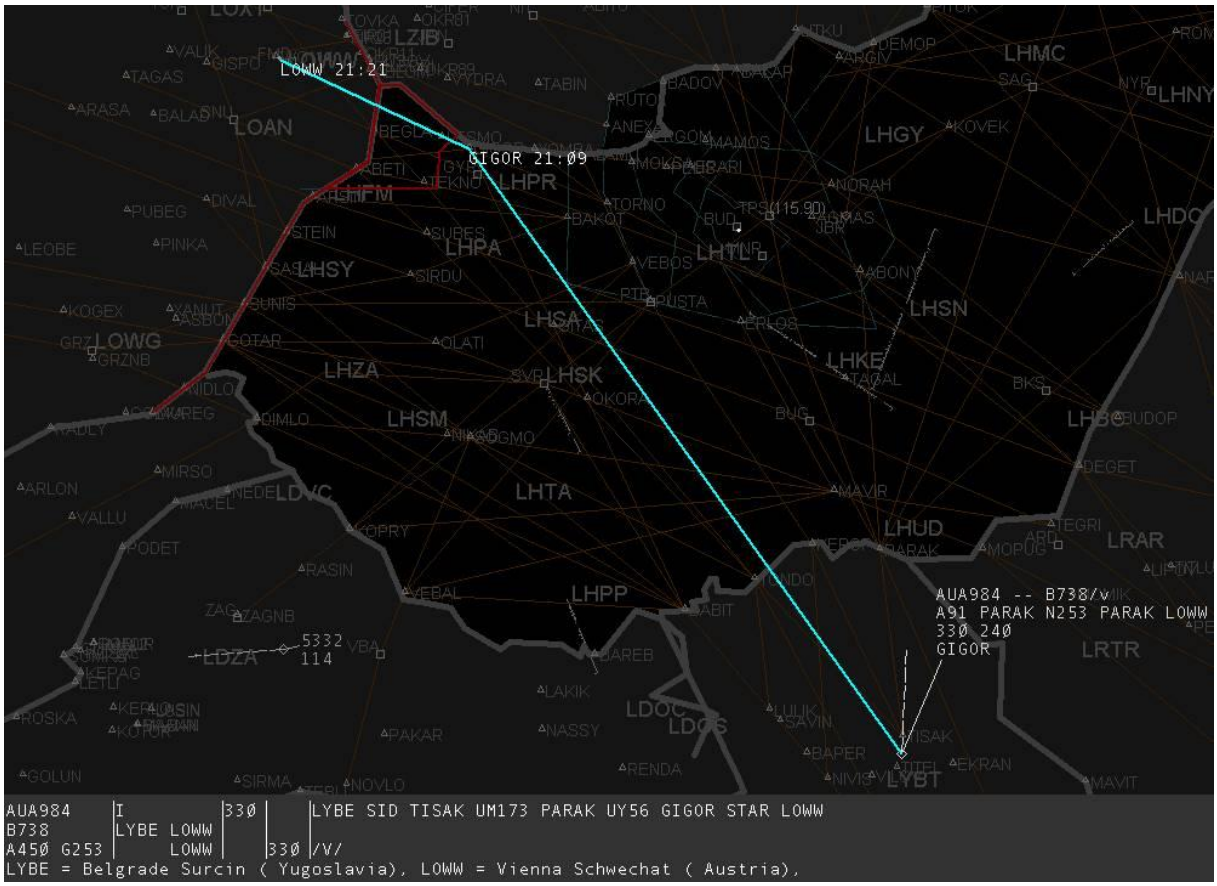
way the extraction of the route data works is good for 90% of the flight plans - but there are still ones that are completely misunderstood. In these cases, the controller can easily edit the routes).

On top of the horizontal route data EuroScope extends it with a vertical profile. For that all the coordination points (see again in the *ESE Files Description* page) descriptions are used and a rough climb and descend rate calculator is implemented. In this way a complete 3-dimensional flight route is calculated for each known aircraft.

In this picture you can see that just from fixes and airway names the whole flight plan will be extracted point by point.



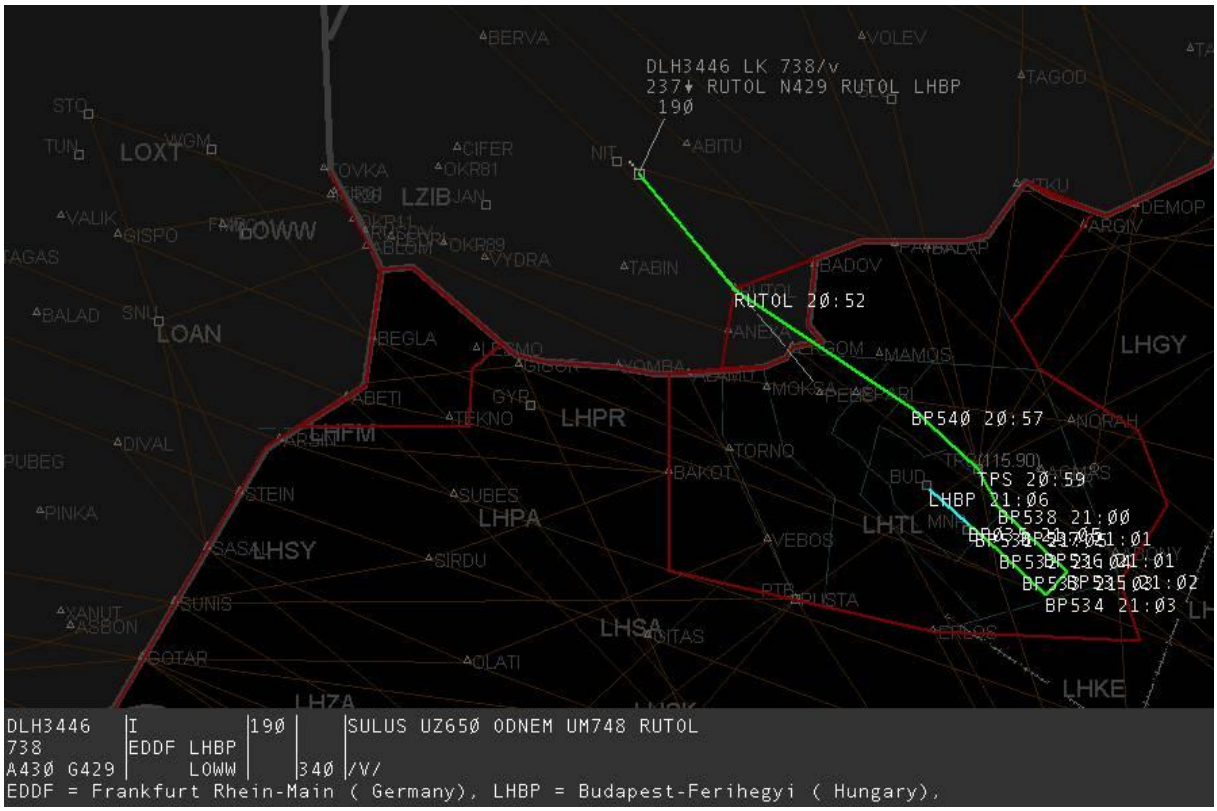
It could happen that you or another controller gives a shortcut to a pilot. It can be very easily set through TAG. Once the waypoint is defined the extracted route is also changed (so does the distance-to-go calculation).



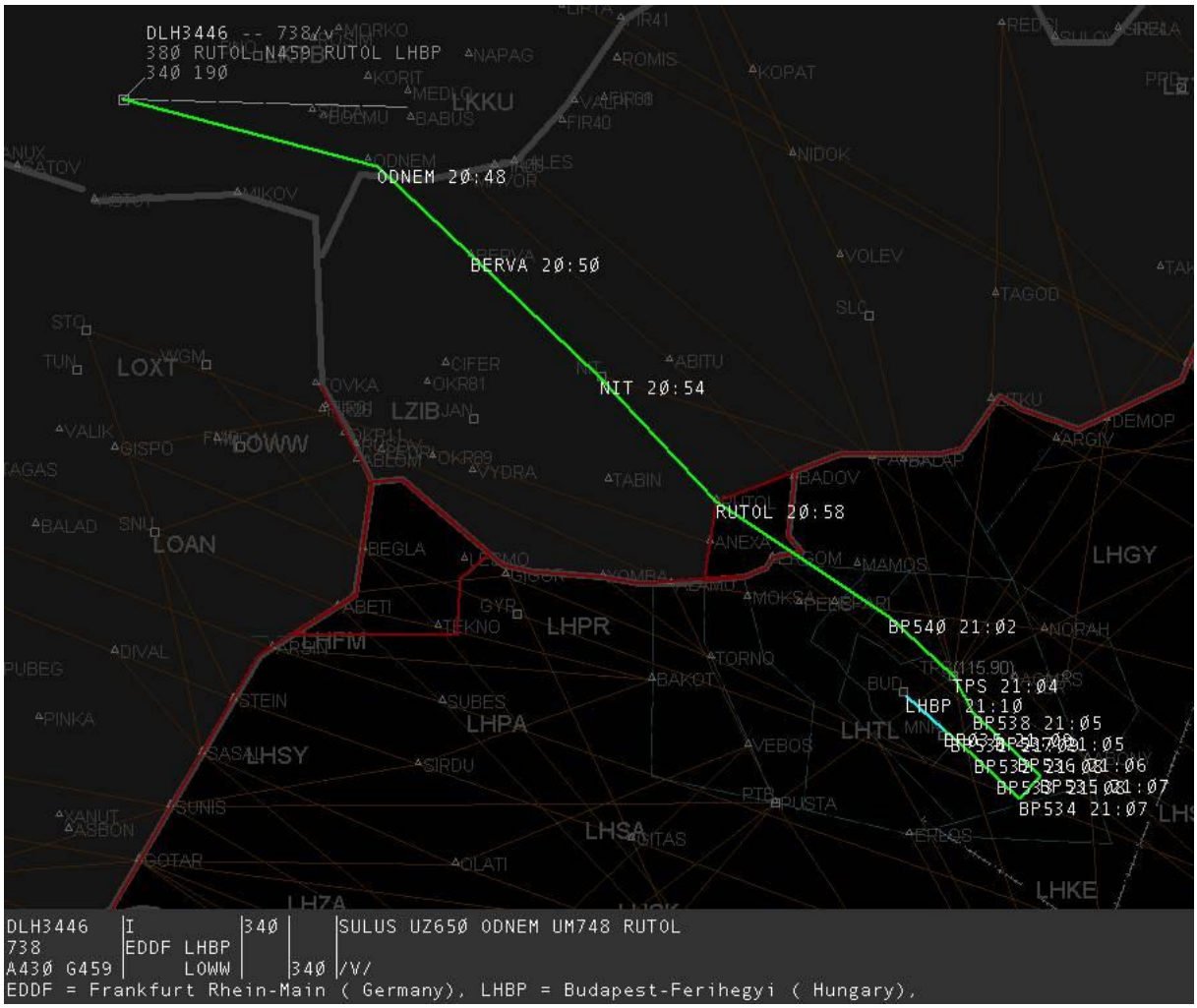
Aircraft States

Now, as we have this complete three-dimensional flight route estimations, EuroScope can compare them with the sector definitions. The result of this comparison is that EuroScope can classify the aircraft to the following categories:

- *Non-concerned* - an aircraft that is not inside any of your sectors and (based on the flight plan) will never ever enter there. Basically, you will never control that aircraft. This picture is interesting. I am controlling Budapest Radar, Budapest approach is also online and DLH3446 is coming to LHBP. But as the coordinated flight level at Budapest TMA entry point (RUTOL) is FL190 and approach is controlling up to FL195 this aircraft never enters to my sector at all just to approach:



- *Notified* - an aircraft that is still far away but if follows the flight plan route will enter your sector. Note that approach has been left, therefore I am controlling that sector too:



- *Coordinated* - in real world this is a very important state indicates that the neighbor controllers agreed how the AC will be handed off. As there are no such tools in VATSIM all Notified aircraft become Coordinated 15 minutes prior to entering your sector.

- *Transfer to me initiated* - another controller initiated a handoff to me.

- *Assumed* - you are controlling the aircraft. Note the sector indicator already indicating that the next controller I will handoff the aircraft will be Ferihegy Tower (abbreviation used is FT).

- As the aircraft is within 3 minutes time to the next controller the sector indicator automatically changes to display the next controller frequency.

- *Transfer from me initiated* - when I initiated a handoff to the next controller.

- *Redundant* - when the aircraft is still inside your sector, but the next controller is already tracking it.

- *Non-concerned* - just to close the sequence, as the aircraft leaves your sector and will not come back, its state changes to Non concerned again.

Radar Connection States

With v3.1, some new radar states for the aircraft's target symbol have been introduced, mainly related to the new *Professional Radar Simulation*. All radar targets can be freely customized using the *Symbology Settings* dialog.

Radar Screen

Layout Of the Screen

We might divide the screen into 3 sections:

- *Menu bar* - the upper menu bar is fixed, yet some of its items might be turned on/off.
- *Main screen* - the main screen is the operational part of the radar screen. Thus, its layout can be modified to your own taste.
- *Command line* - the lower command line is used as text input and *single click* info bar.

Menu Bar

On top of the screen, you can find *The Menu Bar*:

Main Screen

When mentioning main screen, we think about the radar screen itself. We are not going to go into details concerning radar screen in this section, rather focus on parts of the screen which are not related to the radar itself.

The documentation of those elements is divided into the separate functions of the main screen's elements:

- The *Basic Lists* - The lists like those already known from ASRC (if anyone remembers).
- The *Advanced Lists* - More advanced lists, containing all important information about the different states of flight.
- The *Distance Separation Tools*
- The *Chat Box*
- The traditional *Flight Strip* - as it is known by ASRC and VRC.

Command Line

The bottom bar is called *The Command Line*.

The Menu Bar

On top of the screen, you can find the menu bar:

Most of the menu items can be activated with left mouse button as usual, though there are some buttons where right mouse button might be used, too.

Menu Items

Turn on/off some blocks of menu items, like:

- Show controller login name
- Show file name
- Show primary frequency
- Show ATIS frequency
- Show selected aircraft
- Show clock
- Show leader data
- Show transition altitude
- Show altitude filters
- Show METAR in title
- Exit command

Connection

Clicking here will take you to *Connection Settings* dialog. The icons with orange border will show you the actual connection mode. These are:

- Unconnected state
- VATSIM connection
- SweatBox connection
- Simulator session hosted by me
- Proxy connection
- Playback logfile
- Non VATSIM server connected (local FSD for simulation)

Controller login name

During active connection the callsign and your actual rating (in brackets) are shown.

Voice communication setup

Voice setup. Select text/voice frequencies for receiving/transmitting.

Primary frequency

Your primary frequency is displayed here. It turns orange, when you issue a "**`.break`**" command, for a position relief. Clicking on the icon the *Voice Communication Setup* is opened.

Voice ATIS connections

Your voice ATIS connections can be found here. There are four places for the four served airports.

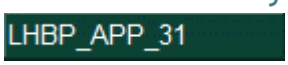
- The "minus" sign means no connection.
- The ATIS letter shows an active connection

Unfortunately, there is space for the airport itself. Clicking on the letter opens the *ATIS Connections Dialog*.

Sector files

- Download sectorfiles from providers
- Reopen your last opened sector layouts (**`*.asr`** files)
- Open - open an existing **`*.asr`** file
- Close - close the actual **`*.asr`** file
- Save - save changes to the actual **`*.asr`** file
- Save As - save the actual **`*.asr`** file with a different name
- New - create a new **`*.asr`** file - depending on the loaded plug-ins here you may have several new options to create different types of screens
- Load Sector File - load your main **`*.sct`** ASRC sector file
- Load Aliases - alias file (**`*.txt`**), same format as ASRC alias files
- Load ICAO Airlines data - data file to decode ICAO airline codes (**`ICAO_Airlines.txt`**)
- Load ICAO Airports data - data file to decode ICAO airport codes (**`ICAO_Airports.txt`**)
- Load ICAO Aircraft data - data file to decode ICAO aircraft codes (**`ICAO_Aircraft.txt`**)
- Load Load airport coordinates (**`ICAO.txt`**)
- Load FSNavigator data - FSNavigator data file for the actual AIRAC (**`AIRWAY.txt`**)
- Load VATSIM Server IP addresses - ipaddr.txt file (not in use anymore)
- Load additional Server IP addresses - myipaddr.txt file (your personal servers file)
- About EuroScope - current version of EuroScope

Actual sector layout

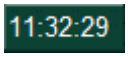


The name of the currently displayed sector layout is shown here, if you open more than one **`*.asr`** files and switch between them with [F7] then the name of the actual one will be here. Clicking on this item will let you manually select another already opened layout.

Selected aircraft

The name of the currently selected aircraft will appear here.

Clock



Your system time is shown in UTC (ZULU time).

Other settings

This is the main settings menu for deeper changes in your program.

- Save profile - To save the current configuration in the current profile file
- Save profile as - To save the current configuration in another profile file with another name
- Auto load last profile on startup - If this menu item is checked, EuroScope will load the lastly used profile file on next startup
- Auto save profile on exit - If this menu item is checked, EuroScope will save the current profile file when exiting.
- Save all settings - To save parameters that are not saved in the settings file, call this item. From version 3.0 it is not so important to do it manually as all settings change will be prompted on exit.
- Load all settings - Replace your settings with previously saved ones
- Settings file setup - It opens the dialog box to specify what settings groups are to be saved to what files (see *Where Are My Settings Saved*)
- General settings - Some general settings such as ASEL and FREQ key, current squawk range (further details under *General Settings*)
- Display settings - Select what to be displayed on your radar screen (further details under *Display Settings*)
- Symbology settings - Set the colors, font sizes, line types and symbols used on the radar screen (further details under *Symbology Settings*)
- Plug-ins - It opens a dialog box to manage your plugins and plug-in permissions. See the *Plug-Ins Dialog*.
- TAG editor - Create your own radar tags/labels using this editor (further details under *TAG Editor*)
- Sounds - Audio notifications can be configured here (further details under *Sounds Setup*)
- Voice - Voice communication setup (same as the one available through the icon, further details under *Voice Communication Setup*)
- Active airports/runways - Select airports to be concerned in your traffic prediction lists, select active runways for displaying default procedures (SID/STAR) and accurate distance calculation (further details under *Active Airports Runways*)

- System messages - It simply opens the *Messages* tab in the chat area
- Extended centerline setup - EuroScope can draw enhanced runway centerlines on your radar screen. (Easy configuration, neat result.) (Further details under *Extended Centerline Setup*) To turn on runway centerline items go to *Display Settings*.
- Conflict alert setup - You can set up when an alert is to be displayed (further details under *Conflict Alert Settings Dialog*)
- Sector ownership setup - Here you can set up how the sector assignment should work (further details under *Sector Ownership Setup*)
- Range rings around planes - Here you can set up range rings around planes
- Scenario editor - built-in simulator in EuroScope (further details under *Scenario editor*)
- VCCS dialog – It opens the *VCCS Dialog*.
- Save chat to a file - Save the content of your current chat into a text file.
- Save chat to the clipboard - Copy the entire text of your current chat to the clipboard.

Quick settings

- Show sector inbound list - Show flight strip with all aircraft incoming to the sector
- Show sector exit list - Show flight strip with all aircraft exiting from the sector
- Show departure list - Show flight strip with all aircraft departing from this position
- Show arrival list - Show flight strip with all aircraft close to its destination (if destination is selected as active for arrivals)
- Show Startup list - Show the departures before startup.
- Show Taxi Out list - Show the planes currently taxiing out for departure.
- Show Take-Off list - Show the planes ready for departure.
- Shod ADC Sector list - Show arrivals in the airport vicinity.
- Show Taxi In list - Show the arrivals taxiing into the gate/stand.
- Show Pending coordinations – Show the pending coordinations.
- Show flight plan list - Show flight strip flight plans (many filters are available)
- Show conflict list - Show CARD list (many filters are available)
- Show controller list - Show list of controllers (also observers, any connections with ATC clients).
- Show aircraft list - Show a list of predicted traffic that is to enter your airspace or have already entered it.
- Show Piloting list - Show the pseudo pilot list for controlling simulated planes.
- Show METAR list - Display a floating bar showing all METAR requested if checked, otherwise not.
- Show ATIS letter in METAR list - Display the ATIS letter in the METAR list if checked, otherwise not.
- Show TS VCCS mini control – It displays the mini version of the VCCS dialog.
- Connect SIL to Top messages - If checked locks Sector Inbound List flight strip bay under the incoming messages list, otherwise you can put that list anywhere you want on your screen.
- Connect SEL to SIL bottom - If checked locks Sector Exit List flight strip bay under the Sector Inbound List flight strip bay, otherwise you can put that list anywhere you want on your screen.

- Connect DEP to SEL bottom - If checked locks Departure List flight strip bay under the Sector Exit List flight strip bay, otherwise you can put that list anywhere you want on your screen.
- Show text messages - As we prefer voice communication, we might miss important text messages coming on our primary frequency. With this option we can display the incoming messages (with time stamp) on top of the radar screen, with double clicking we can hide them and go to answer them.
- Show STBY aircraft - This tool comes handy when you would like to turn on the radar tags for aircraft that are squawking STBY.
- Show simulated traffic - Traffic falling out of your range is also simulated. This way, you can have information on flights that are not in your range yet. If this option is on when you are not connected to the network, you can see all aircraft and controllers online based on VATSIM statistics data.
- Hide flight plans inside my sector – This option is designed for multiple monitors with proxy connections. When checked you can use your secondary monitor as an overview and hide traffic from the other, more detailed screen.
- Play sounds - Play sound files for certain events, like handoffs, etc. Configuration is possible in Other Options -> Sounds.
- Show magnetic north up - If this option is checked then the magnetic north will be displayed to the UPSIDE of the monitor. If unchecked, then the true north.
- Enable advanced proxy communication - EuroScope is designed to be easily used in systems with two or more monitors and displays. In this case you should start two instances of ES and connect the second to the main program via proxy connection. In this case both clients will be at the full station using only a single VATSIM connection. If advanced communication is enabled then several messages are sent between the clients (e.g. the selected screen item, the open chat windows, the entered message to the command line etc.) With the help of it you can write the command in one instance and click the aircraft in the second one and it will still work. On the other hand, when someone is connected to your proxy externally then it is not a good idea to see what he/she is typing. This flag is set automatically. If a proxy connection is made to the "localhost" client, then it is enabled otherwise disabled as default.

Active airports/runways

Here you may select the airports to be concerned in your traffic prediction lists, select active runways for displaying default procedures (SID/STAR) and accurate distance calculation. Clicking on the left side of the runway designation will select the airport, in the right-hand columns the departure and arrival runways can be ticked (further details under *Active Airports Runways*).

Leader line on/off

Toggle the time/distance vector for all displayed aircraft. (Mind you, it is possible to toggle the leader line of a given aircraft by right clicking on an empty section of the detailed tag.) Clicking with the right menu button a popup list appears that allows a quick setting of the leader lines. In this popup you can select if the leader line is a straight one or if it follows the route.

Leader line type/length

You may set the type of leader line, depending on whether time or distance vector you prefer now. Also, by clicking on the numbered button (“left click” to increase, “right mouse button” to decrease) you can set an exact length for the vectors.

History trails

Toggle history trails for all aircraft. (Small dots symbolize the previous positions of the aircraft.)

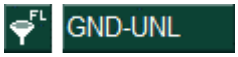
Show standby aircraft

This tool comes in handy, when you would like to turn on the radar tags for aircraft that are squawking STBY. Note that flying STBY planes are always shown in professional mode. In this mode it hides the planes on the ground only.

Transition altitude

This is just a reminder of the actual transition altitude for you. Set the values with your left and right mouse buttons (“left click”' to increase, “right click” to decrease). Below FL100 the levels can be adjusted by 500 ft, above FL100 by 1000 ft.

Altitude filter



You may set an interval (open or closed) in which you want traffic to be displayed. Default value is GND-UNL which means that all traffic is shown on the radar.

Distance tool

A smart tool for measuring distance and time, checking radials, headings, coordinates, etc. This button calls the “`.distance`” command, which can be followed by callsigns, fixes, etc. Selecting the points can be done either by typing the points or by selecting them on the radar by a single mouse click.

Separation tools

Use separation tool if you are not sure whether two aircraft on converging tracks would require further attention to keep the separation between them. With this you can predict what the minimum distance between these planes would be, and when exactly this situation would happen.

Short METARs

To display the short METAR of an airport press [F2] type the "ICAO code" of the airport and hit [ENTER] (this is equivalent to command: '**.QD LHBP** in the text input). If a new METAR is received from the server, it will be shown in orange to draw your attention. By clicking on it (acknowledging it) the color will change to white and the complete metar is displayed in the status bar. If the place is long enough to show the full metar string, then it will be displayed instead of the short version. If you must display more station data at one time you may run out of space for them (it is not too big area). In this case with a right click you can loop over the displayed metar data. A double-click will remove the clicked metar just as F2 and "ICAO code".

Send screen to the next desktop

This button is hidden unless you have a multi-monitor system. Users with multiple monitors can send the screen to the next monitor using this button.

Minimize to taskbar

The standard Windows minimize button.

Maximize/restore window

This is once again the standard maximize/restore Windows button. But it has limited behavior. As EuroScope does not have a resizing frame around there is no meaning to make smaller than the screen. So the only difference between maximized and restored state of the screen is that in maximized state even the taskbar is covered by the radar. In restored state the taskbar is visible. My experience shows that when the screen is maximized MSN will show your state *busy* but not in restored state. Clicking here with the right button a popup menu appears that allows you to select the position of the window from a short list.

- Full
- Left half
- Right half
- Top half
- Bottom half
- Left third
- Middle third
- Right third
- Left two thirds
- Right two thirds

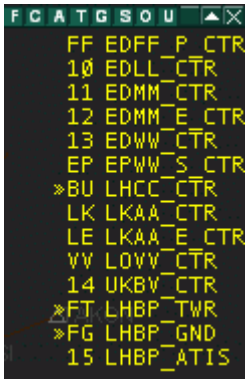
The selected position is used only if EuroScope is not maximized.

Quit

No real need to comment on this function.

Basic Lists

The Controller List



This floating bar can be set on any position on screen at user discretion. It displays some information about the controllers around your center.

The top bar allows you to filter which controller positions are displayed on screen by clicking on the buttons located in left part of the floating bar.

- **F** - Displays FSS stations online (Flight Service Stations).
- **C** - Displays CTR stations online (Center positions).
- **A** - Displays APP stations online (Approach positions).
- **T** - Displays TWR stations online (Tower positions).
- **G** - Displays GND stations online (Ground positions).
- **S** - Displays ATIS stations online (ATIS positions).
- **O** - Displays OBS stations online (Observers positions).
- **U** - Displays unidentified stations online (Non identified positions).

For each position, the following items are displayed in the Controller list:

- Ongoing coordination flag indicating that the controller uses radar client that is ready for ongoing coordination.
- The position identifier as defined in the ese file.
- The complete callsign.

The color of the controller means:

- **yellow** - normally
- **pink** - when leaving shortly
- **white** - when there is no position update in the last 30 seconds and they are assumed to be disconnected.

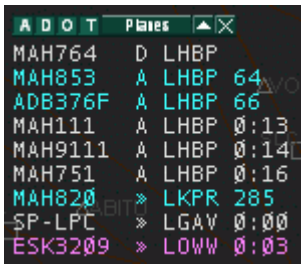
With a left single click on any position in the list a detailed data is copied to the message area. With a doubleclick you can open a chat window with the controller.

With a right click a special popup menu appears that shows the following items:

- Display scope as – This command changes your screen as you were online as the selected controller. Note that even if your screen looks like you are in a specific position, the tools and command are still limited to your actual connection.
- Back to myself – This function returns the display to your actual connection.
- *Get ATIS* - This item calls for the actual ATIS of the controller, the answer will be shown as private message in the chat area,
- Call on VCCS – This function calls the controller on *VCCS*.
- End VCCS call – This function terminates the ongoing VCCS call.

The Aircraft List

This floating bar displays the aircraft which are relevant for your position active position. Both the in range and the simulated planes are here. Each line is colored depending on the aircraft state, according to the definition in the data block settings in symbology dialog. A left click on a line selects the aircraft - it can be used as a click on the TAG itself, right click opens the flight plan editor.



- The first item is aircraft callsign. With a handoff request in progress, a left click opens the handoff popup menu.
- The second item can either be an **A**, **D** or <<.
  - **A** - indicates the aircraft is an arrival for one of the users active airports.
  - **D** - indicates the same for departures.
  - >> - indicates the aircraft's destination is outside your sector and the aircraft is going to leave or enter your sector.
- The third item is the aircraft departure or destination airport.
- The fourth item depends on the aircraft state. For departures it is the assigned squawk, for arrivals it is the distance remaining to the destination airport. When the user is working an active sector which the aircraft is going to enter, it is changed to the time left until entering the sector.

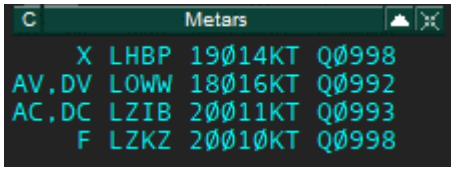
The list can be filtered by the header left letters:

- **A** - is for arrival planes,
- **D** - is for departures,
- **O** - is for overflights,
- **T** - is for tracked planes.

The Metar List

This floating bar displays the METAR stations requested by the controller. The user requests a METAR by typing the [F2] function key or by typing "`.QD`" then the ICAO code of the requested station. It appears in orange color in the menu bar and in the METAR floating bar in short METAR format.

- Short format line: DAAG VRB03KT Q1029
- Long format line: DAAG 101030Z VRB03KT 9999 FEW020 14/04 Q1029



If the user clicks on an orange METAR, the change of the METAR is acknowledged, the color changes from orange to blue and it is displayed in long METAR format on the right side of the command line. Using the C button on top left of the floating bar, the user can acknowledge all METAR changes with one click.

Via *Quick Settings* You can add the current ATIS letter to the METAR lines.

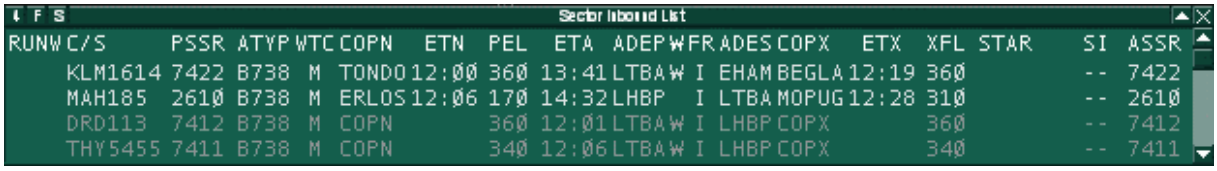
The ATIS letter handling is completely rewritten in v3.2.8.0. This was a breaking change. Therefore, it might happen that prior version of EuroScope does not 100% compatible with the ATIS letter propagation.

v3.2.8.0 uses the following rules:

- Only _ATIS callsigns are expected to provide ATIS letters.
- If no _ATIS controller is online for an airport, then no ATIS letter is displayed at all.
- If there are more than one _ATIS controller online for an airport, then a comma separated list of ATIS letters are displayed. In from of the ATIS letter the _ATIS controller designator letter also displayed. The above image is created when the following controllers were online:
  - LHBP_ATIS
  - LOWW_A_ATIS
  - LOWW_D_ATIS
  - LZIB_A_ATIS
  - LZIB_D_ATIS
  - LZKZ_ATIS
- Actual ATIS letter is extracted from querying ATIS information from _ATIS controllers. The ATIS info is queried automatically when a controller comes online.
- ATIS letter change is propagated via the **`$NEWATIS`** packet only. Because of that all clients that do not handle this packet (including EuroScope prior this version) will not update ATIS letter on change.

Advanced Lists

Summary Of This Page



There are several different lists available on EuroScope. In addition to those standard lists, additional lists can be added by plugins (for example the Holding List Plugin). All those lists have three small buttons located on the upper left corner of the list window.

The first button on the left defines the size of the list window. The following options are available:

- *unlimited* - in that case, there is no limit to the number of lines in the list window. The lists shrink or expands according to the number of aircraft.
- *maximum nn* - in that case, the window has a variable size according to the number of aircraft and expands only to the maximal size indicated by the nn parameter.
- *fix nn* - in that case, the window has a fixed length and displays the nn first items.

The second button allows you to define which items are displayed in the list window. Full details are described below.

The third button opens the List Columns Setup Dialog to completely customize the lists up to your needs. Full explanation is given at the end of this page.

On the right side you can find an up-arrow button. That can be used to close up the list.

And finally, the small X button closes the list.

Note: By clicking on the header of a column in each list, the order of the aircraft in the list can be changed. Second click will reverse the order. The lists support multiple columns ordering. In this case the last click will be the main order. This can be saved in the settings file.

The list types

As all lists can be configured using the list setup dialog, there is no need to describe the fields. What is important when a flight plan is in a list or not.

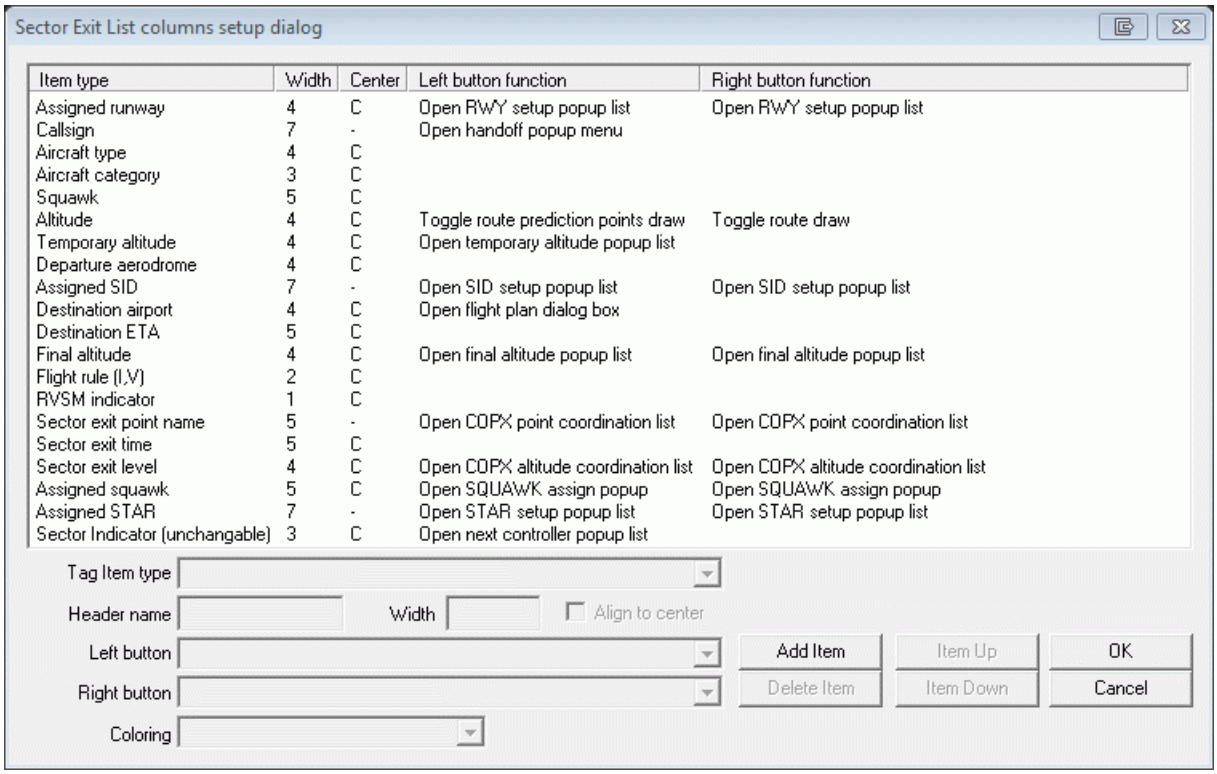
In EuroScope we have the following list types:

- Sector Inbound List (SIL) – It keeps track of all aircraft that will enter your sector but are not currently inside. This strip is mostly read only. You can use that list only for ongoing coordination (as described in *Controller to Controller Communication*). The default order of this list is by the estimated sector entry time.
- The Sector Exit List (SEL) - This list displays all information about the aircraft which are inside your sector and tracked by you. You can modify some of these parameters by clicking on it. In some cases, a popup menu appears like in the detailed TAG and allows you to modify this parameter. The default order of this list is by the estimated sector exit time.

- The Departure List (DEP) - The departure list shows you all aircraft currently on the ground on one of your active departure airports. In this list You can assign all essential data for the aircraft and keep annotations on their current clearance status.
- The Arrival List - The arrival list displays all traffic that is arriving or has arrived at an active airport. The flight plans added to the list when they are closer than 40 NM to destination.
- Startup List – It is part of the departure list. This list is mainly for the clearance positions. It holds all flight plans that are about to depart from the active airports, and their ground state is "*Not Started*", "*Starting up*" or "*Pushing back*".
- Taxi out list – It is part of the departure list. It holds flight plans if their ground state is "*Taxiing out*".
- Take off list – It is part of the departure list. It holds flight plans if their ground state is "*Departing*".
- ADC sector list – It is part of the arrival list. It holds flight plans if their ground state is "*Arriving*".
- Taxi in list - It is part of the arrival list. It holds flight plans if their ground state is "*Taxiing in*".
- Pending coordinations – In this list you can find all flight plans that have an initiated coordinations, inbound or outbound. It is handy when you have an inbound coordination on a flight plan that is not yet visible on the radar.
- The Flight Plan List - The flight plan list displays all flight plans based on actual radar traffic and simulated traffic. This list has an advanced filter on top:
    - **I** - Show IFR flight plans
    - **V** - Show VFR flight plans
    - **C** - Show correlated flight plans
    - **U** - Show uncorrelated flight plans
    - **O** - Show concerned flight plans
    - **N** - Show unconcerned flight plans
- CARD (Conflict And Risk Display) list - The list shows warnings (yellow) based on the profile altitudes and alerts (red) if the planes are cleared for the conflicting levels. Conflicts are detected when horizontal separation is less than defined in the *Conflict Alert Settings Dialog* and the intersection of the vertical limits (between the actual and cleared levels) is not empty. Conflict is not detected when the calculated profile is below the minimum (final or temporary). Press and hold the right mouse button over any line in the file to show the conflict detection tool for the planes of that line.
- The piloting list - This list is for the pseudo pilots of a simulator. All the planes that belong to the pilot are listed here.

List Columns Setup Dialog

This dialog allows the user to customize the way strips are reacting when the user clicks on an item.



There are four columns in this dialog:

- *Item type* - the user can choose in the Tag item type popup menu which characteristic applies to the selected item.
- *Header name* - chosen abbreviation for the selected item
- *Width* - the width of the column in characters.
- *Align to center* - this parameter can be set with the "Align to center" checkbox to align to center text in the column for the selected item.
- *Left button function* - this popup menu allows the user to choose in a list of preset actions to apply when the user left clicks on an item in the strip.
- *Right button function* - this popup menu allows the user to choose in a list of preset actions to apply when the user right clicks on an item in the strip.
- *Coloring dropdown list* - You can assign different colors to list items. Those colors match the relevant data block items in the *Symbology Settings* dialog.

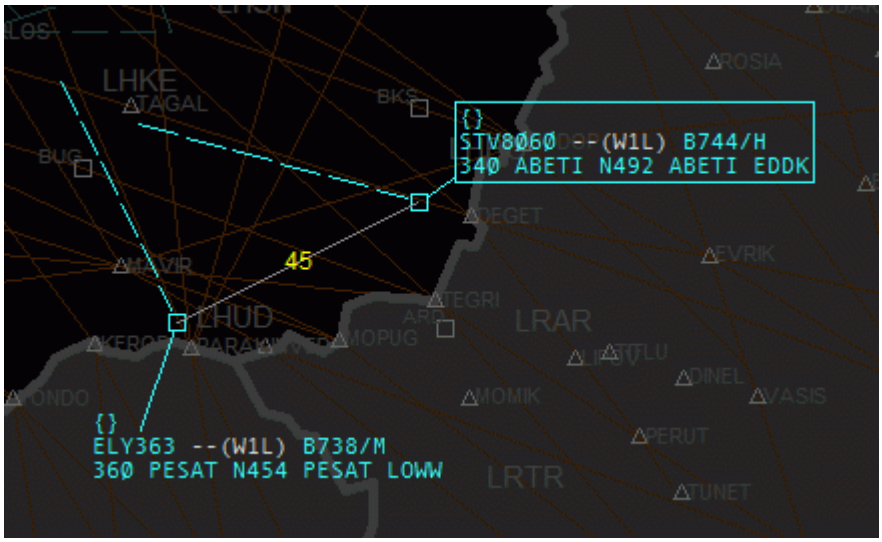
The different buttons *Add item*, *Item up*, *Item down* and *Delete item* allows the user to add, move up or down or delete an item in the dialog.

Distance Separation Tools

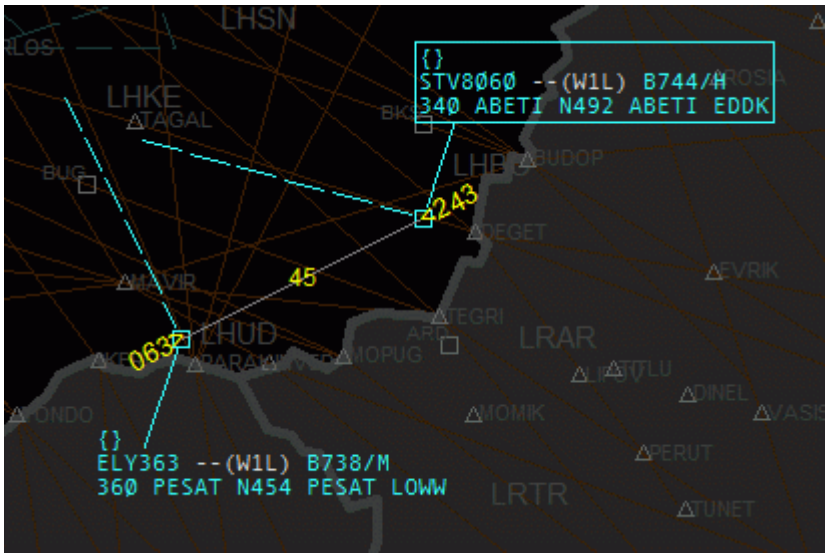
The Distance Tool

It is located on the right side of the main menu bar. It allows the display of the distance between two points. These points can be an aircraft, a VOR, a NDB, or even a single geographic point. After clicking on the distance separation tool icon, the user selects an aircraft by clicking on its TAG. After clicking has been done, a white line follows the mouse and displays a tag above it showing distance and heading from the first clicked point.

If the user clicks on a second point, the line remains displayed on screen.



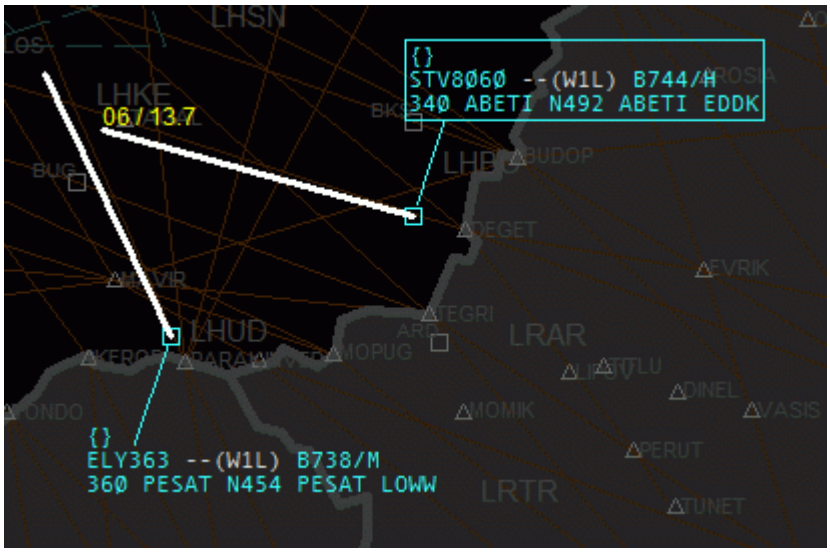
When the user clicks on the icon the "`.distance`" command is entered to the command line. The user has the option to go down and write parameters manually. Two parameters can be entered that can be anything: FIX, NDB, VOR or airport name, aircraft callsign or a geographical point in the following format: N046.39.34.935,E020.24.14.512 . The user also has an option to change the .distance command to .distance2 . This command will show direction values at both ends of the line.



Use the *LEFT* mouse click on the distance line to start measuring to another point. Or use the *RIGHT* mouse click to remove it from the screen.

The Separation Tool

It is located on the right side of the main menu bar. Use it if you think that two aircraft are on convergent tracks and need special attention to avoid a conflict. This tool indicates the minimum distance between both aircraft and the time from now when this situation will occur. It displays also for each aircraft a bold white line from current position until minimum approach position.

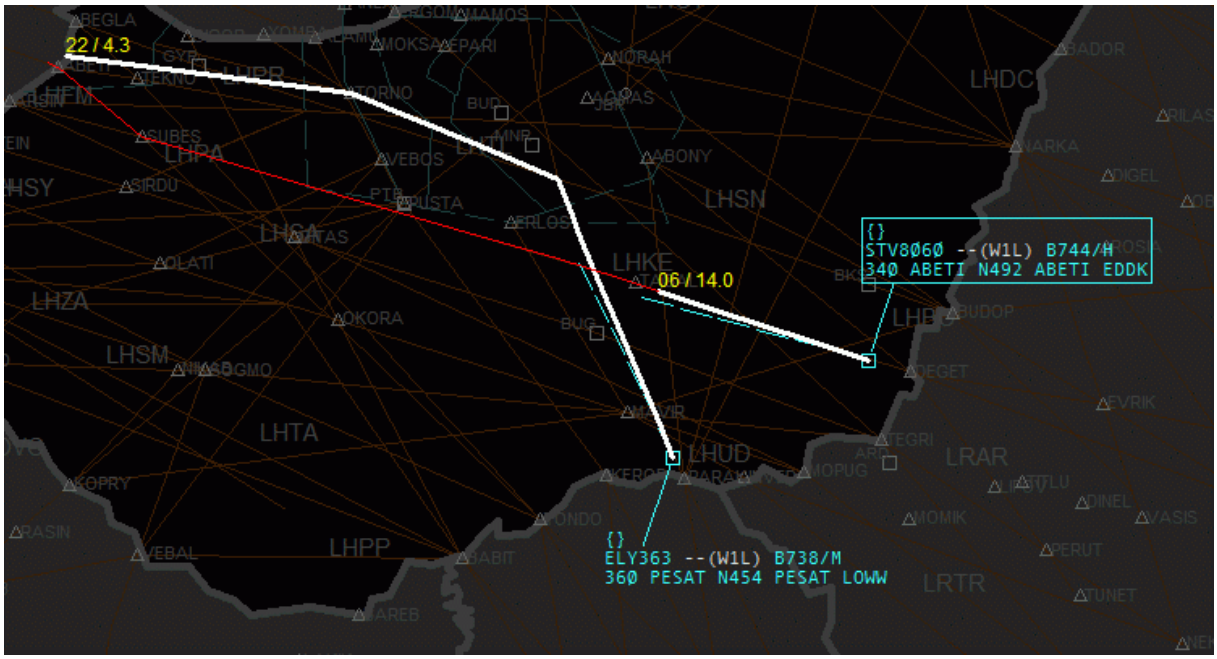


The tag in the upper left corner is updated as both aircrafts situations evolve.

Use the *LEFT* mouse click on the lines to start measuring to another point. Or use the *RIGHT* mouse click to remove them from the screen.

The Flight Plan Separation Tool

Use the same icon as before but click it with the right mouse button. Then select two aircraft.



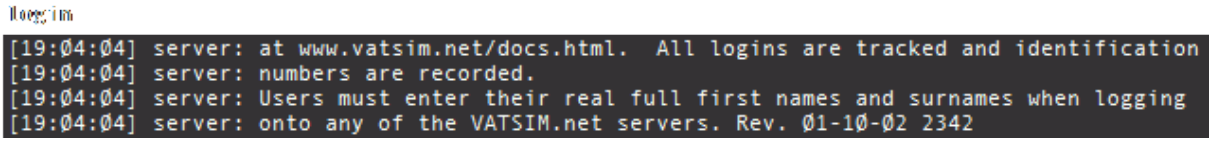
As seen from the picture in this case the convergent lines do not follow the actual heading, but the planned flight plan. The drawn line also turns at fixes to follow the flight plan route. But the picture you have is nearly the same as the simple separation tool.

But as far as the first intersection point is not the closest point along the route then it became a bit more interesting. The white lines are drawn from the planes to the first intersection point. The one that passes that point continues with white, but the latter one is drawn with thin red. Also, you can see the distance in time to the intersection point. The lines are then drawn to the closest predicted point with time and distance data at the end. This function can be useful for planes that follow the same route from a point.

Use the *LEFT* mouse click on the lines to start measuring to another point. Or use the *RIGHT* mouse click to remove them from the screen.

Chat Box

The Chat Box



- On this picture you can see the message received from the server. You will have the list of names above the box, with whom you are in conversation with. These names can be one of the following:
- *callsigns* - pilot or controller to indicate private chats
- *frequencies* - to see text messages come and send
- *server* - to see server messages (welcome and other notifications)
- *Message* - to see EuroScope system message (former message dialog)
- *ATC* - for ATC broadcast messages (not that you cannot write here directly, just with the / command)
- *Broadcast* - to see supervisor broadcast messages
- *SUP* - for supervisory request messages

Private messages sent by a network supervisor are visible regardless to the settings being set on the visibility of the private messages in the client (general settings).

To change between them, simply click on the name. To collapse the chat bar, press *[ESC]* and to close it, double click the name, whose chat you wish to close. To jump to your primary frequency, press *[NUM STAR]* (or if you changed it your new primary frequency key). If you receive a new private message from a user, then its callsign will turn blue in the list.

New in v3.1 that you can configure how the new incoming messages are shown in the chat area. You can simply show them, use a highlight color to indicate unread messages, use flashing handlers for unread messages and even requires a one-by-one confirmation of them. See the *General Settings* dialog second page about the available options.

Flight Strip

Flight Strip

When you press the “F6” button the flight strip is displayed here. The flight strip display is very similar to ASRC.

- In the first column you can see:
  - *callsign*
  - *aircraft information* - based on the flight plan data
  - *flight plan* (A350) and *current ground speed* (G345)
- The second column:
  - *flight plan type* - **I** stands for IFR while **V** for VFR plans
  - *departure and destination airport* - you can see extended information about the airports in the bottom line
  - *alternate airport*
- The third column:
  - *cleared altitude/flight level*
- The fourth column:
  - *final cruising altitude/level*
- The fifth column:
  - *route* - the first two lines contain the flight plan route section
  - *remark* - the flight plan remark section
- The flight strip annotations columns:
  In these three columns you can see the flight strip annotations. For the annotation EuroScope uses the same 3x3 block layout that was invented in VRC. To edit any of the annotations simply click to the place and edit the sting in place. When editing an annotation, you can use the TAB key to move between the 9 fields. The fight strip can be pushed to the next controller using the “.SS” (F1+u) command or by RIGHT click on the strip itself. When you initiate a handoff to the next controller EuroScope automatically pushes the flight strip.
- The last column:
  - *assigned squawk* - the top line contains the assigned squawk (it may be empty if no squawk is assigned by any controller so far)
  - *actual squawk* - in brackets; it is not displayed if the assigned and the current squawk equals

The last line contains some information about the selected aircraft, the origin and the destination.

The Command Line

Command Line

The bottom bar is called the command line. As already mentioned, it functions as text input bar. Anything you type using your keyboard will appear down here. To send a *message to your primary frequency* hit *the primary frequency send key* you defined in *General Settings* and not *[ENTER]*. To *send text messages* or give *commands* use *[ENTER]* (further details under [[Working with keyboard]])

The right side of this bar is an info bar. Clicking on screen items e.g.: aircraft, controller, ATIS, etc. you can get detailed information. On the left side, the callsign of the currently selected aircraft is displayed. You can clear the content of the command edit and if it already edits deselect the aircraft with the *[ESC]* key.

TAGs

TAGs in general

An aircraft is shown on the screen as a radar target or flight plan track, and an associated TAG, that shows the controller relevant and available information on the aircraft's situation and flight. In EuroScope, you always have the possibility to customize the outlook and/or the behavior of all TAG items. For further information on customizing the TAGs, see the *TAG Editor* page.

TAG types

As EuroScope simulates the different radar modes it has the chance to show only that amount of information that would be available for the controller at a specific circumstance - even EuroScope always has all information ready due to the nature of VATSIM. Every TAG family has eight different TAG types:

- *Primary only* - When the transponder is in stand-by mode.
- *Uncorrelated A+C mode* - When the transponder returns A+C mode data, but there is no correlated flight plan data.
- *Uncorrelated S mode* - When the transponder returns S mode data, but there is no correlated flight plan data.
- *Correlated A+C mode* - When the transponder returns A+C mode data and there is a correlated flight plan.
- *Correlated S mode* - When the transponder returns S mode data and there is a correlated flight plan.
- *Flight plan track* - When the system calculates positions based on previous data and flight plan, but there is no correlated radar target.
- *Ground S mode* - In ground mode, when S mode transponder return is available.
- *Ground no radar* - When no radar at all and we simulate the situation that the controller is just looking out of the window (airline name and aircraft type are available only).

The TAG types correlate with the radar identification state of the aircraft. For further information on this topic, refer to the *Professional Radar Simulation* page.

Every TAG type has three different states:

- *Untagged*
- *Tagged*
- *Detailed*

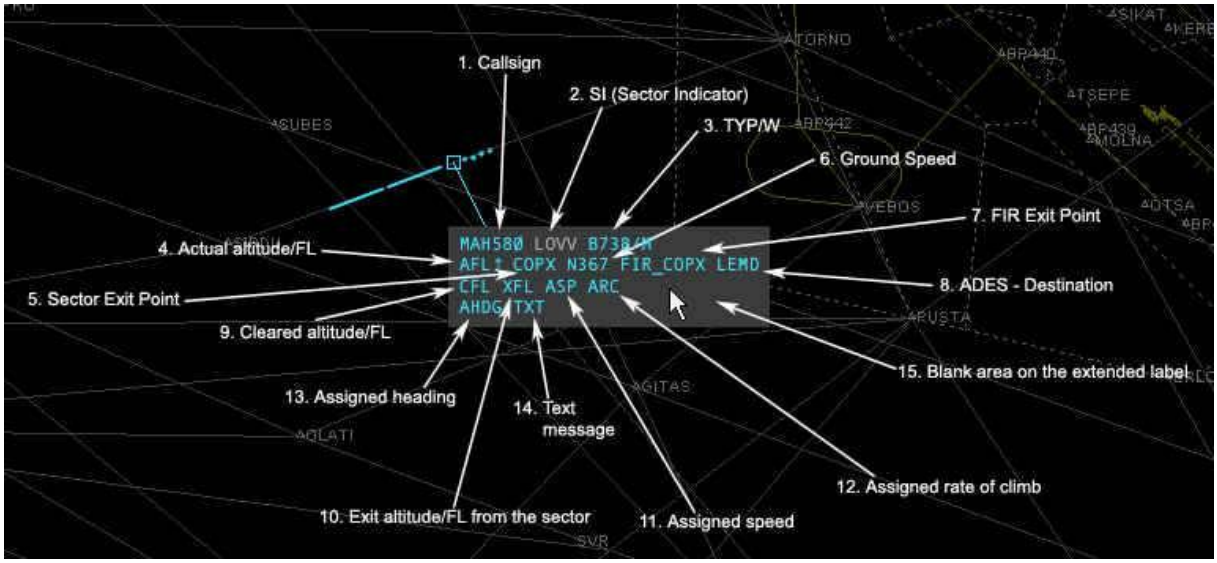
Those TAG states correlate with the current usage state of the aircraft on the controller's system. For further information on TAG states, refer to the *TAG Editor* page.

Default Matias TAGs

EuroScope comes with the default and unchangeable Matias TAG family. It closely simulates the version used by the real Hungarian ANS's system - Matias contains a very rich set of relevant information and is rather similar to what is also used in other real-world workstations, e.g. on Eurocat models. Still, if you want to simulate a different system, you are free to do so.

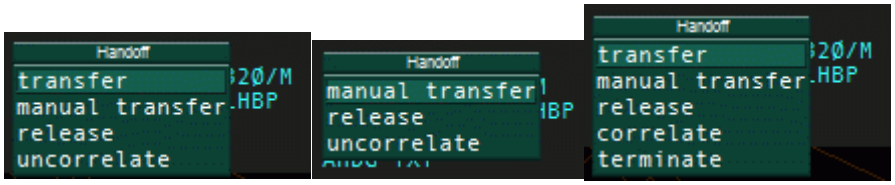
Detailed

The *Detailed* TAG comes visible when you move the mouse over a *Tagged* TAG. At one time only one TAG can be detailed. And this type has many functions connected to special parts of it.



1. Callsign - It displays the callsign of the aircraft

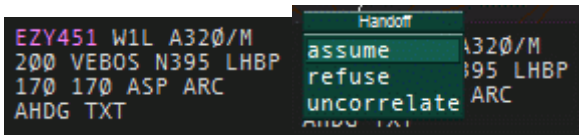
When you are tracking the aircraft there is a popup menu available with left button that allows you to transfer it:



The first list comes up if there is a controller who is controlling the sector just after yours. The second list is missing the *transfer* command when no next controller is detected. The third picture shows the same menu when clicking on a flight plan track only with no correlated radar target. The functions are the following:

- *transfer* - initiates a handoff to the controller next to your sector.
- *manual transfer* - pops up another list with all the available controllers; select one from the list and a handoff is initiated to him/her.
- *release* - simple drops the aircraft.
- *uncorrelate* - uncorrelate the radar target from the flight plan.
- *correlate* - start correlating the flight plan with a radar target.
- *terminate* - terminate the flight plan simulation.
- *find* – new in v3.2.11 – it finds the flight plan on the radar screen draws a line to it; it is not handy in radar TAGs but useful in flight plan lists.

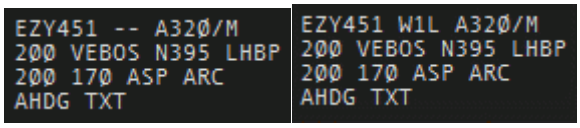
When another controller has initiated a handoff to you then another popup menu is available (the first picture displays the initiated handoff):



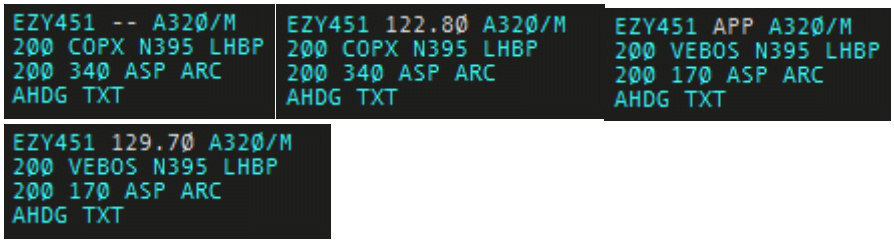
- *assume* - accept handoff.
- *refuse* - refuse handoff.
- *uncorrelate* - is still available here as well.

2. *Sector Indicator* - indicates the current or the next sector controller

When you are not tracking the aircraft, it simply indicates the controller who is tracking it. "--" means no controller owns it. If no owner of the aircraft at all then a left click here starts tracking it.



When you are tracking the aircraft, it indicates the controller of the next sector. If there is no online controller who is controlling the next sector, then a "--" will appear here. By right button clicking the controller short ID can be changed to the primary frequency. EuroScope will change the ID to frequency automatically when the aircraft is within 3 minutes to the borderline.

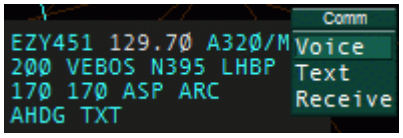


You have the chance to override the next controller calculated by EuroScope. Click the left button on the sector indicator. It opens a popup menu with the reachable controllers. Select one from the list. It will be assumed as next controller independently what sectors are next. The overridden controller is flagged by accepted ongoing coordination color. Select *reset* to allow EuroScope to detect the next controller based on route and sectors. You also have the possibility to delete next controller by selecting UNICOM.

3. *Aircraft type* - the type of aircraft coming from the flight plan

By clicking on it with the right button you can toggle its display in the *Tagged* TAG. The type is followed by the aircraft category sign (by default **/H** or **/M** or **/L** or **/J**) and the communication type (**/r** or **/t** or **/?**) is here also. **Note** that from version 3.0 EuroScope never displays the **/v** as voice is the default

communication form on VATSIM and we would like to save space. Only the different or unidentified types are flagged.
To set the communication type just click on the sign (there are two spaces in the detailed TAG for **/v** types that allows the mouse clicks). Then a popup menu appears to select the right type.



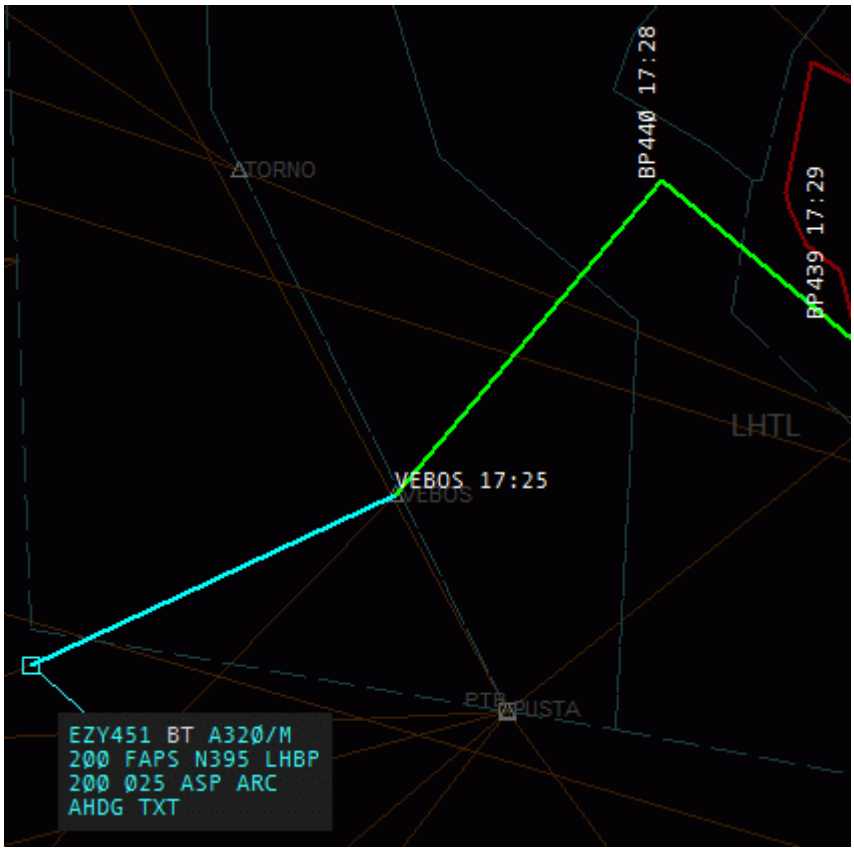
4. Actual altitude/FL - the actual altitude or flight level of the aircraft

Below transition altitude an **A** letter (the letter itself is optional) is followed by two or three digits (the altitude value in 100 feet) (**A50** or **A05** or **A115**). Above transition altitude the flight level is displayed with three digits (**050** or **380**).
The actual altitude/flight level value may be followed by an arrow pointing up or down. The arrow indicates the altitude change direction (climb or descent).
With right button click it toggles the route display of the aircraft.

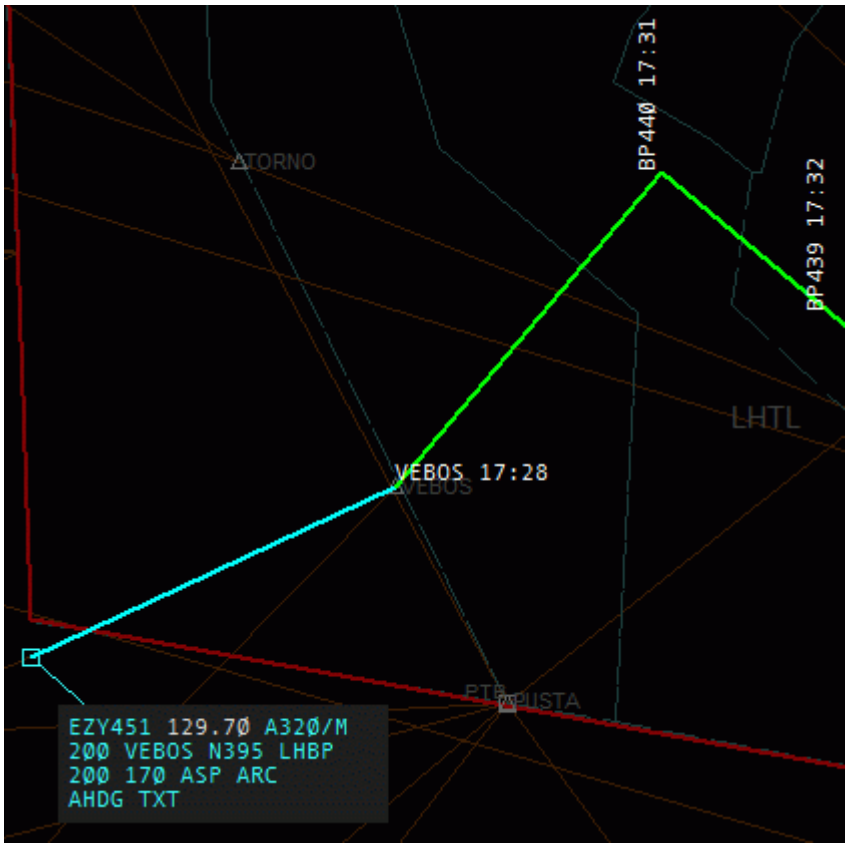
5. Sector entry/exit point - the next coordination point along the route

The coordination points are defined in the EuroScope Sector Extension file (see: *ESE Files Description*). If a controller owns both sectors of the coordination point, then that one is ignored and the next one will be displayed.

In this picture I am Budapest Radar and no approach is online. Therefore, the coordination point over VEBOS is not active as I control both sectors. Only the final approach fix from the south (FAPS) is effective as TWR is online.



In the next picture Budapest Approach comes online. Therefore, coordination point VEBOS becomes active.



By having a left click on this piece, you can select a direct point for the AC. If the selected point is inside the sector of next controller, then it initiates an entry or exit point coordination with the previous or the next sector controller. Detailed information about the ongoing coordination can be found on the *Controller To Controller Communication* page.

6. Ground speed - the ground speed of the aircraft

The format is a letter **N** (optional) then the ground speed value.

By clicking on it with the right button you can toggle its display in the *Tagged* TAG.

7. FIR exit point - the coordination point along the route where the aircraft leaves the actual FIR

The definition of the FIR exit point is like the sector exit point.

By clicking on it with the right button you can toggle its display in the *Tagged* TAG.

8. Destination - the ICAO code of the destination airport

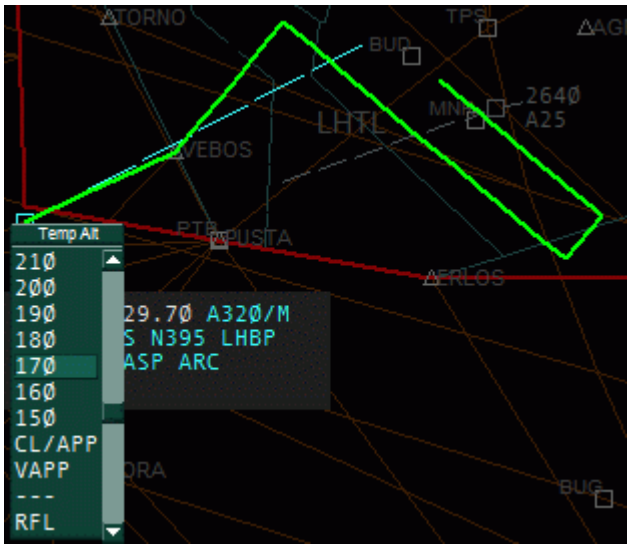
A left button click on this item opens the *Flight Plan Setting Dialog* where you can amend the flight plan.

By clicking on it with the right button you can toggle its display in the "*Tagged*" TAG.

9. Cleared altitude/FL - the altitude or flight level cleared to be reached

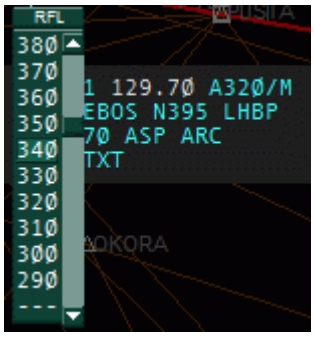
That is the temporary altitude in VATSIM.

A left click on this item opens a popup menu with a list of the altitudes and flight levels from ground to FL610. If the aircraft has cleared flight level, then it will be selected. Just select one and it will be assigned to the aircraft.



There are four special elements in this popup list:

- *CL/APP* - select this item to indicate that the AC is cleared for ILS approach.
- *VAPP* - select this item to indicate that the AC is cleared for a visual approach.
- **---** - this selection clears the temporary altitude setting the final as cleared.
- *RFL* - this popup menu will open another popup menu that allows you to change the requested flight level/altitude.



Note the following behaviors:

- The actual flight level/altitude is selected as default value.
- If you enable *Show conflict tool on temporary altitude settings* then clicking on this item the system shows up the conflict detection tool, and re scans the possible conflicts whenever you move the mouse to another level/altitude value. You can find more information about it on the *Probing tools* page.

Important: When you are the pseudo pilot of the plane in a simulation session, setting the cleared level via the popup menu will drive the simulated aircraft to the specified altitude.

10. Exit altitude/FL from the sector - the coordinated altitude or flight level at the next coordination point

If no such point is defined, then the final cruising altitude. See the pictures again from the *sector exit point* description.

In this picture no approach is online. Therefore, no COPX point is active, and you can see the final requested level (FL340) there.

Conflict detection tool can be activated at a particular aircraft by a hold right-click. It shows the selected plane and all conflicting ones with color coding (yellow for warnings and red for alerts). The tool will not show conflicts when the calculated profile is below the minimum.

```
EZY451 -- A320/M
200 COPX N395 LHBP
170 340 ASP ARC
AHDG TXT
```

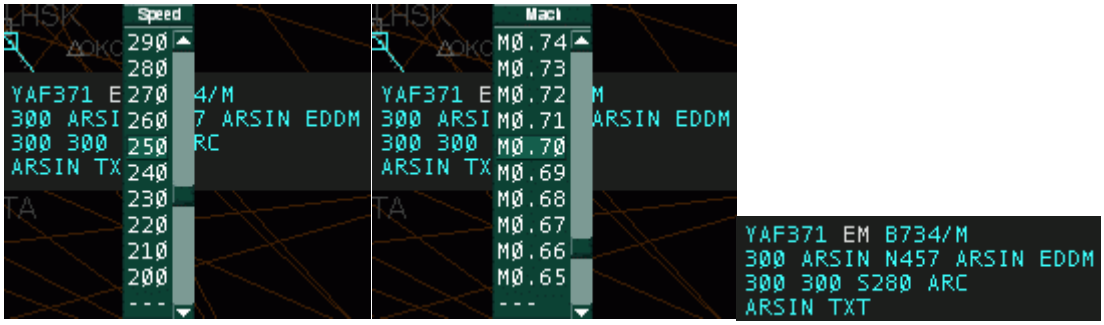
When approach is online then the coordination point is VEBOS and the coordination altitude is FL170.

```
EZY451 129.70 A320/M
200 VEBOS N395 LHBP
170 170 ASP ARC
AHDG TXT
```

Clicking on this item with left button the sector entry/exit point altitude popup opens up that allows a coordination with the previous or the next sector controller. Detailed information about the ongoing coordination can be found on the *Controller To Controller Communication* page.

11. Assigned speed - the speed assigned to the aircraft

If no speed is assigned, then a static string ASP. If has an assigned IAS, then a letter **S** then the assigned speed. If a Mach number is set, then a **M** then the assigned Mach. With the left click you can open a popup list with the available values from 120-400. With a right click the Mach values popped up from 0.60 to 1.00. Select the one to be used. To clear it select the item with **"--"**. Assigned speed/Mach number is propagated to other controllers via scratch pad text in a form SNNN or MNNN. If the other controller uses EuroScope too this type of scratch pad text will be recognized as assigned speed.



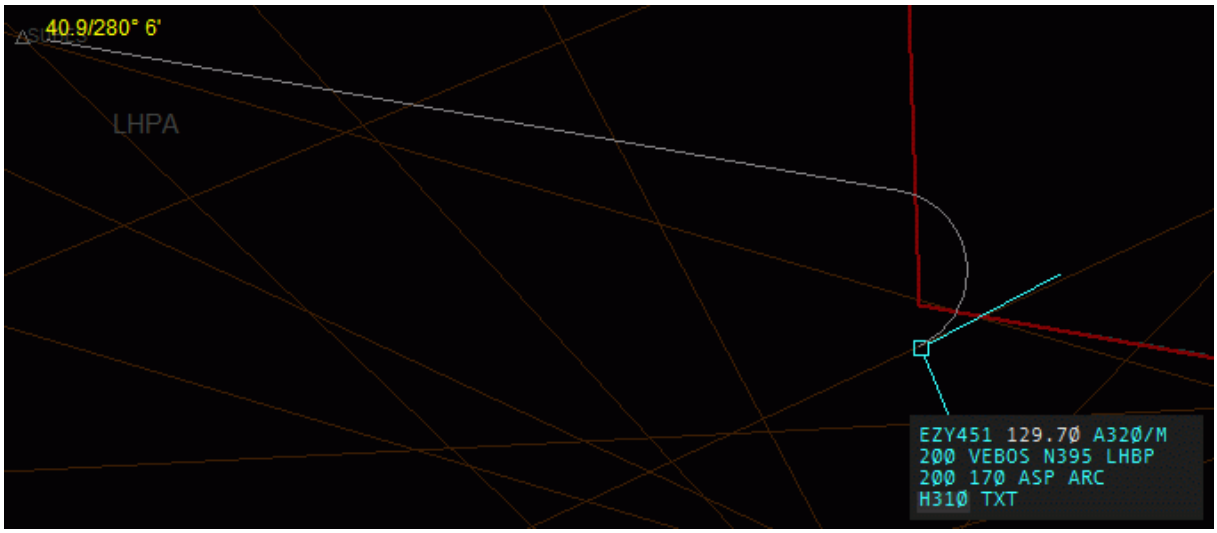
Important: When you are the pseudo pilot of the plane in a simulation session, setting the assigned speed will drive the simulated aircraft to the specified speed.

12. Assigned rate of climb/descend - the assigned rate of climb or descend to the aircraft.

If no rate is assigned, then a static string ARC otherwise a letter **R**, then the assigned rate. Similarly to the assigned speed you can select the rate values from the popup list. Assigned rate is propagated to other controllers via scratch pad text in a form RNNNN. If the other controller uses EuroScope too this type of scratch pad text will be recognized as assigned rate.

13. Assigned heading - the assigned heading to the aircraft.

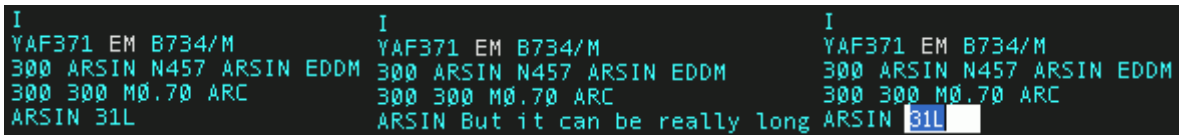
If no heading is assigned, then a static string AHDG otherwise a letter **H** then the assigned heading. Similarly to the assigned speed you can select the rate values from the popup list. Assigned heading is propagated to other controllers via scratch pad text in a form HXXX. If the other controller uses EuroScope too this type of scratch pad text will be recognized as assigned rate. When the aircraft is directed to a waypoint using the popup list from /sector exit point/ then the name of the point will be visible here. Heading can also be assigned to the tag by dragging the AHDG item. Required heading value is being set by moving the cursor to the wanted direction, the program draws the expected track of the plane during the item is being dragged. When defining a heading in this way, turning circle is also used and calculated automatically.



Important: When you are the pseudo pilot of the plane in a simulation session, setting the assigned heading will drive the simulated aircraft to the specified heading. In this case it is important to be able to turn the aircraft to the left or to the right. For that the list contains the values from -360 degrees to +360 degrees from the actual heading. Dragging the item (AHDG) will set the specified heading for the simulator too.

14. Text message - the scratch pad

Note that if the scratch pad is recognized by EuroScope then the scratch pad remains empty and the appropriate other item is changed. On the other hand, if the scratch pad is not empty a static letter **I** is displayed over the first line. The length of the scratch pad is limited to 60 chars only but be careful with long texts as other radar clients are limited to 3 or 4 characters only. By clicking on the scratch pad area in the TAG the message itself can be edited there.



Tagged

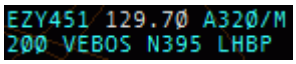
The tagged TAG is like the detailed but contains less information. The following items are not visible at all:

- assigned speed
- assigned rate
- assigned heading - only if heading is assigned, but if a direct to waypoint is specified then it is visible
- scratch pad

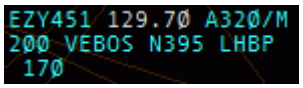
There are also items that can be switched to be displayed or to be hidden. You can switch the following items by a right click:

- aircraft type
- ground speed
- FIR exit point
- destination airport

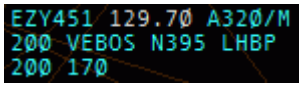
The altitude display is also different. The logic behind is to display only the values that are different from the other ones. In this way when all three values (actual, cleared/temporary and coordinated/final) are the same then only the actual altitude is displayed.



When the cleared/temporary is not defined or equals coordinated/final, then only the coordinated/final is displayed. And to be easily visible the coordinated/final altitude is not displayed at the beginning of the line but one letter to the right.



And finally, of course if all three are different (or even if temporary and actual are the same) then all three values are displayed.



Untagged

The *untagged* TAG is a really compressed with limited data available. Only the squawk code and the altitude are visible. And also, the color of the TAG can be different.

Here the order is: *non-concerned*, *notified* and *redundant*.

Moving The TAGS

In EuroScope the position of the TAGs related to the plane is not restricted at all. You can freely move them around the screen in any direction and to any distance. Just press with the LEFT button and move.

When you are moving the TAG and you press the RIGHT button before releasing it with the LEFT the TAG will "stick" it on the screen in its present position and will not move with the aircraft's target. Moving the TAG again cancels the *sticking* state.

Tag Up, Tag Down

You can tag up and down a tag by double clicking on the track symbol.

To revert the tag back to the default position you do the same.

TAG Editor

TAG Families

In EuroScope the TAGs are not fixed at all. It is up to the user what he/she would like to see on the radar screen.

To define your own TAG displays, you should add and edit TAG families. You should define each member of the family, then you can assign the whole family to the layout settings (ASR) files. TAG family is a set of eight TAG definitions:

- *Primary only* - When only a primary radar contract is detected. This means that the transponder is off.
- *Uncorrelated A+C mode* - An A+C mode only transponder is active, but the radar target has no correlated flight plan data.
- *Uncorrelated S mode* - An S mode transponder is active, but the radar target has no correlated flight plan data.
- *Correlated A+C mode* - An A+C mode only transponder is active, and the radar target has a correlated flight plan.
- *Correlated S mode* - An S mode transponder is active, and the radar target has a correlated flight plan.
- *Flight plan track* - When the system moves the flight plan based on external data, but no radar target associated with it.
- *Ground S mode* - Ground radar with S mode transponders.
- *Ground no radar* - When no radar at all and the controller can see the planes only by looking out of the window.

Each of the above family members may have three different levels of display:

- *Untagged* - This is used for aircraft that are not considered by the controller. This type should be as compact as possible but should contain enough information to provide safe separation. In EuroScope a double-click on the TAG will tag it up or down.
- *Tagged* - This is the normal TAG used for aircraft tracking or considered. It contains far more information therefore needs a little bit more space. You cannot tag down TAGs that are tracked by you or a handoff initiated to you. All the rest can be down. In the real-life Matias system even the concerned aircraft TAG cannot be moved to down, but as we have a smaller screen, I let it be switched on or off. So, if you are a real fan of Matias never let it go down.
- *Detailed* - Even if the /Tagged up/ TAGs can contain more information still has something that is not necessary always but handy to have it very fast. For that a /Detailed/ TAG member is invented. When you are moving your mouse as you are over a /Tagged up/ TAG it will change to /Detailed/ and you will see even more information about the aircraft. At one time only one TAG can be detailed. And on a detailed TAG you can have several functions connected to the part of the TAG.

You must completely define all 8x3=24 TAGs in the family before using it.

Also note that the first eight types of TAGs may have less information than available on EuroScope. It is up to you to define only the amount that is available in that case. As correlation is deeply coded in

EuroScope you cannot break the correlated, not correlated boundary, but otherwise the system does not warn you if you display some information that is not available in the real systems.

How A TAG Is Built Up

Every TAG in EuroScope is built up from TAG items. The available TAG items are defined by the system. All such items have a piece of code that calculates the actual string to be displayed every time. There are items that always have content they are never empty but there can be ones that are sometimes empty and display nothing. There is a special item, the "*Next line*" item that never displays anything but creates a new line.

So that the only thing that you should do is to make a list of these items and it will form a TAG that can be displayed.

The following TAG items are defined at this moment in EuroScope:

- *Aircraft category* - The weight turbulence category of the aircraft. The actual symbols can be modified via the *General Settings* dialog.
- *Aircraft category with slash* - The same as the above one but starts with a / letter.
- *Aircraft type* - The short name of the aircraft type.
- *Aircraft type - deprecated* - The same as above but can be switched on/off in tagged up TAG. This function is outdated and should no longer be used. It is kept only for compatibility with TAGs created using an old version.
- *Aircraft type/category combined* - It is a combination of the type and the category separated by a slash. Use it if you would like to hide/show them at once.
- *Aircraft type/category combined - deprecated* - The same as above but can be switched on/off in tagged up TAG. This function is outdated and should no longer be used. It is kept only for compatibility with TAGs created using an old version.
- *Airline callsign* - This item displays readable name of the airline from ICAO_Airlines data file.
- *Airline name* - This item displays the first 3 letters airline name.
- *Altitude* - The actual altitude of the aircraft. Over the set transition level, it displays the value in three digits (e.g.: 310, 050), below the transition level it assigns an A (for altitude) and displays two or three numbers (e.g.: A55, A06, A110). The A can be switched off via the *General Settings* dialog.
- *Assigned departure order* - When the plane is assigned to depart soon it receives a departure order number. This number is displayed in the item (it is rarely used in the TAG itself, but on the advanced aircraft lists).
- *Assigned heading* - Assigned heading is an attribute of the aircraft. It indicates the heading given to it by the controller. It can be set in EuroScope but not published via the network so far. If no heading is assigned, then a static string AHDG is displayed. Otherwise, an H plus the heading in three digits (e.g.: H110). This item can also display the content of the scratch pad in case the content is a waypoint along the route in the flight plan (from 2.8h version any valid waypoint) (e.g.: VEBOS)
- *Assigned heading (if set)* - The same as above but not shown if no heading is assigned.
- *Assigned heading (non-moveable)* - The same as *Assigned heading*, but it does not accept dragging.
- *Assigned rate* - Assigned rate is an attribute of the aircraft. It indicates the climb or descent rate given to it by the controller. It can be set in EuroScope but not published via the network so far. If no rate is assigned, then a static string ARC is displayed. If rate is assigned then an R followed by the signed rate value is visible (e.g.: R1500).

- *Assigned rate (if set)* - The same as above but not shown if no rate is assigned.
- *Assigned runway* - The assigned departure or arrival runway. The runway can be assigned by the controller, but can be calculated by EuroScope from route, SID/STAR and active runways.
- *Assigned SID* - The assigned standard departure route. The SID can be assigned by the controller but can be calculated by EuroScope from route and active runways.
- *Assigned speed* - Assigned speed is an attribute of the aircraft. It indicates the speed given to it by the controller. It can be set in EuroScope but not published via the network so far. If no speed is assigned, then a static string ASP is displayed. If rate is assigned than an S followed by the value is visible (e.g.: S160).
- *Assigned speed (if set)* - The same as above but not shown if no speed is assigned.
- *Assigned squawk* - The squawk assigned by the controller.
- *Assigned STAR* - The assigned standard arrival route. The STAR can be assigned by the controller but can be calculated by EuroScope from route and active runways.
- *Callsign* - The callsign of the aircraft. It is never empty and most cases used as primary/main item (see later).
- *CLAM warning* - The stand alone Cleared Route Adherence Monitoring warning. A static CLAM string when the pilot does not follow the altitude restrictions.
- *Clearence received flag* - It indicates if the plane has received the clearance flag or not.
- *Collision alert indicator* - This item is normally empty. But if a short-term conflict alert is switched on and there are two aircraft closing to break the separation rules defined at *Conflict Alert Settings Dialog*, it shows the warning:
    - *Red point* - if the separation will be broken in the defined prewarning time.
    - *Red number with the minimum vertical distance* - if the separation will be broken in the defined warning time.
    - *Yellow point* - if the separation will be broken only in case the cleared levels are not maintained by the pilots in the defined prewarning time.
    - *Yellow number with the minimum vertical distance* - if the separation is broken only in case the cleared levels are not maintained by the pilots in the defined warning time.
- *Communication type* - The type of communication the aircraft is able. The well known /t or /r will be displayed. **Note** that /v is never displayed by EuroScope as voice is the main form of communication in VATSIM. If the plane is able for voice communication, two SPACE characters are displayed to have a place to pop up the communication type menu. If the type can not be extracted from the remark field a /? is shown.
- *Communication type (reduced)* - The same as the above, but voice communication is empty there. In that case it will not be possible to pop up the selection menu from this item. We suggest using it on the tagged type but not in the detailed.
- *Compound warning item* - This item combines the following warning flags in this priority order:
    - *Emergency indicator*
    - *MSAW indicator*
    - *Radio failure indicator*
    - *Hijack indicator*
    - *Collision alert*
    - *Squawk error*
    - *Duplicated squawk flag*
    - *CLAM/RAM warning*
- *Conflict end time* - The detected conflict ends.
- *Conflict start time* - The detected conflict starts.
- *Conflict type* - The detected conflict type: 'WARN' or 'ALERT'.

- *Conflicting AC callsign* - When the MDCA tool detects a conflict, it saves the callsign of the other AC. It is used in the CARD list.
- *Departure aerodrome* - The departure airport was extracted from the flight plan.
- *Departure time estimated* - The estimated departure time.
- *Destination airport* - The destination airport extracted from the flight plan.
- *Destination airport - deprecated* - The same as above but can be switched on/off in tagged up TAG. This function is outdated and should no longer be used. It is kept only for compatibility with TAGs created using an old version.
- *Destination ETA* - Estimated time of arrival to destination airport.
- *Direct to point name* - If a direct is given to the specified aircraft, then the name of the point can be displayed by this item.
- *Duplicated squawk* - If the assigned squawk is used by another aircraft, then a static DUPE string. Otherwise, empty.
- *Emergency indicator* - If the aircraft is squawking 7700 then a static EMG string. Otherwise, empty.
- *Estimate* - This item shows the estimate to the relevant waypoint if set.
- *Estimate (always)* - The same as above but it shows a fixed EST if no estimation is set. It is planned for detailed TAGs.
- *Estimated off block time* – The calculated estimated off block time with four digits.
- *Final altitude* - The final cursing level/altitude defined by the flight plan and might be overwritten by the controller.
- *FIR exit point - deprecated* - The same as subsequent but can be switched on/off in tagged up TAG. This function is outdated and should no longer be used. It is kept only for compatibility with TAGs created using an old version.
- *FIR exit point name* - The name of the next point from the flight plan route that is defined as FIR exit point in the sector file extension. If there is no such point, then it is empty.
- *Flight Plan Track Status* - This item displays the status of the flight plan track.
- *Flight rule* - The flight plan route I/V/S.
- *Ground speed (with N)* - The ground speed of the aircraft with an N letter in front.
- *Ground speed (with N) - deprecated* - The same as above but can be switched on/off in tagged up TAG. This function is outdated and should no longer be used. It is kept only for compatibility with TAGs created using an old version.
- *Ground speed (without N)* - The ground speed of the aircraft (just the numbers).
- *Ground speed (without N) - deprecated* - The same as above but can be switched on/off in tagged up TAG. This function is outdated and should no longer be used. It is kept only for compatibility with TAGs created using an old version.
- *Ground status* - The status of the aircraft in the departure sequence. The following values can be selected and displayed here:
    - CLEA – cleared flag
    - NOTC – not yet cleared
    - NSTS – not yet started
    - STUP – startup is approved
    - PUSH - when pushback is approved
    - TAXI - when the plane is taxiing
    - DEPA - when the plane is about to depart
    - ARR – arriving plane still in the air
    - TXIN – when “taxiing in” to the gate
    - PARK – parked at destination

- *Handoff target ID* - The ID of the controller who has is targeted by a handoff request. This item is used rarely now as the *Sector indicator* does this work also.
- *Hijack indicator* - If the aircraft is squawking 7500 then a static HIJ string. Otherwise, empty. It is inside the code that even this squawk is not permitted on VATSIM.
- *Manual coordination flag* - A telephone symbol, that indicates when something needs to be coordinated with an adjacent controller who uses a client that does not support the ongoing coordination feature.
- *MSAW flag* - Minimum safe altitude warning indicator. Normally empty, but if the plane is inside an MSAW area (see *ESE Files Description*), the static MSAW text.
- *Next line* - It is a special item. It never displays anything but starts a new line in the TAG. TAGs are always left justified.
- *Next line if not empty* - The same as the previous but it starts a new line only if the current line is not empty. Using this you can be sure that no empty lines are displayed in the TAG.
- *Non RVSM indicator* - When an IFR plane that does not indicate RVS equipment in the plane type a static W is displayed. Otherwise, it is empty.
- *Not cleared or not reached temporary altitude* - This is the sector exit or (if not given) the final altitude. If different from temporary, then displayed by three digits 150 or 050. If same is temporary but the aircraft is not at this level, then extra space is added to the beginning. Otherwise, empty.
- *Not cleared sector entry/exit altitude* - It is a combined tag item. If the plane is coming into your sector, then sector entry level/altitude is displayed. If inside your sector, then the sector exit level/altitude. If the sector entry/exit level is not defined, then the requested level is displayed here. This item is changing color to coordinated values.
- *Not reached temporary altitude* - It is the temporary or if not set the final altitude. It is displayed only if it is different from the actual level/altitude. If it is reached, then empty.
- *Owner* - The ID of the controller currently tracking the plane. It is an obsolete item. Use the *Sector indicator* instead.
- *Old AC list airport* – The destination airport in the old AC list.
- *Old AC list code* – The flight plan code (A/D/O) in the old AC list.
- *Old list data* – The additional data in the old AC list.
- *Radio failure indicator* - If the aircraft is squawking 7600 then a static RDO string. Otherwise, empty.
- *RAM warning* - If the aircraft is more than 5nm away from its calculated route, the RAM warning is shown. RAM is not shown if the plane is on the ground or cleared for approach, has a direct to point or assigned heading. And not shown for VFR plans.
- *RVSM indicator* - It indicates that the plane is equipped to be able to fly in RVSM airspace. The symbol is strikethrough W. If the plane is non RVSM able then empty.
- *Scratch pad* - The content of the scratch pad if not empty. Once again if the content of the scratch pad is a name of a waypoint, then the scratch pad itself is considered as empty.
- *Scratch pad (always)* - Same as above, but item is always visible. If empty, then a static TXT is shown.
- *Scratch pad filled indicator* - If the aircraft scratch pad is not empty a static I string. Otherwise, empty. Do not forget that if the content of the scratch pad is a name of a waypoint, then the scratch pad itself is considered as empty.
- *Sector entry point name* - The point name along the flight plan route of an aircraft where it should enter the sector. The definition of the sector entry points is once again an extension to the original sector file.

- *Sector entry/exit altitude* - The altitude where the aircraft should be (as described by the standard procedures) when entering or exiting the sector of the controller who is currently tracking. If no such point is defined in the sector extension file, then the final cruising altitude is displayed.
- *Sector entry/exit point name* - The point name along the flight plan route of an aircraft where it should enter or leave the sector. The definition of the sector entry/exit points is once again an extension to the original sector file.
- *Sector exit level* - The flight level/altitude at which the aircraft is supposed to leave the sector.
- *Sector exit point name* - The point name along the flight plan route of an aircraft where it should leave the sector. The definition of the sector exit points is once again an extension to the original sector file.
- *Sector exit time* - The estimated time over the sector exit point. Be careful if you coordinate a point that is far from the sector border, this value might be different from the actual sector exit time.
- *Sector indicator* - It is a compound item and can show several things. If the aircraft is not tracked by you then it simply shows the current owner ID. -- stands for a non-tracked aircraft. If the aircraft is tracked by you then it calculates which sector is the next along the route and displays the ID of the next controller if he/she is online. There can be -- also if no next sector is defined or the next sector is not controlled (no controller online). When the aircraft within three minutes time to the sector border the next controller ID is changed to the primary frequency. E.g.: AP, BU, NED, 133.20, --.
- *Sector indicator (unchangeable)* - Same as above but can't be changed by the controller.
- *Sector planned entry level* - The flight level/altitude at which the aircraft is going to enter the sector based on the flight plan.
- *Sector planned entry time* - The time at which the aircraft is over the planned entry point. Be careful if you coordinate a point that is far from the sector border, this value might be different from the actual sector's entry time.
- *Simulation altitude/level* – It is a combination of the current altitude/level, the required climb/descend flag and the simulator target altitude/level. E.g.: **320v160**.
- *Simulation heading* – It is a combination of the current heading, the turn direction and the simulator target heading. E.g.: **180>120**. It also may contain nose heading offset, when crosswind is simulated.
- *Simulation holding* – The point name where the plane is holding over.
- *Simulation indicator* - Available only in simulator connections. It shows the ID of the pseudo pilot of the plane in brackets **{}** If you are the pseudo pilot then a * is shown.
- *Simulation landing*– Simulated plane landing and vacating data:
    - "—" – when not on approach at all
    - "LAND" – when on a full stop landing final phase
    - "T&GO" – when on a touch and go
    - <RWY name>+"RV" – when on approach a stop on runway
    - <RWY name>+"VL" – when on approach and vacate to the left
    - <RWY name>+"VR" – when on approach and vacate to the right
- *Simulation next waypoint* - Available only in simulator connections. It shows the name of the next waypoint of the plane. If holding, then H:<holding name>.
- *Simulation speed* – actual and simulator requested speed
    - *250^280* – when accelerating (IAS)
    - *280v250* – when decelerating (IAS)
    - *280/240* – TAS/IAS when on steady speed
    - *240/M0.72* – above 25000 feet

- *Simulation takeoff* - Available only in simulator connections.
  - „LU+" – When lining up and taking off immediately
  - "LU" – When lining up and waiting after
  - "TO" – When taking off
- *Simulation taxi* - Available only in simulator connections. The actual ground taxing mode:
  - „HOLD" – No moving at all
  - "PUSH" – When pushing backwards
  - "TAXI" – Normal taxi
  - "MATX" – Manual taxi
  - "CRASH" – After collision with another AC on the ground
  - "HOVE" – Rotorcraft is hovering
- *Simulation taxi behind* - Available only in simulator connections. When the AC is following another AC on the ground:
  - "FME" – Follow me all around the route
  - "FME-1" – Follow me on a one-point shorter route
- *Squawk* - The squawk code is sent by the aircraft. As it is never empty it is once again a good item to be primary.
- *Squawk error indicator* - This item is normally empty. But if the squawk sending by the aircraft differs from the assigned squawk it displays an "A" then the assigned squawk. E.g.: A2602.
- *Squawk/callsign* - This item shows the squawk of an aircraft unless it is tracked. Then it changes to the callsign of the aircraft. This is very handy to create tiny compact TAGs.
- *Static string* - It is up to the designer. If you need a static string in the TAG, you can add an item like this and specify the text itself. EuroScope does nothing with it, just displays.
- *Target startup time* – Calculated or assigned target startup time in four letters.
- *Target takeoff time* – Calculated or assigned target takeoff time in four letters.
- *Temporary altitude* - The assigned temporary altitude. If not set, then the assigned final altitude is displayed. Above transition level it is displayed with 3 digits (e.g.: 170, 050), below the transition level it is displayed with an A followed by two or three digits (e.g.: A50, A100).
- *Temporary altitude (if set)* - Same as above but hidden if no temporary altitude is set.
- *Temporary if different from sector exit* - The temporary altitude if set and if different from the sector exit. Otherwise, it is empty.
- *Tracking controller ID* - It is the ID of the controller who is currently tracking the aircraft. It is no longer used since the *Sector indicator* is developed.
- *TSSR text* - It is a simple static text but built in. For non-squawking aircraft display.
- *Two letter assigned speed* - Assigned speed is an attribute of the aircraft. It indicates the speed that was given to it by the controller. It is published by a special scratch pad string that can be interpreted by other EuroScope clients. If no speed is assigned, then a static string ASP is displayed. If speed is assigned, then an S followed by the first two digits of the value is visible (e.g.: S16).
- *Two letter assigned speed (if set)* - Same as above, but only visible if a speed is assigned.
- *Two letter ground speed* - The ground speed of the aircraft with only the first two digits indicated.
- *Two letter ground speed - deprecated* - The same as above but can be switched on/off in tagged up TAG. This function is outdated and should no longer be used. It is kept only for compatibility with TAGs created using an old version.
- *Vertical speed* - This is the actual vertical speed value. It is displayed only if climb rate or descending rate is bigger than 100 f/minute. It displays absolute value without direction sign. The value is 100th of the actual rate displayed to zero decimal digit (e.g.: 1 - 100 f/minute, 25 -

2500 f/minute). Its value is far from exact due to the random position updates coming from the planes.
- *Vertical speed indicator* - It is a small arrow to the UP or DOWN depending on the vertical speed. It is displayed only if the climb rate or descending rate is bigger than 100 f/minute. If you do not have the right EuroScope font installed, you will see ^ and | in place of the arrow.

Note: If you have a plug-in loaded that supports additional TAG items, then these items will appear on the list too.

Functions From TAG

You can change not only the outlook of the TAG but also the behavior. It can be done by assigning functions to TAG items. Each TAG item may have a function associated with the left mouse button click or the right (works for middle too) mouse click. The functions are available only on detailed TAG. You can assign the following functions:

- *Accept manual coordination* - This function needs to be assigned to the Manual coordination flag to confirm the manual coordination and hide the manual coordination flag itself.

- *Conflict detection tool* - It shows the conflict detection for the selected AC. It shows the route with different colors for conflicted paths. It dims all other AC except the conflicting ones. It works a bit differently than the others, as the display is only active while the button is down.

- *Conflict detection tool for two planes* - It shows the conflict detection between two selected AC. As there are two planes associated with the CARD list only, it has no meaning to assign this function to other than items in that list. It shows the conflict lines as the previous command but limited to the two planes only.

- *Edit scratch pad string* - This function adds a text entry box to change the text in the scratch pad. It is not available if someone else is tracking the aircraft.

- *Open advanced ground status popup list* – It opens a popup list where the controller can advance the ground status of the plane.

- *Open assigned heading popup list* - This function pops up a list with the possible heading values to be assigned. It has no real meaning to add this function other than the *assigned heading* item. This function is not available if someone else is tracking the aircraft.

- *Open assigned MACH popup list* - This function pops up a list with the possible Mach numbers to be assigned. It has no real meaning to add this function other than the *assigned speed* item. This function is not available if someone else is tracking the aircraft.

- *Open assigned rate popup list* - This function pops up a list with the possible climb or descent rate values to be assigned. It has no real meaning to add this function other than the *assigned rate* item. This function is not available if someone else is tracking the aircraft.

- *Open assigned speed popup list* - This function pops up a list with the possible speed (IAS) values to be assigned. It has no real meaning to add this function other than the *assigned speed* item. This function is not available if someone else is tracking the aircraft.

- *Open communication type popup* - Assigned to the communication type item, this function allows you to change the communication type of the aircraft as you would do it using F9. This function is not available if someone else is tracking the aircraft.

- *Open COPN altitude coordination list* - This function is part of the ongoing coordination feature and allows you to coordinate an altitude at which an aircraft shall enter your sector from the previous controller. This function is not available if the plane is not coming to your sector or if it has no owner.

- *Open COPN point coordination list* - This function is part of the ongoing coordination feature and allows you to coordinate a different routing an aircraft shall enter your sector with the previous controller. This works like giving a direct, the only difference is that direct is a recommendation to the other controller that he accepts or refuses. This function is not available if the plane is not coming to your sector or if it has no owner.

- *Open COPN/COPX altitude coordination list* - This function is part of the ongoing coordination feature and allows you to coordinate an altitude at which an aircraft shall enter or exit your sector with adjacent controllers. You can use it to assign direct points within your sector. If the plane has owner and is going to come to your sector, then it opens the COPN point list. If you are tracking the AC it opens the COPX point list. In that list all points are masked if it is going to start coordination and with which controller or not.

- *Open COPX altitude coordination list* - This function is part of the ongoing coordination feature and allows you to coordinate an altitude at which an aircraft shall leave your sector with adjacent controllers. This function is not available if someone else is tracking the aircraft.

- *Open COPX point coordination list* - This function is part of the ongoing coordination feature and allows you to coordinate a different routing and aircraft shall leave your sector on with adjacent controllers. This works like giving a direct, the only difference is that direct is a recommendation to the other controller that he accepts or refuses. If you select the point with LEFT click it sets the direct or starts the coordination according with the flags. Using the RIGHT button, you can assign direct points beyond the sector exit.

- *Open correlate popup* - This function is part of Professional Radar Mode and allows you to correlate a radar track and a flight plan track.

- *Open estimate popup* - This function is part of Professional Radar Mode and allows you to set the estimate crossing time for the aircraft over a waypoint. It is a free text box. The entered value must be in a / format, where the time is a 4 letter ZULU time. E.g. ARSIN/0322.

- *Open final altitude popup list* - This function pops up a list with the possible final altitude values to be assigned. It has no real meaning to add this function other than the *final altitude* item. This function is not available if someone else is tracking the aircraft.

- *Open flight plan dialog box* - This function opens the flight plan setting dialog box. This function is always available even if someone else is tracking the aircraft. But in that case, you will not be able to save changes made in the plan.

- *Open FP track status popup* - This function allows you to edit the state of the current flight plan track.

- *Open ground status popup list* - This function pops up a list with the possible ground states to be assigned. It has no real meaning to add this function other than the *ground status* item.

- *Open handoff popup menu* - This function pops up a menu that allows you to start tracking, to drop track or initiate a handoff to another controller. There are several cases when different items are displayed in this menu:

    - *The plane has no owner* - In this case you can start tracking it by selecting *Assume*. Here, *Refuse* has no meaning.

    - *A handoff is initiated to you* - In this case the menu contains items to *Assume* or to *Refuse* the handoff.

    - *You are tracking the AC* - Then this popup menu the *Drop track* and the *Manual handoff* are always available. Selecting the first item will drop the aircraft tracking while the second will pop up another list that contains all online controllers within range. If the sector file extension is prepared and so the next sector can be detected and the controller is online, then a simple *Handoff* menu item appears that will initiate a handoff to the controller calculated by EuroScope.

- *Open next controller popup list* - This function opens a list with the currently online active controllers, which you can use to override the automatically selected next controller indicated in the *Sector indicator* item. This function is not available if someone else is tracking the aircraft.

- *Open next points popup list* - This function opens the same point as the *Open COPX point coordination list*.

- *Open RWY setup popup list* - When the plane is on the ground at the departure airport then this function opens a popup list that contains the list of the available runways of the airport. Otherwise, the list contains the arrival airport runway list. When you select an item here the FP is amended to hold information about the departure or arrival RWY.

- *Open SID setup popup list* - It opens a popup menu with the available departure routes. If there is an assigned departure runway then the list contains the SIDs connected to the runway only. When you select an item here the FP is amended to hold information about the departure route.

- *Open SQUAWK setup popup list* - It opens a popup that holds two items. One is for automatic SQ assignments and another for manual. In that case you can manually enter the SQ value.

- *Open STAR setup popup list* - It opens a popup menu with the available arrival routes. If there is an assigned arrival runway then the list contains the STARs connected to the runway only. When you select an item here the FP is amended to hold information about the arrival route.

- *Open temporary altitude popup list* - This function pops up a list with the possible temporary values to be assigned. It has no real meaning to add this function other than the *temporary altitude* item. This function is not available if someone else is tracking the aircraft.

- *Set clearance received flag* - This function sets or clears the clearance received flag. It has no real meaning to add this function other than the *clearance received* item.

- *Simulation popup* - Available on simulations only. It shows the following simulator commands (depending on the actual state):

- *Get simulation*
- *Transfer simulation to another pseudo pilot*

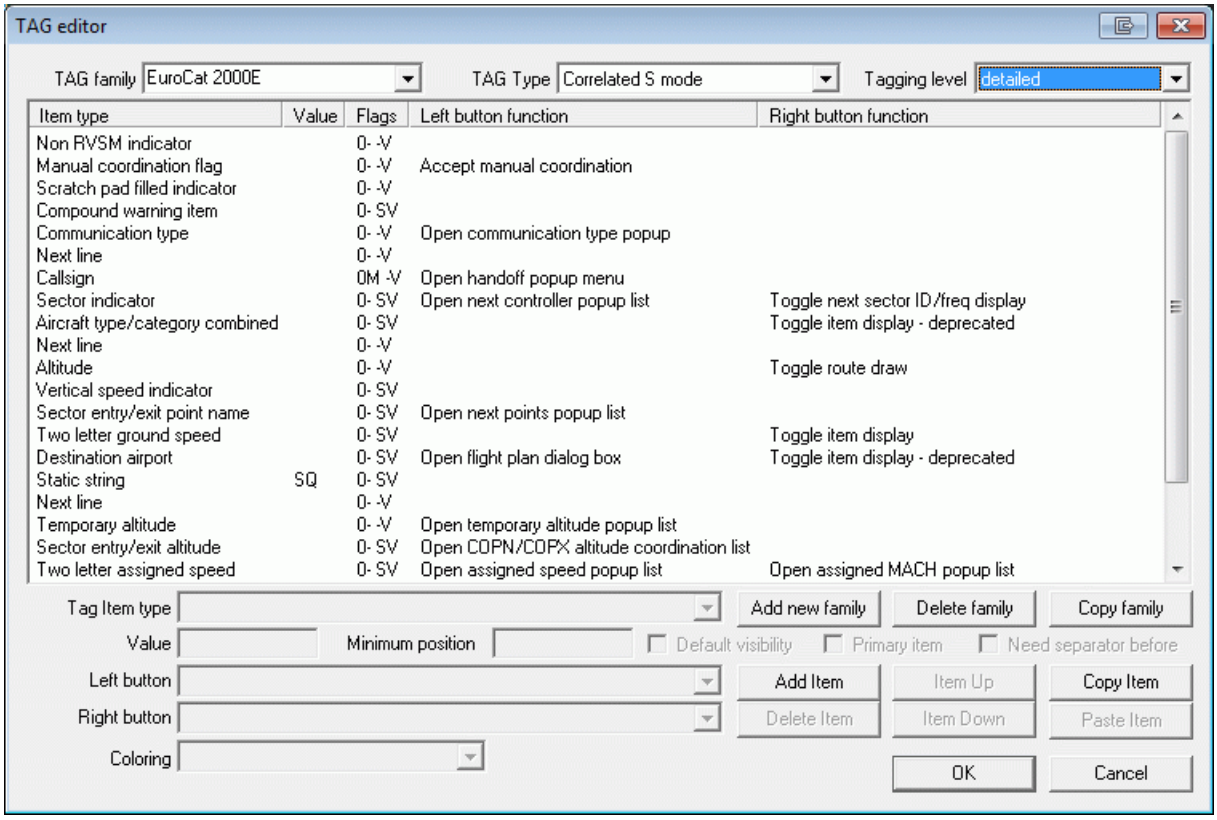
- *Simulator holdings popup* - Available on simulations only. It shows a list of the defined holdings to select and enter it.
- *Simulator land and vacate popup* - Available on simulations only. It shows the following simulator commands (depending on the actual state):
  - *ILS stop on the RWY*
  - *ILS vacate left*
  - *ILS vacate right*
  - *ILS touch and go*
  - *ILS low pass at 50-200 ft*
- *Simulator next waypoints popup* - Available on simulations only. It shows a list with the next waypoints to proceed to.
- *Simulator predefined routes popup* - Available on simulations only. It shows a list with defined routes. The selected route will be assigned to the plane.
- *Simulator takeoff popup* - Available on simulations only. It shows the following simulator commands (depending on the actual state):
  - *Line up*
  - *Takeoff*
  - *Abort takeoff*
  - *Go around*
- *Simulator taxi behind me* - Available on simulations only. It allows the pseudo pilot to select another AC to taxi behind it.
- *Simulator taxi popup* - Available on simulations only. It shows the following simulator commands (depending on the actual state):
  - *Pushback*
  - *New taxi route*
  - *Hold position*
  - *Continue taxiing*
- *Toggle item display* - This function switches on/off the display of the respective item.

- *Toggle item display - deprecated* - Those functions are old item specific switches that should no longer be used and are only kept for compatibility with TAGs created under the old version.
- *Toggle next sector ID/freq display* - This function switches between the ID or the frequency of the next controller. It has no real meaning to add this function other than the *sector indicator* item.
- *Toggle route draw* - This function switches on/off the display of the calculated route track of the aircraft. It also displays the estimated time of arrival to each point.
- *Toggle route prediction points draw* - This function switches single/all/off the display point/altitude pairs EuroScope is used for sector prediction. Use this function as a debugger tool to see why a sector is indicated as next. At first click it shows the points when the sector owner is changing. Second it shows all predicted points. Third click hides the display.
- *Track an aircraft* - This is a quick start tracking of untracked aircraft.

Note: If you have a plug-in loaded that supports additional TAG functions, then these items will appear in the list too.

Editing The TAGs

The following dialog box helps you create new or modifying existing TAGs, TAG families.



The built in Matias family cannot be modified. It is hard coded into EuroScope and will be rebuilt at every startup. When the system is up it works the very same way as a user defined family. To create your own TAGs you always must build a complete family. When ready and saved you can select

your family in the *Display Settings* dialog and save it to the ASR file. In this way the system will remember what TAGs to be used for what display layout.

The elements and functions of the editor dialog box:

- *TAG Family* - In this dropdown list you can switch between your TAG families. It is also used to rename the current family. You can edit the name of the built-in TAG, but it will be ignored on saving.
- *TAG Type* - This dropdown list is used to toggle between the eight types of TAGs in the family, dependent on radar identification state. You should define all types to be able to save the family.
- *Tagging level* - With this dropdown list you can choose the tagging state to edit.
- *The item list* - Major part of the dialog box is the item list defined for the specified family of any type. If you select an item here, then its data is copied to the controls below and you can change the data there. The order of the items is extremely important as EuroScope will display them in the way it finds them on this list.
- *Tag Item type* - With this dropdown list you can change the selected item in the list.
- *Value editor* - This editor is available only if a "free text item" is selected. In this case you can write the string itself to here.
- *Minimum position* - You can define the minimum position of the TAG item, counting from the left border to the right. Maximum value is 50.
- *Default Visibility check-box* - This settings triggers if the item should be visible by default.
- *Primary item check-box* - The primary item plays an important role in the TAG definition. The line from the aircraft position will point to the center of this item. If the primary item is not visible, then there is no way to connect the TAG with the aircraft position, and you will be lost. So, select an item the is always visible (squawk, callsign, TSSR etc.). Of course, only one primary item can be defined for one TAG. Its mark is an ‘M' (:)) letter in the 'Flags' column.
- *Need separator before check-box* - This check box indicates a space will be added before this item if the current line is not empty so far. That makes it a little bit easier to have some spacing between items.
- *Left and Right button function dropdown list* - With these combo boxes you can define the function you would like to have when clicking on the item. It is available only for detailed TAGs.
- *Coloring dropdown list* - You can assign different colors to TAG items. Those colors match the relevant data block items in the *Symbology Settings* dialog.
- *OK button* - Nothing to say. Saves your edit and closes the dialog. Some tests are executed before saving the TAGs and you may receive error messages if something is wrong (e.g.: no primary item selected for a TAG).
- *Cancel button* - It closes the dialog and discards all changes you have made.

- *Add new family button* - It inserts a completely empty family to the system. You can use it if you want to start with a clean paper.
- *Copy family button* - It copies the content of the selected TAG family into a new name. You can use it if you just want a family that is a little bit different from another.
- *Delete family button* - Stands for its name. It deletes a family. Of course, the built-in family cannot be deleted.
- *Add Item button* - It inserts a new item to the list. If there is no selected item, then it is placed as last. If there is a selected, then it will be placed just before the selection. You can immediately start editing it by the bottom controls.
- *Delete Item button* - It simply deletes the selected item from the list.
- *Item Up button* - With it you can move your item one up in the list. Sorry I was lazy to write the real drag-and-drop.
- *Item Down button* - With it you can move your item one down in the list. Sorry again I was lazy to write the real drag-and-drop.

Controller To Controller Communication

Basic Communication

In this section you can find just a brief list of the communication types between controllers with a reference inside the documentation. The basic communication is when you provide information that is available to all neighbor controllers. In these cases, you just spread out the data you have, and you do not request any answer to them.

- *Temporary altitude assignment* - The cleared climb or descend flight level or altitude. You can do it using the ".QQ" (F8) command or via the appropriate popup menu. In EuroScope there are special values to clear an aircraft for ILS or visual approach, which disable the CLAM-warning.

- *Final altitude assignment* - Different final / cruising altitude assignment. It is important to notice that the ".QZ" (F5) altitude assignment does not modify the flight plan. It is published using controller to controller messages only.

- *Scratch pad string* - The free text area for adding notes up to 60 characters. In addition to that the scratchpad is used more heavily inside EuroScope. For more about it see the *Non Standard Extensions* page.

- *Squawk assignment* - The squawk assignment is somewhat different. It is published between controller clients, but the servers are also storing some information about it.

Flight Plan Amendment

A little bit more advanced, but the flight plan amendment is still just a data propagation. There are two different ways to do that:

- *Simple FP editing* - You can change all parts of the flight plan using the *Flight Plan Setting Dialog*.

- *Automatic FP change* - In EuroScope there are new functions that are using the flight plan amendment.

    - *SID/STAR assignment* - When you assign a SID or STAR to an aircraft its flight plan route section is amended to hold the information about it. It is visible to all controllers, but EuroScope clients will interpret it automatically.

    - *Departure/arrival runway assignment* - Similarly the runway assignment amends the route section like the one above. And once again EuroScope clients can interpret the modified route automatically.

Look at the *Non Standard Extensions* page to see how EuroScope will change the route section of the flight plan when a runway or a SID/STAR is assigned via the popup menus.

Advanced Communication

We can say advanced communication when the two controllers are sending information to each other and in many cases, they need an answer for their messages. The following communications are here:

- *Handoff* - When you initiate handoff to the next controller he receives a message about it. Then he has the possibility to accept or refuse it.

There are also two not really formalized communication forms:

- *Chat area* - You can chat with all controllers. Even with the ones that are out of your area.
- *Ground to ground voice* - Since the new AFV this kind of communication is no longer available.

The Ongoing Coordination

The ongoing coordination is a new advanced feature in EuroScope. It allows neighbor controllers to offer, accept, refuse points and altitudes the plane is expected. The coordination point may be just on the border of the sectors of the controllers, but it is also possible to coordinate a point well ahead in the next sector. The ongoing coordination is a brand-new innovation in EuroScope, and at the time of writing this documentation EuroScope is the only controller that is prepared for it. Unfortunately, it has a back draw that you cannot use when the other party did not use EuroScope. In this case some features are still available, but not all. To realize who can use the coordination features look at the controller lists:

All controllers who are ready to answer are flagged by a << sign. You can expect answers from them to your coordination requests.

There are three different scenarios when you can use ongoing coordination:

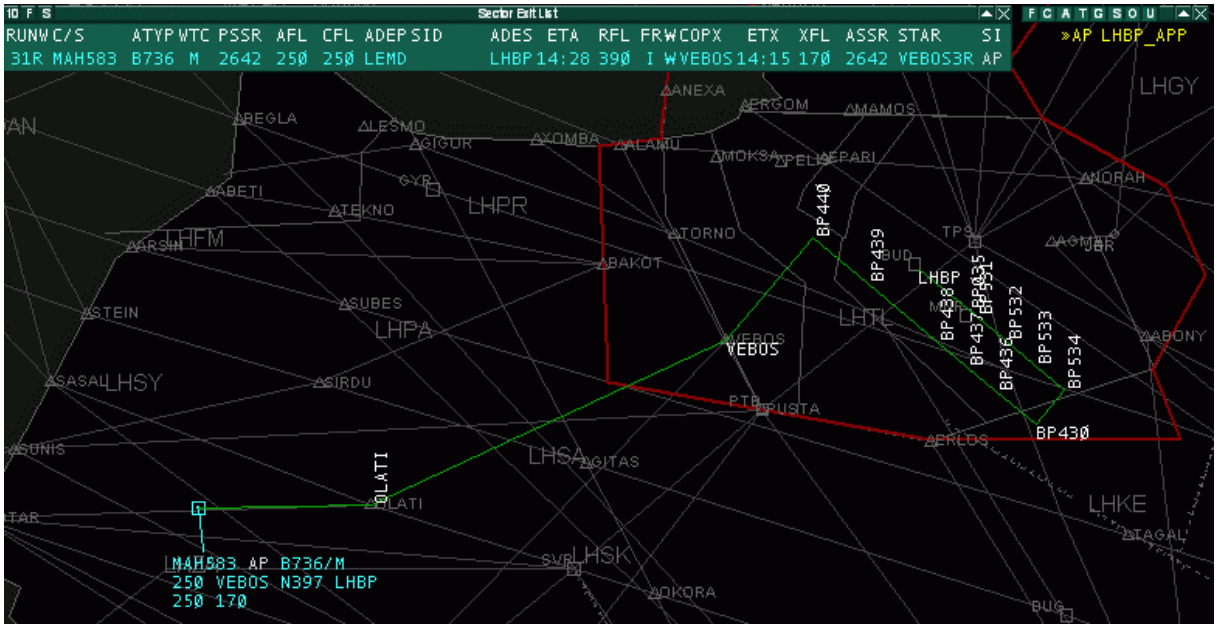
- *Exit point/altitude coordination* - when you are tracking an aircraft and you would like to suggest a different point or altitude to the controller of the next sector.
- *Entry point/altitude coordination* - when you are expecting an aircraft to enter your sector and you would like to suggest a different point or attitude to the controller who is currently tracking it.
- *Bypass coordination* - when you are expecting an aircraft to enter your sector, but for too short time and you are aware that it will not require any instruction from you then simply offer a handoff to the controller after you to the current owner.

From the above list it is visible that the first two cases are always in pairs. If you would like to coordinate the exit point/altitude it is a coordination of the entry point/altitude for the next controller. And

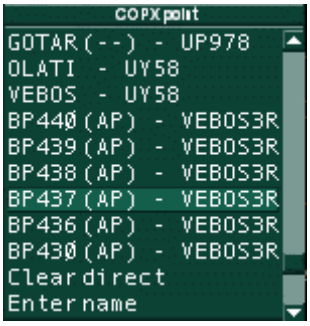
opposite: an entry point/altitude coordination for you is an exit point/altitude coordination for the current owner of the AC. The last one is different, not symmetrical at all.

Exit Point/Altitude Coordination

Probably the easiest way to describe the feature is to start with an example.

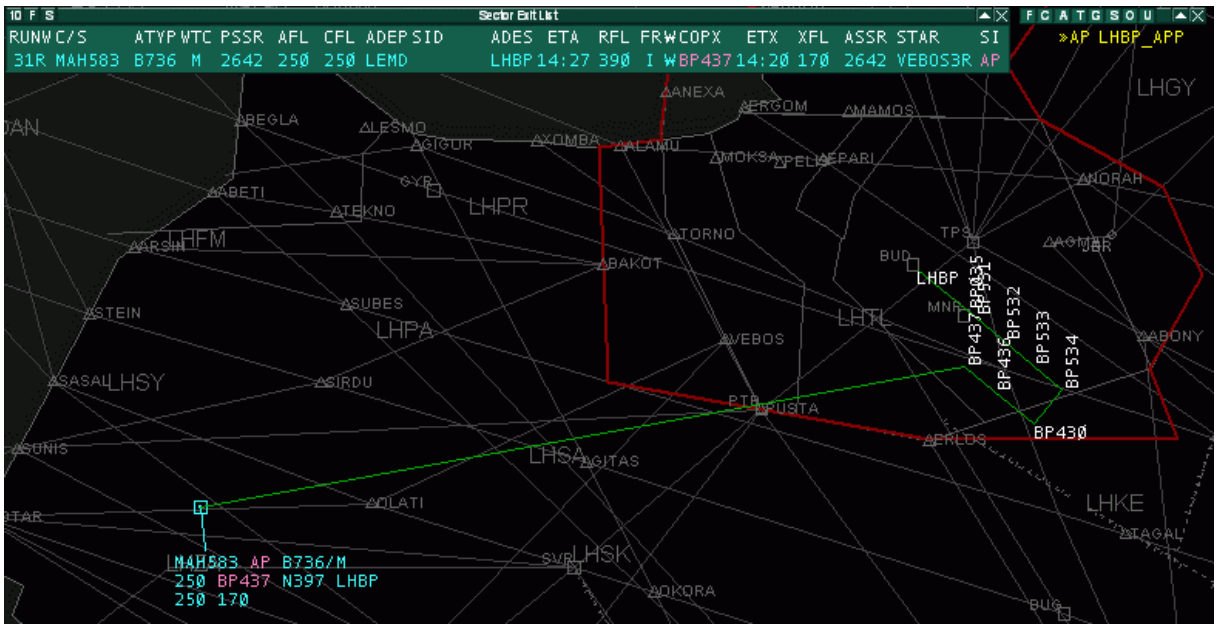


In this first example you see that I am controlling the Hungarian FIR as LHCC_CTR and approach for LHBP is online too. See the >> indicating that he can do the coordination. I have a plane that is coming from the southwest and destination is LHBP. In the TAG it is already indicating that the next controller will be Budapest Approach. The route is plotted in the picture, and it is visible that a real big turnaround is ahead of the plane if he follows the route to VEBOS point that is the normal handoff point between CTR and APP and then follows the VEBOS3R transition to RWY 31R. If the traffic allows it why not give him a shortcut to a point that leads him to the base immediately.
To start a coordination request with APP I pop up the next points list from the TAG:

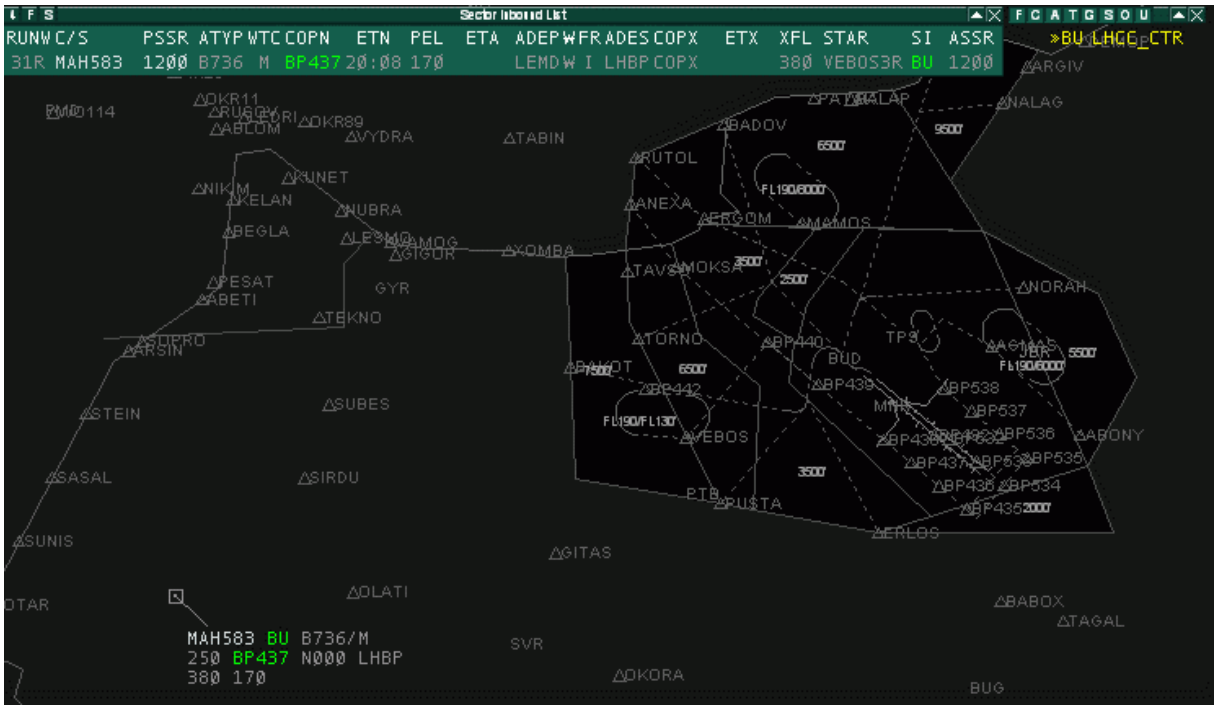


Here in the list, you can now see the points along the route and a flag that indicates if a point is required coordination with another controller or not. You see that until the VEBOS point I am free to give any direct as the plane will still go to VEBOS for the handoff. But the points after VEBOS are marked with the ID of Budapest Approach (AP). These indicators mean that a direct need to coordinate with Approach, he must accept my offer.

If I select the point BP437 a coordination request is sent to approach. For me the new point name is displayed with different colors. And the route plot shows the desired new route.



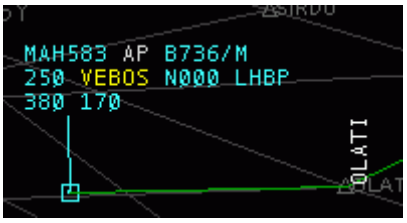
On the approach side the owner and the desired destination point are colored to indicate the incoming request. There is also a configurable audio warning about it.



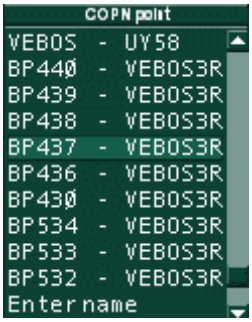
If the plane itself is not inside the screen approach still can see the colored values in the sector entry list. This time the approach has 90 seconds to decide what to do with the request. He can click on the desired new point to answer the call:

- *Accept* - To accept the coordination as it is. When accepted

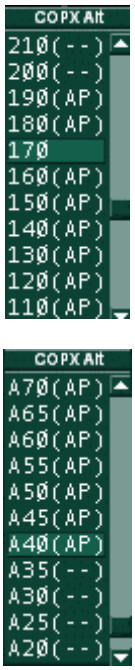
- *Refuse* - To refuse the coordination at all. When the coordination is refused the values are turning back in both sides to the original state. And depending on the symbology and settings it is once again flagged by a different color.



- *Change* - When approach is ready for a shortcut, but the offered point is not the best for him, he can select the "Change" option. Then a popup menu appears with the other options available. Selecting an item here will start a new entry point coordination with CTR.



OK, we have completed the shortcut coordination. But you can still see some pictures above that even the new point is BP437 the coordination altitude remained FL170 that is far too high at that point. When CTR realizes it, it can offer a lower level/altitude. He can click on the sector exit altitude item.



In the list there are the possible altitude values. All are followed by the ID of the controller that will be called for coordination. You can see that FL170 is not flagged as it is the so far accepted value, and it does not need any coordination. FL200 and above are not marked with AP as approach controls up to FL195 and a higher altitude will not drive the plane to his sector at all. In this way it does not need any coordination. The same is visible if the altitude is 3500ft or lower. In this case EuroScope detects a path from present position to BP437 that leaves CTR sector before enters to APP sector (as CTR bottom level is FL100). Therefore, no controller is indicated for coordination.

When the CTR selects the altitude it will start coordination.

It is also indicated at approach like this:

The way to accept, refuse and change is the very same as was described at the next point coordination.

Some notes:

- If CTR decides that he does not want to coordinate but set the direct on his own discretion he can select the point name in the list by a right mouse click. In that case it will set but not coordinated.

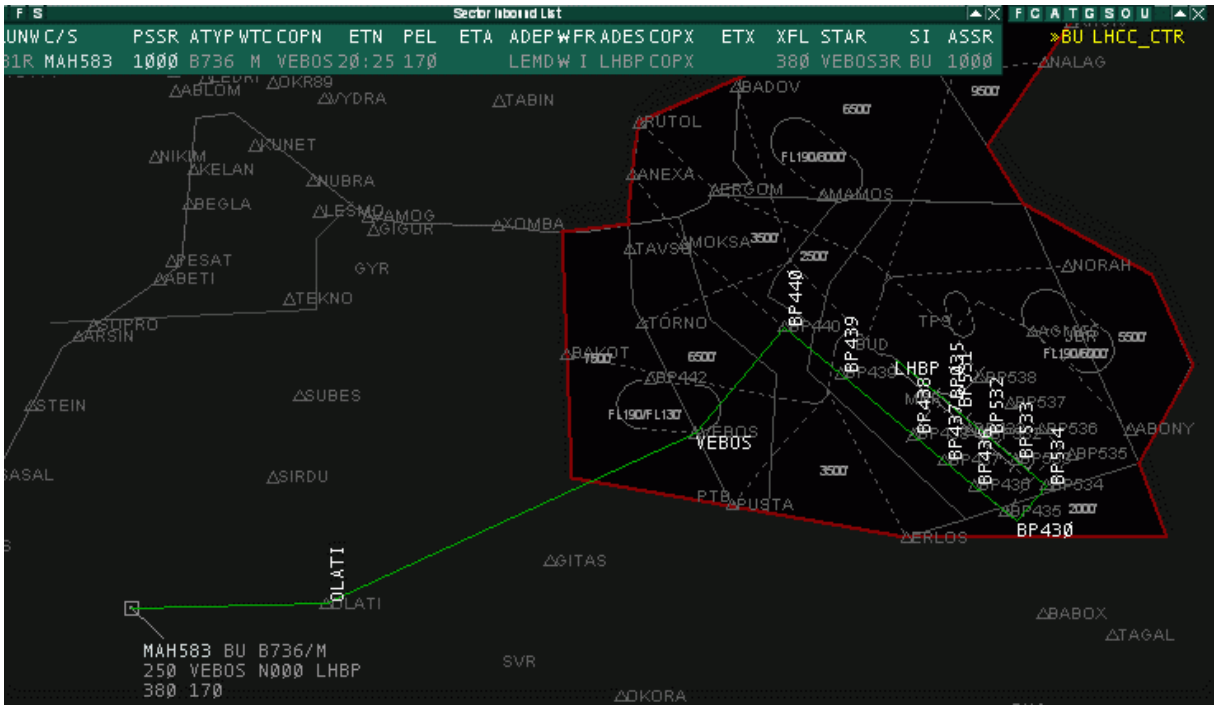
- If the plane is still outside the visual range of the APP, the coordination will be refused immediately, and a generated message is sent to CTR: "LHBP_APP: ES generated - MAH583 is out of my range".

- When you start an exit point/altitude coordination EuroScope will connect the plane actual position with the requested new position with a straight line. Along this line it will detect what sectors are crossed. And the first, that is outside the sectors of the current owner, will be called for coordination.

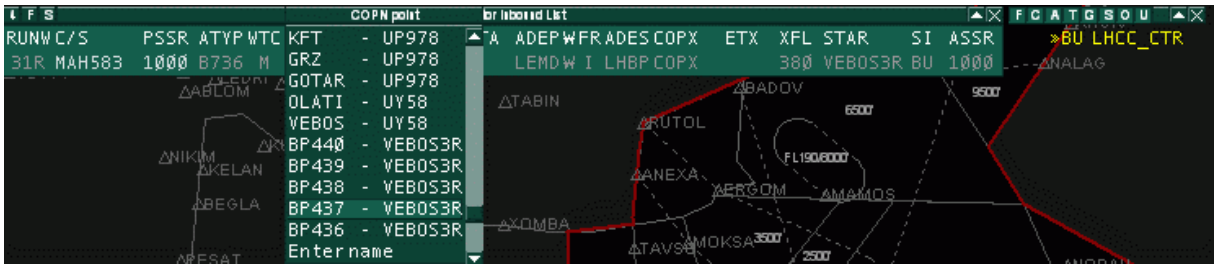
- The controller who is tracking the AC has the right to change the next controller. Clicking on the sector indicator item he can select the appropriate controller from the menu. If the next controller is forced in this way EuroScope will start coordinating with that controller independently from the sectors detected.

Entry Point/Altitude Coordination

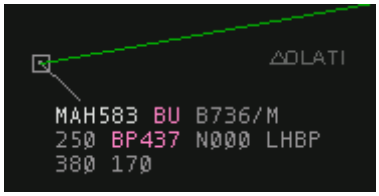
Let us now see the very same example from the approach point of view.



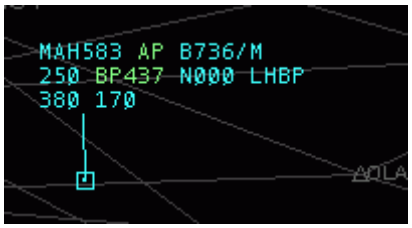
Now approach sees the arriving traffic that is currently tracked by CTR. For some reason it would be better for approach to ask CTR to send the plane direct to BP437 point rather than VEBOS and, he wants it to descend to 4000ft altitude. First, he opens the COPN point popup list on the TAG or on the sector entry list (whatever is the easiest) and requests BP437.



A controller can open the COPN coordination menus only if the plane is controlled by someone else and it is going to enter his sector later. Here you can see that there is no signal what controller will be called as an entry point coordination is requested from the current tracker of the plane. Approach here selects BP437 and the value is signaled in both clients.

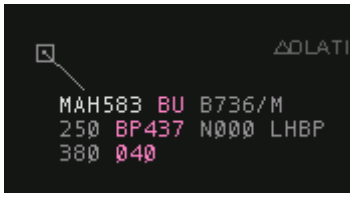


APP view



CTR view

Now CTR has 90 seconds to respond. Let us change the scenario a little bit. Approach still has an option. To start the altitude coordination before receiving the answer to the point request. He simply opens up the COPN altitude list and selects a new requested altitude. Then both requests will be shown in both clients simultaneously:



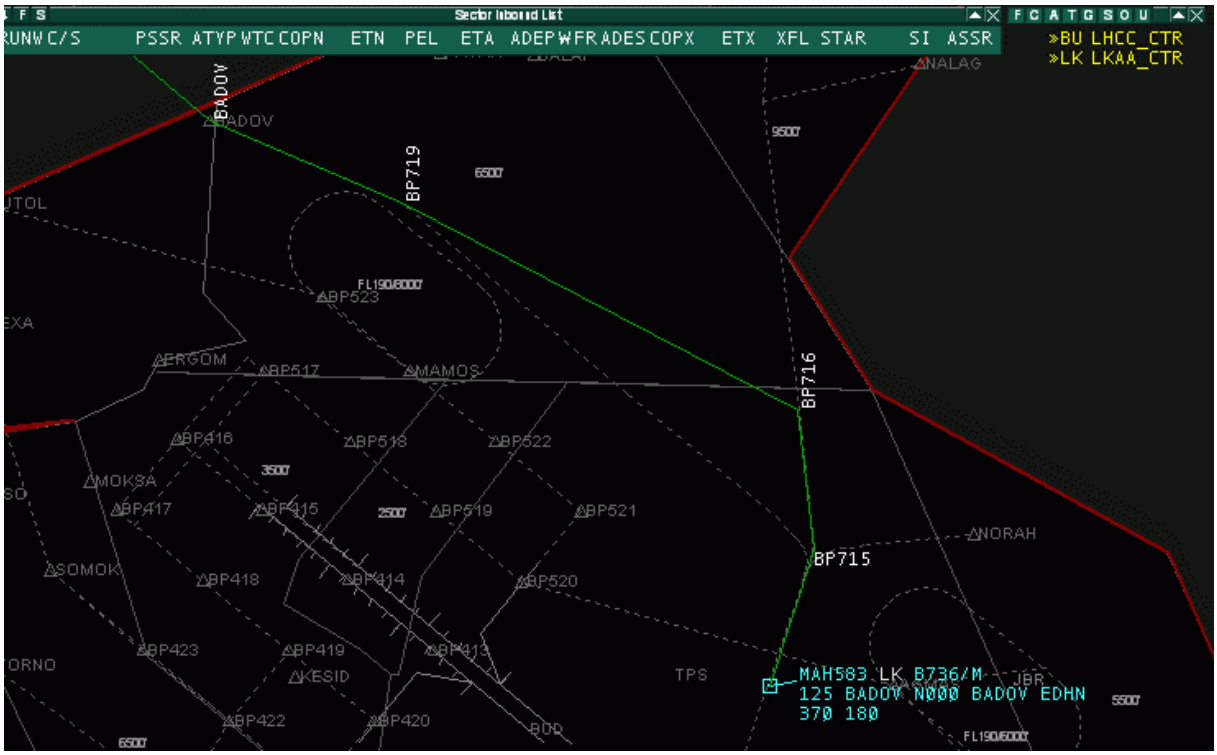
APP view

CTR view

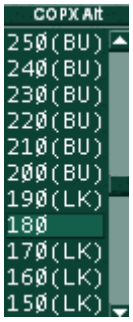
In this case CTR has the option to accept or refuse them with a single click.

Bypass Coordination

This is a little bit different scenario. It is not symmetrical at all. We have now a departure from LHBP. The active runway is 13L for departure. In this case the standard exit point for north bound departures BADOV at FL180.



As FL180 is below the top of approach sector, the plane is not intended to leave the sector at the top to Budapest Radar but goes directly to Bratislava. But in case of RWY13 configuration it is quite probable that the plane climbs much faster than necessary and reaches FL180 well advance BADOV. When approach realizes it, he starts an altitude coordination:



You can see in the popup list that up to FL190 Praha will be contacted for coordination, but at FL200 and above Budapest Radar as in this case the plane will leave the sector on top. Let us assume that approach starts an exit altitude coordination and Budapest Radar accepts it.

Even though Budapest accepted the coordination and allowed the plane to climb above FL180 up to FL250 the plane will just cross the section and will not spend more than 1 or 2 minutes there. As there is no other traffic in the area and the plane does not need any command from Budapest Radar it is better to hand off to Praha from Approach skipping Budapest. Therefore, CTR opens a popup menu and sets Praha as next controller. It starts with coordination with APP.

CTR start the coordination

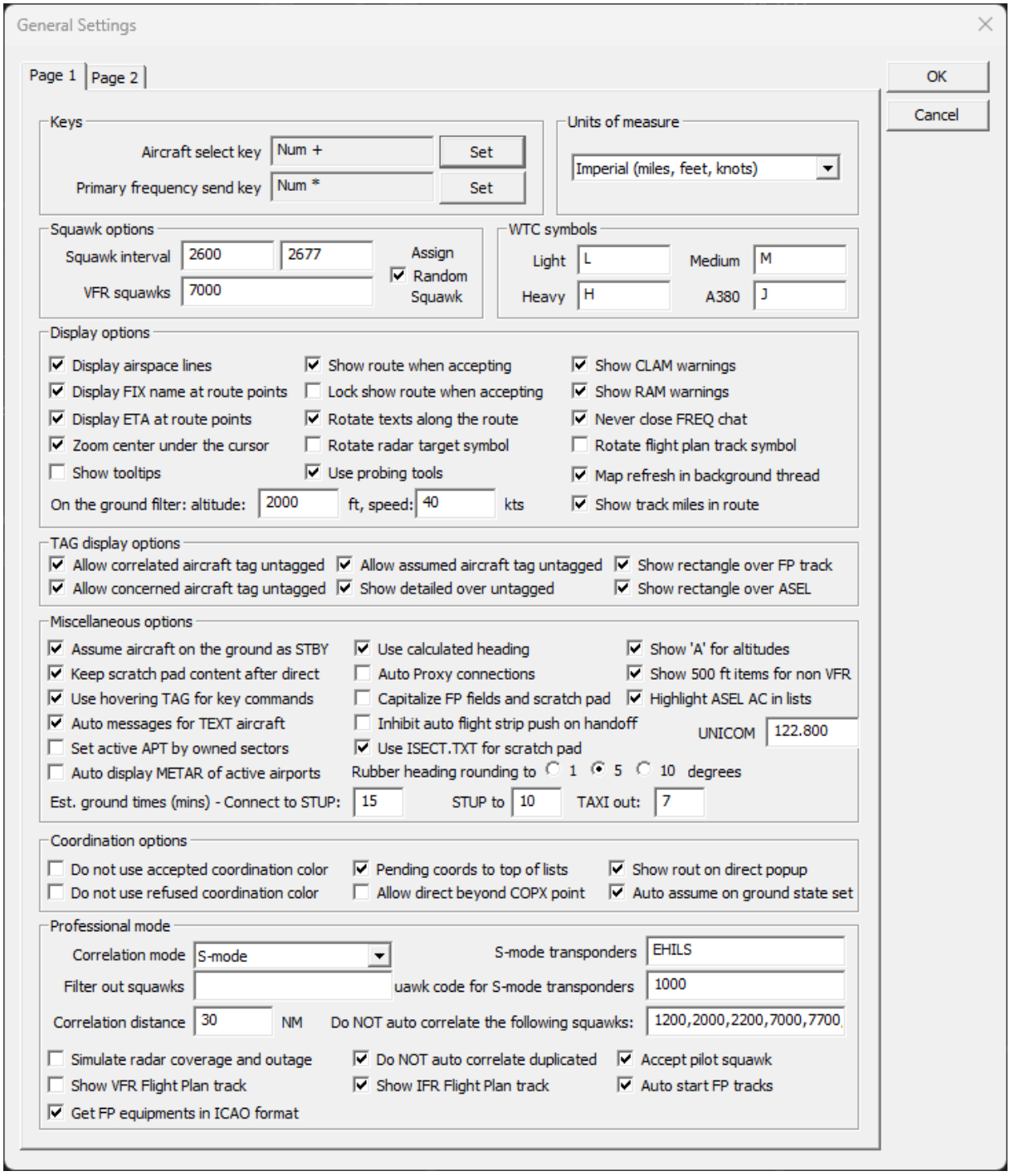
CTR point of view

APP point of view

APP can accept and refuse the same way as an exit or entry point coordination. Once he has accepted the new next controller is displayed in the sector indicator item.

General Settings

General Settings Dialog Page 1



In this dialog you can set up different global behaviors of the system.

In the first page you can find the following blocks:

- Keys

- *Aircraft select key* - In the display field on the left you can read the actual name of the aircraft select button. The default value is the numpad +. To change it, press the *Set* button then the desired aircraft select button.

- *Primary frequency send key* - In the display field on the left you can read the actual name of the primary frequency button. The default value is the numpad *. To change it, press the *Set* button then the desired aircraft select button.

- Units of measure

  - In this dropdown menu, you can choose which system to use, the Imperial system or the Metric system.

- Squawk options

  - *Squawk interval* - The actual squawk range is displayed here. It is loaded from the ESE file based on your active position. You also can override the range here, but if you change your position the squawk range will be reloaded from the positions section of the ESE file and override your setting from the dialog.

  - *VFR squawks* - Here you can specify a list of VFR squawks. Entering the VFR codes here will remove the DUPE warning for VFR airplanes squawking that code. A code range can be specified by separating the first and the last code in the range with -. Separate different squawks/ranges by using the comma.

  - *Assign random squawks* - if this box is checked, EuroScope assigns random squawk numbers in the defined squawk range. If it is unchecked, EuroScope assigns squawk numbers from the beginning and incrementing in sequential order. It checks if the next squawk number is free and if so, assigns it to the selected aircraft.

- WTC symbols

  - *WTC four categories* - Here are predefined symbols for different aircraft categories. The user can modify them according to his needs.

- Display options

  - *Display airspace lines* - Highlights the sector border according to the setting under *Symbology Settings* where an adjacent sector is online.

  - *Display FIX name at route points* - If that option is checked, every FIX name in the route appears near the displayed route.

  - *Display ETA at route points* - If that option is checked, the expected time of arrival at every FIX name in the route appears near the displayed route.

  - *Zoom center under the cursor* - With this option checked, zooming is based on the position of the mouse cursor. Otherwise zooming is based on the center of the screen.

  - *Show tooltips* - When checked, tooltips are displayed when the mouse cursor is placed on items in *The Menu Bar*.

- *Show route when accepting* - If that option is checked, the route is displayed upon accepting a handoff.
- *Lock show route when accepting* - When accepting a handoff, the routing of the aircraft remains displayed.
- *Rotate texts along the route* - If the route is closer to east-west than to south-north, the route annotations are rotated by 90 degrees.
- *Rotate radar target symbol* - If checked, the radar target symbols are rotated according to the aircraft's heading.
- *Use probing tools* - If checked, the conflict detection tool is run on temporary altitude popup and direct to point popup and shows the recalculated conflicts whenever the cursor is over a new item in the list.
- *Show CLAM warnings* - CLAM stands for Cleared Level Adherence Monitoring. It indicates that the pilot does not follow the cleared level. It is shown if the plane is outside the +-200 ft range of his temporary or final altitude and his vertical speed does not indicate that he is trying to reach it. There are some exceptions:
  - CLAM is not displayed on the ground.
  - CLAM is not displayed if the AC is cleared for approach.
  - CLAM is not displayed if there is no temporary altitude set and the plane is not tracked.
  - CLAM is not displayed if AC is flying at final altitude but cleared for lower.
- *Show RAM warnings* - RAM stands for Route Adherence Monitoring. It is displayed when the AC is out of the 5-5 NM (fixed value and no settings so far) range of the route calculated by EuroScope. Here are also some exceptions:
  - RAM is not displayed on the ground.
  - RAM is not displayed if the AC is cleared for approach.
  - RAM is not displayed when a direct is set or has assigned heading.
- *Never close FREQ chat* - If this box is checked, the text chat box for the primary frequency can't be closed.
- *Rotate flight plan track symbol* - If checked, the flight plan track symbols are rotated according to the aircraft's heading.
- *Map refresh in background thread* – If set then when zooming or panning the new image will be displayed promptly by moving or stretching the actual bitmap image. The actual new background map is created in a separate thread and will be visible with a bit of delay. If not set, then zooming happens in the main thread. That might cause a bit delay in the GUI, but the final image will be used without bitmap stretching.

- *On the ground filter* - These settings are used to determine when an aircraft is on the ground. When an aircraft is below the *altitude* value and its ground speed is less than the *speed* value, it is assumed to be on the ground.
- *Show track miles in route* – When set the remaining track miles is displayed at every route point when route is displayed.

- TAG display options
  - *Allow correlated aircraft tag untagged* - With this option unchecked, the TAG of a correlated aircraft cannot be displayed as untagged.
  - *Allow concerned aircraft tag untagged* - With this option unchecked, the TAG of a concerned aircraft cannot be displayed as untagged.
  - *Allow assumed aircraft tag untagged* - With this option unchecked, the TAG of an assumed aircraft cannot be displayed as untagged.
  - *Show detailed over untagged* - With this option checked, detailed TAGs are displayed over untagged TAGs.
  - *Show rectangle over FP track* - This option displays a rectangular boundary around flight plan tracks.
  - *Show rectangle over ASEL* - This option displays a rectangular boundary around the TAG of the currently selected aircraft.

- Miscellaneous options
  - *Assume aircraft on the ground as STBY* - Simulate STBY mode for all aircraft on ground, even if they are squawking C.
  - *Keep scratch pad content after direct* - For VRC and ASRC compatibility EuroScope deletes the scratch pad content after a direct is assigned, and the point name is stored there. With this option you can disable it and keep the original content. This will cause VRC and ASRC users to not see the assigned point.
  - *Use hovering TAG for key commands* - If that option is checked, when the mouse is over a detailed TAG and the controller presses any function key, that command is directly sent to the selected aircraft without any need to press the Enter key.
  - *Auto messages for TEXT aircraft* - When this option is checked whenever something is set via the TAG menus then EuroScope generates a message to be sent via the frequency chat. It is placed into the command editor but not sent automatically.
  - *Set active APT by owned sectors* - This option automatically activates airports in the *Active Airports Runways* dialog, if they are defined in the sector definition of the ESE file. When logged in as an Observer, this setting is ignored.
  - *Automatically display METAR of active airports* - When this option is checked, the METARs of active airports are automatically added to the METAR List, if there are runways activated for those airports.

- *Use calculated heading* - If this option is checked then EuroScope will calculate the heading of the aircraft based on the actual and the previous points received. In this case the leader line will show the actual track heading. If this option is off, then the true heading reported by the aircraft will be used to display the leader line. In case of high winds that could be different from the route.

- *Auto Proxy connections* - The Proxy Connection is automatically activated. If used on the primary instance, the Proxy Server is activated, any subsidiary instance is automatically connected to the primary instance (on the same computer).

- *Capitalize FP fields and scratch pad* - With this option enabled, text in the flight plan and the scratch pad is capitalized.

- *Inhibit auto flight strip push on handoff* - If this box is checked, the aircraft flight plan is not automatically pushed to the next controller. It's up to the controller to push the flight plan using the **.SS <controller ID>** command or with the popup menu on the flight strip.

- *Use ISECT.TXT for scratch pad* - If selected, the scratch pad entries are checked against fix names in the ISECT.TXT file. If a match is found, the scratch pad entry is considered to mean a direct to that fix.

- *Show 'A' for altitudes* - Altitudes are preceded by A depending on the setting in *The Menu Bar*.

- *Show 500 ft items for non VFR* - If this option is set then in the altitude assignment popup lists below 1000 ft all 500 ft items are shown for all AC. If disabled, then for IFR planes only the 10000 ft items are displayed.

- *Highlight ASEL AC in lists* - If set then ASEL AC is shown with a different background color in the AC lists.

- *UNICOM* - Defines the frequency to be used for Unicom. Default is 122.800. However according to http://www.vatsim.net/comms/Temp_archives/BOG04jan2009.pdf it was decided to forbid UNICOM frequencies other than 122.800, but no action has been taken yet, so currently it should be allowed under VATSIM regulations to use the correct UNICOM frequency for your area.

- *Rubber heading rounding to 1/5/10* – With there radio buttons you define how to round the heading assigned to the plane when dragging the AHDG item in the TAG.

- *Estimated ground times* – Here you can specify how many minutes an average plane will use for the phases. All values are in minutes. The estimations will update *estimated off block time, estimated departure time* and *target startup time*.

  - From connect to startup.

  - From startup to push back.

  - Taxi out time

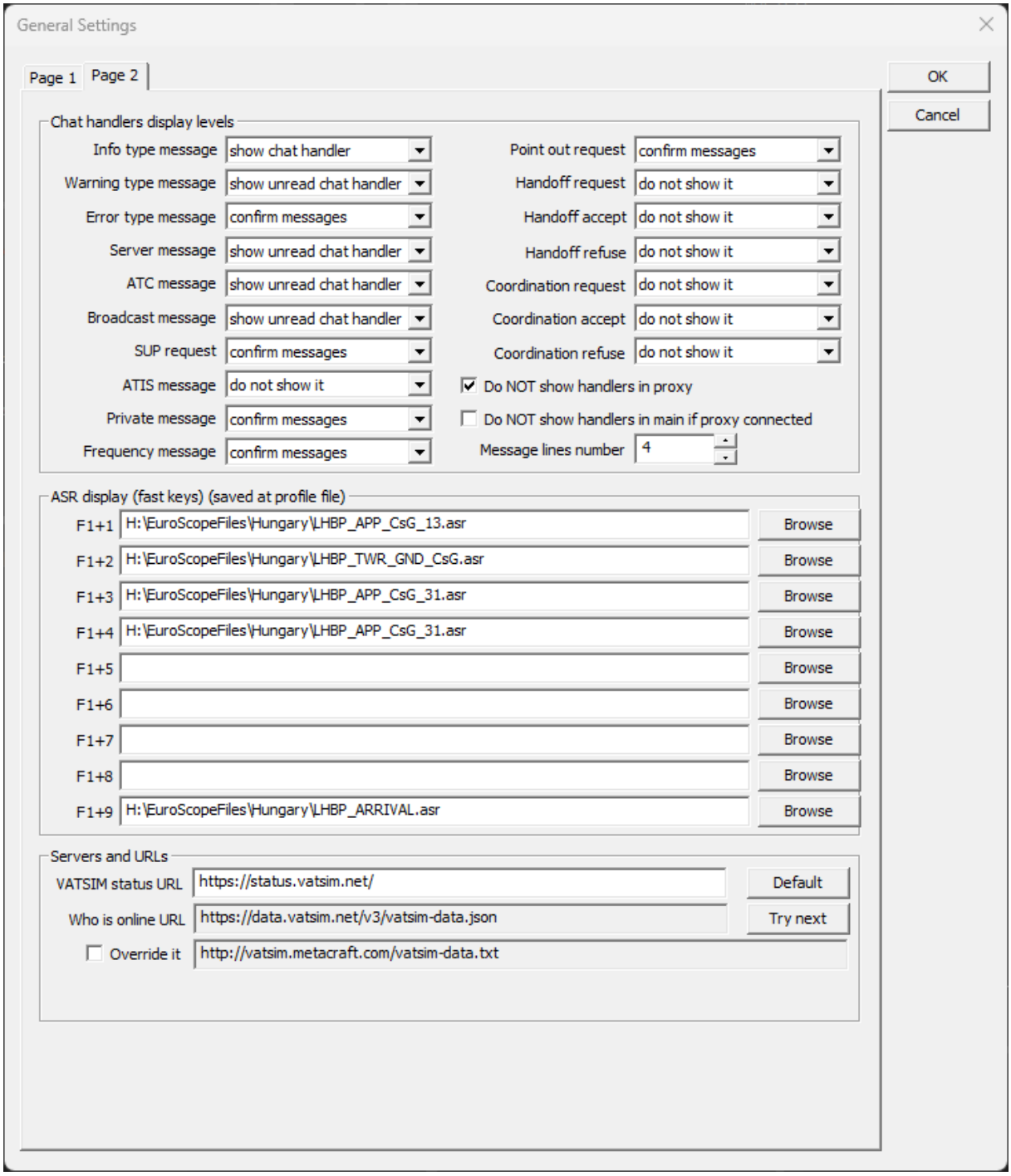
- Coordination options

- *Do not use accepted coordination color* - Indicates that accepted coordinations are to be displayed with normal color and do not need a highlight.
- *Do not use refused coordination color* - Indicates that refused coordinations are to be displayed with normal color and do not need a highlight.
- *Put pending coordinations to first place* - Aircrafts with pending coordination requests are moved to the top of the *Advanced Lists*.
- *Allow direct beyond COPX point* - If set then no coordination is initiated if a point is selected beyond the actual COPX.
- *Show route on direct popup* – If set the route is displayed while the next point popup list is displayed.
- *Auto assume on the ground state set* – If set then ground state changes will automatically assume the aircraft. It also automatically initiates a handoff to the next controller.

- Professional mode
  - *Correlation mode* - This pop menu allows the user to choose between Easy VATSIM Mode, S-Mode or C-Mode. For more details about these modes go to *Professional Radar Simulation*.
  - *S-Mode transponders* - In this field you can specify the aircraft equipment codes for which a mode S transponder is assumed.
  - *Filter out squawks* – The planes with squawk codes from this list will not be displayed on the radar screen.
  - *Squawk code for S-mode transponders* – The transponder code set here will automatically assigned for all planes with S mode transponders.
  - *Correlation distance* - This setting defines the range of automatic correlation of radar target and flight plan track. The maximum value that can be entered is 100nm, but setting the value to 0 gives an unlimited correlation distance.
  - *Do NOT correlate the following squawks* - Aircraft squawking codes in this list will not be automatically correlated. Separate multiple codes with commas (,). A code range can be specified by separating the first and the last code in the range with '-' (e.g. entering "1200,2000-2077" means code 1200 and all codes in the range 2000 to 2077).
  - *Simulate radar coverage and outage* - With this option checked, the area of radar coverage and radar outages are simulated, based on the entries in the ESE file. For more details, refer to the *Professional Radar Simulation* page.
  - *Do NOT auto correlate duplicated* - With this option checked, an aircraft squawking a duplicated code will not be automatically correlated. Duplicated squawks are only checked against other radar tracks, not against flight plan tracks.
  - *Accept pilot squawk* - With this option checked, whatever code the aircraft is squawking is considered to be the assigned code if no code is actually assigned.

- *Show VFR flight plan track* - With this option checked, flight plan tracks of VFR flights are displayed.
- *Show IFR flight plan track* - With this option checked flight plan tracks of IFR flights are displayed.
- *Auto start FP tracks* - With this option unchecked, flight plan tracks are not automatically started and therefore their flight path position is not calculated.
- *Get FP in ICAO format* – If enabled EuroScope will report to the servers that equipment codes should be received in ICAO format. When disabled it will request FAA codes.

General Settings Dialog Page 2



- *Chat handlers display levels* - These options set how the new incoming messages are shown for you. You can define the action for the following messages by selecting a value from a drop-down list:
    - Info type message
    - Warning type message

- Error type message
- Server message
- ATC message
- Broadcast message
- SUP request
- ATIS message
- Private message
- Frequency message
- Point out request
- Handoff request
- Handoff accept
- Handoff refuse
- Coordination request
- Coordination accept
- Coordination refuse

For all the message types, you have the following options:

- *Do not show it* - In this case even the appropriate message handler does not appear. Be careful with this option as you may miss valuable information.
- *Show chat handler* - This options shows the message handler if new message arrives.
- *Show unread chat handler* - With this option the message handler has different color when it contains an unread message.
- *Flash chat handler* - With this option the message handler is flashing when it contains an unread message.
- *Confirm messages* - With this option the message handler is flashing when it contains an unread message and you must confirm the individual messages. As long as there are read but unconfirmed messages the handler is displayed with a different color.

Rest of the options in this section:

- *Do not show handlers in proxy* – us this option if you use a secondary instance in your secondary monitor and do not want to waste space for message handlers.
- *Do not show handles in main when proxy is connected* – It is just the opposite of the prior item.
- *Message lines number* – the height of the message area.

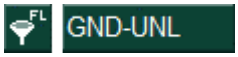
- *ASR display (fast keys)* - Using these options you can assign ASR files for different F1+<0..9> key combinations. When you press e.g. F1+6, the ASR defined there will be loaded if it isn't already and selected as current.
- *Servers and URLs* - These URLs are used to obtain information about different servers and statistical data. Normally you do not need to modify them.
    - *VATSIM status URL* - This is the root URL that is asked about available servers. The *Default* button resets the URL to its default value.
    - *Who is online URL* - Here you can specify the URL from where EuroScope downloads VATSIM data for the *Show simulated traffic* function.
        - *Try next button* – Obsolete.
    - *Override it* - You can override the default URLs using this checkbox.

Display Settings Dialog

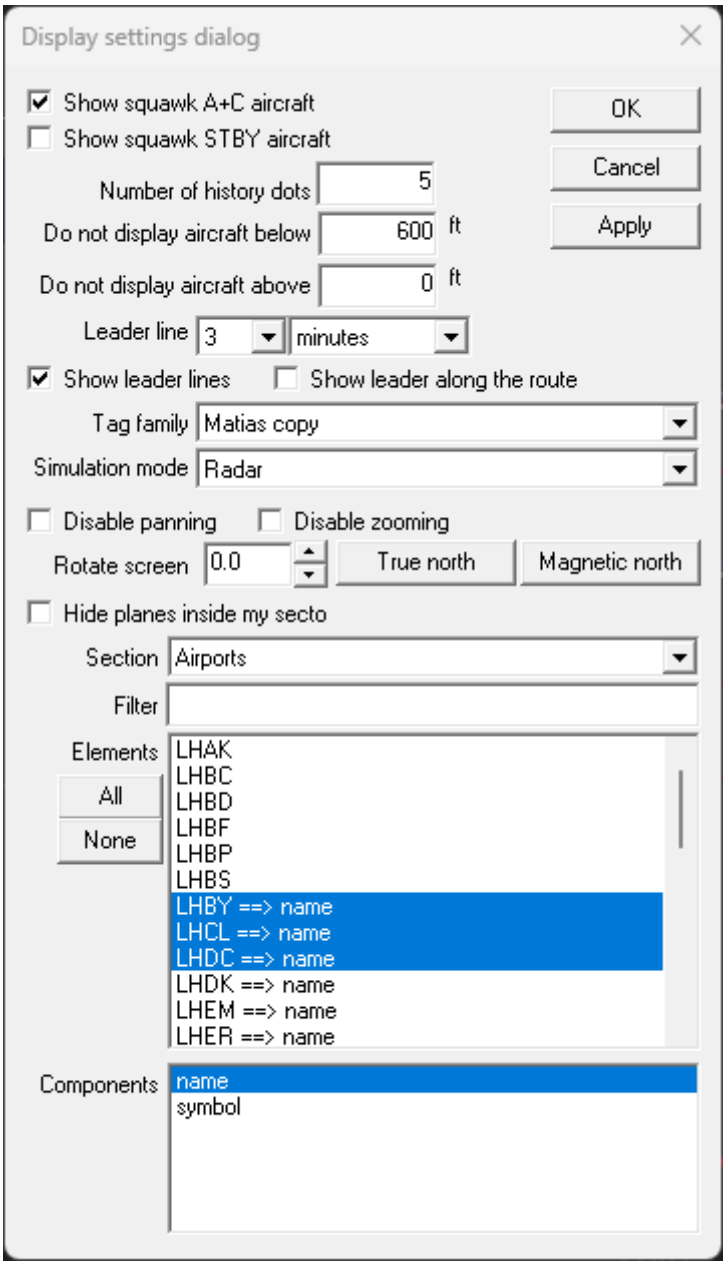
This is where you can customize the display settings, saved in the .asr files. EuroScope takes a big step forward from previous radar clients by allowing users to switch on/off individual items on the radar screen. You may want to have a clear view and switch off most navaids, but you need a given VOR or a FIX; you want to see a certain Runway or a centerline, without having to see others making the screen confusing - this is the setup dialog for you! Earlier witty .sct file creators used the SID/STAR settings to add adjustable little practical details to the screen - now with EuroScope, there's no need for that anymore!

Open the Display Settings Dialog by clicking on the upper toolbar on

OTHER SETTINGS > Display Settings ...



or directly by clicking on the (Altitude filter/Display settings) icon.



- *Show squawk A+C aircraft* - Display or hide targets with transponder active
- *Show squawk STBY aircraft* - Display or hide targets with transponder set to standby
- *Number of history dots* - Specify the number of history dots in the trails of the radar target.
- *Do not display aircraft below [ ] ft* - Filters all targets below the given altitude in feet (a value of 0 means filter is OFF)
- *Do not display aircraft above [ ] ft* - Filters all targets above the given altitude in feet (a value of 0 means filter is OFF)
- *Leader line [ ] [MINUTES/MILES/KILOMETERS]* - Set leader line to predict aircraft's position in given minutes or nautical miles. Minutes or NM can take up values between 1-10.

- *Show leader lines* - Using this setting, you can disable the leader lines.
- *Show leader along the route* - Using this setting, the leader line follows the route of the aircraft.
- *Tag family* - Select pre saved TAG settings from the list. Default TAG is the one used in the Matias system at Budapest ACC/APP
- *Simulation mode* - Here you can specify the radar mode used for the current ASR.
    - *Radar mode* - For details on Professional mode, refer to the *Professional Radar Simulation* page. If the correlation mode in the *General Settings* dialog is set to Easy EuroScope mode, then it looks like the old Easy Radar mode.
    - *Professional ground with S-mode radar* - Ground mode with S-mode surface radar coverage.
    - *Professional ground without radar* - Ground mode without radar identification of the aircraft.
- *Disable panning* - You can disable panning to prevent accidental changes to the screen display.
- *Disable zooming* - You can disable zooming to prevent accidental changes to the screen display.
- *Rotate screen* – Here you can specify if the screen should be rotated around the center. The value 0.0 is used for true north. Magnetic north is coming from the SCT file.
- *Hide planes inside my sector* – Using this check box you can hide the planes inside your sector. It is planned to be used in proxy client when you use your second instance to have an overview. It cleans up the contents of your screen.

Switching on/off individual items on the map

The lower part of the dialog shows several controls to show or hide individual graphics elements on the radar screen background.

- *Section* – This is the top level in the hierarchy. The SCT/ESE files store data in sections. In this combo box you can select what sections data you would like to change.
- *Filter* – Enter the name or part of the name of the item you would like to change. In the *Elements* list all the matching elements are listed.
- *Elements* – The filtered content of the section. If an element is displayed on the radar screen, then it has a ➔ sign, then the names of the components. It is handy as you can also filter to the component names.
  The list is multi select list. You can select as many items as you need. Use the *All* button to select all and the *None* button to deselect all.
- *Components* – It contains the component names of the actual section items. You can select/deselect the visible graphical components in this list.

Symbology Settings

Similar to *Display Settings*, the settings in the symbology settings window gives a controller some new tools: EuroScope allows to have different colors, line width or fonts for every individual item on the radar screen.

Click on Symbology Settings ...

The following dialog will appear:

Symbology

In the left bottom area, you can find the Section/graphical components tree. Select the component to change the symbology of all items. You can change the actual values using the left top controls.

The settings are quite straight forward, colors can be chosen from a palette, font size can be adjusted as required, .5 (values are also accepted), set line weight to a value of 0-10, select line style from values of solid, dash, dot, dash-dot, dash-dot-dot, and select Text alignment for the elements.

TAG background

In the to right area there are several on/off switches:

- *Transparent AC list background* - if selected, the background of the aircraft lists is transparent.
- *Transparent AC list selected item background* - if selected, the currently selected aircraft won't be highlighted in the lists.
- *Transparent detailed TAG background* - if selected, the background of detailed tags will be transparent.
- *Transparent detailed TAG selected item background* - if selected, the specific item within the detailed tags won't be highlighted.
- *Transparent TAG background* – if selected none of the TAGs will have solid background.
- *Use Arrival/Departure TAG background colors* – if set then the background colors of departure and arrival airport planes will use different colors.

Symbols

Every symbol can be customized in the right window using graphic commands. All coordinates are in pixels. They are very simple:

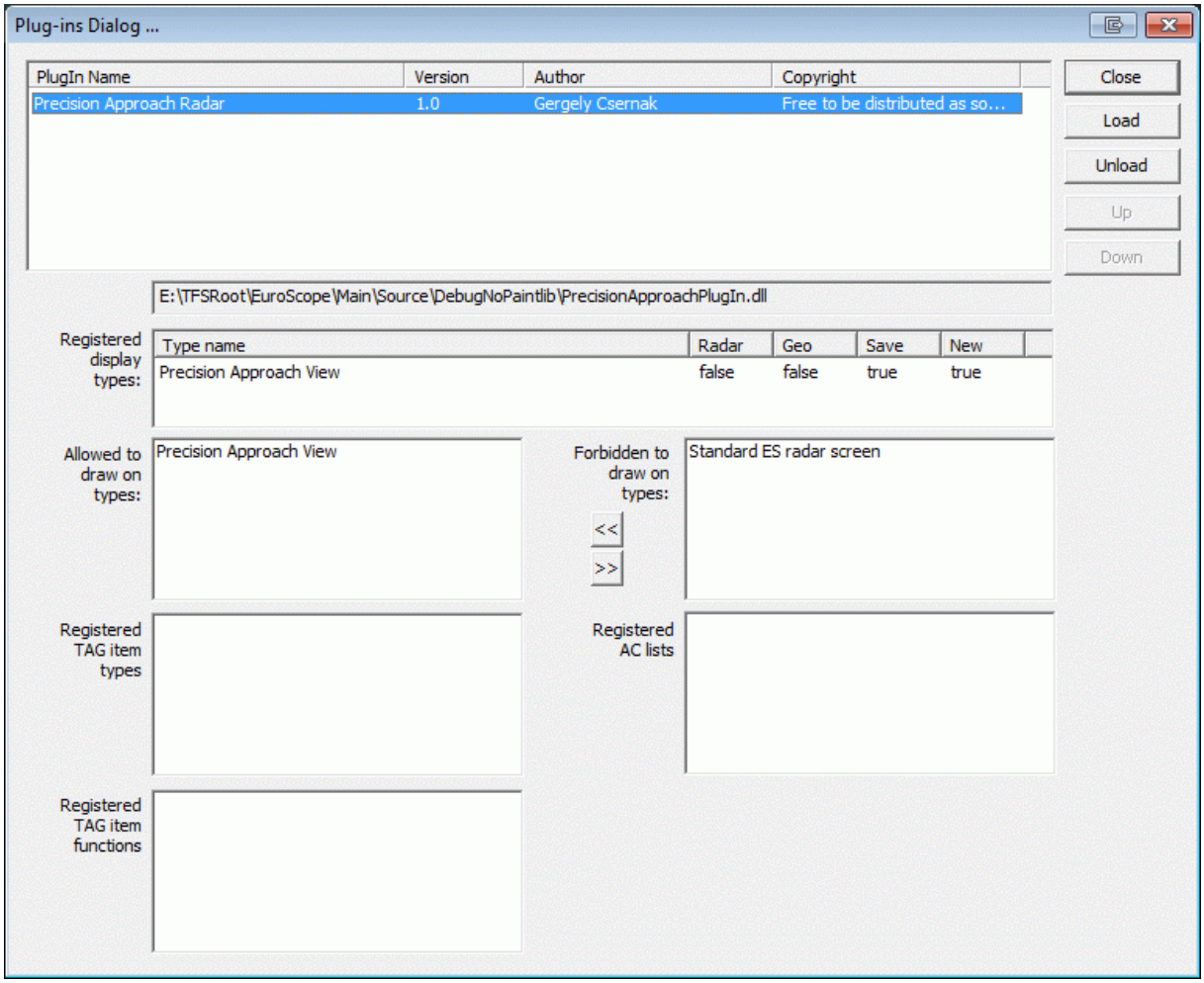
- *MOVETO <x> <y>* - to move the cursor to the specified location
- *LINETO <x> <y>* - draw a straight line from the previous position
- *POLYGON <x1> <y1> <x2> <y2> ... <xn> <yn>* - to draw a freeform polygon (the number of coordinates are limited to about 20)
- *ARC <x> <y> <radius> <start angle> <end angle>* - to draw part of a circle (angle values are in degrees)
- *FILLARC <x> <y> <radius> <start angle> <end angle>* - to draw a filled part of a circle
- SETPIXEL <x> <y> - to display an individual pixel

Pressing the *Default* or *Filled* default button the symbol changes the actual symbol description with the default one.

The Clipping area around radar targets textbox allows to define a squared area (in pixels) around every aircraft where no information can be displayed and thus prevents the anchor line from running to the middle of the symbol. Its maximum value is 50.

The user perspective of the plug-ins

To set up the plug-ins you would like to use click on the *Plug-ins* item in the *Settings* menu. You will have the following dialog box:



On the top area you can see the loaded plug-ins. You can check here the name, the version number, the author and the copyright messages. Selecting an item in the list fills the detailed controls below.

You can use the right-side buttons to manipulate the list:

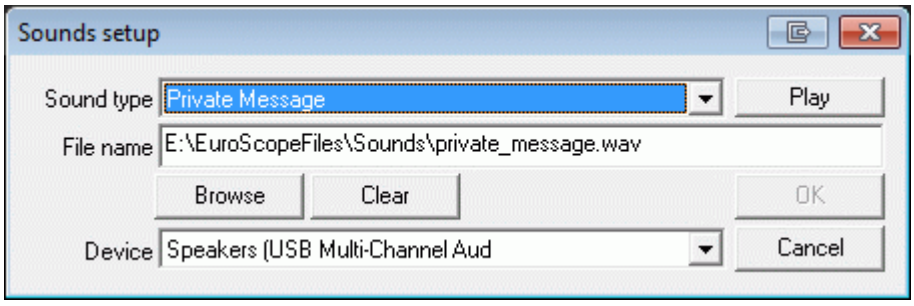
- *Close* - Simply close the dialog a go back to the radar.
- *Load* - It opens a file browser where you can locate and select the plug-in DLL to be loaded.
- *Unload* - It unloads the selected plug-in DLL.
- *Up* and *Down* - With these buttons you can reorder the plug-ins. It may be important as this is the order they are loaded and called for every event. It could be interesting when they are drawing on the screen.

Below the list you can see the detailed controls. They are filled with values only in case you have a selected plug-in in the list above.

- *DLL file name* - Full path to the DLL file that holds the plug-in.
- *Registered display types* - If the plug-in defines its own display type, then you can find details about them. The OCC and the Precision Approach plug-in define their own display types.
- *Allowed to draw on types* / *Forbidden to draw on types* - The two lists hold all defined screen types. You can allow if a plug-in can display on top of that kind of screen or not. Use the arrow buttons (or double-click) to allow/forbid the drawings.
- *Registered TAG item types* - The items you can use in the TAGs and lists provided by the plug-in.
- *Registered TAG item functions* - The functions you can assign in the TAGs and lists provided by the plug-in.
- *Registered AC lists* - New AC lists provided by the plug-in.

Note: The plug-in system changed a bit more and the old plug-ins cannot be loaded to v3.2. If you are fan of any of the existing plug-ins that you are not happy to control without it, then do not install v3.2 just now. Wait a bit for your plug-in provider to update the plug-in to v3.2.

Sounds Setup



To define audio notifications to certain events, go to *Other Settings* > *Sounds* in the menu. In a simple configuration window, you can assign any *.wav files to the following actions:

- *Handoff request* - sound is played upon receiving a handoff request
- *Handoff accept* - sound is played when a handoff is accepted by another controller
- *Conflict alert* - if the minimum separation is not kept, conflict alert notification will be played. Separation minima can be configured in the *Conflict Alert Settings Dialog*
- *Radio message* - audio notification of incoming messages on your primary frequency
- *Private message* - audio notification of incoming private messages
- *ATC message* - audio notification of messages on the ATC board
- *Broadcast message* - audio notification of broadcast messages
- *Supervisor call* - audio notification of incoming supervisor messages
- *Connected* - sound is played when connection is established
- *Disconnected* - sound is played upon disconnection
- *Ongoing coordination request*' - audio notification of incoming ongoing coordination requests
- *Ongoing coordination accepted* - audio notification of accepted ongoing coordination requests
- *Ongoing coordination refused* - audio notification of refused ongoing coordination requests
- *Manual ongoing coordination* - audio notification of manual ongoing coordination
- *New ATIS message* - sound is played whenever a new automated ATIS notification is received
- *Handoff refused* - sound is played when a handoff is refused by another controller
- *Pointout* - sound is played when a point out of an aircraft is received
- *Startup* - sound is played during startup of EuroScope

IMPORTANT NOTE: User sounds will only be valid if its duration is one second or more.

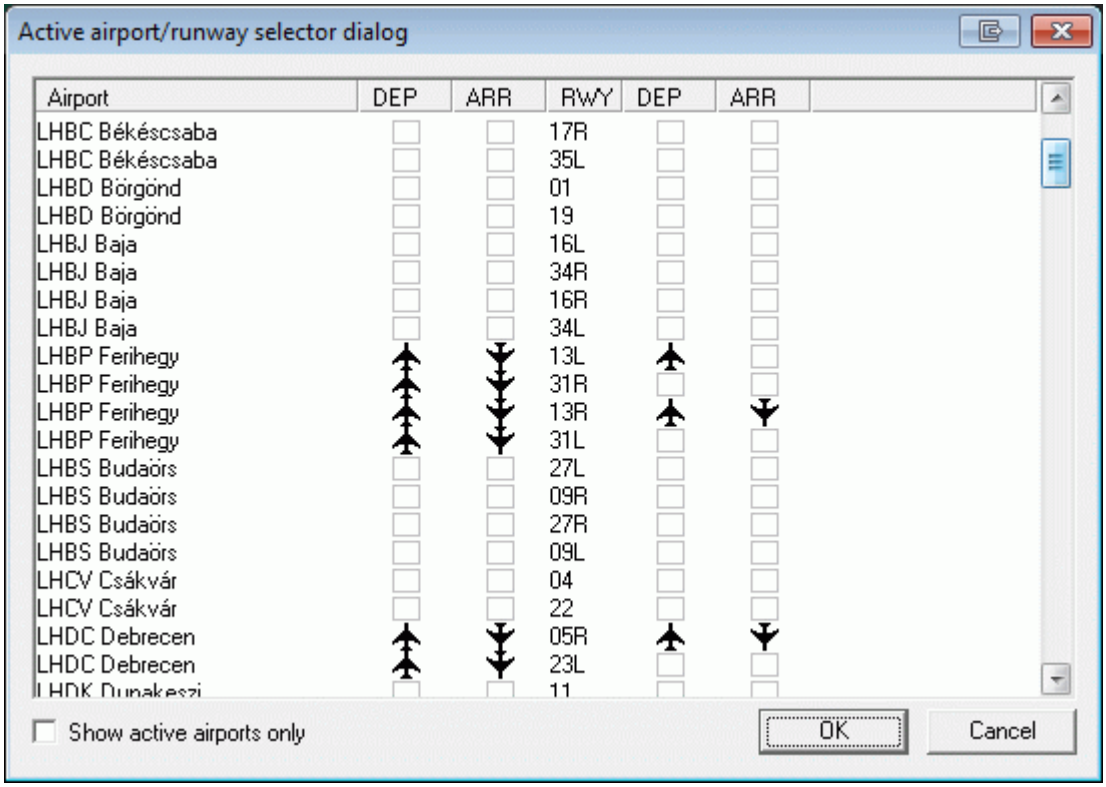
In the *Device* combo box, you can define which sound device is to be used for the sound. You can select from your available devices or use the default Windows output one. All sounds will be played on the device selected here except the startup sound. That is always sent to the default Windows device unit.

Active Airports / Runways

Here you may select which airports are under your control, thus what flights should be listed in the aircraft and departure list. You can activate arrival and departure functionality for each airport separately. In the aircraft list, every arrival or departing flight will be displayed in addition to aircraft concerned by your sector. If defined in the ESE file's sector definitions, active airports will be set automatically dependent on the sectors under your control.

You can also set the runways in use regardless of the active airports. The active runways are relevant for the SID and STAR prediction, and optional also for the display of extended centerlines and the calculation of COPX points.

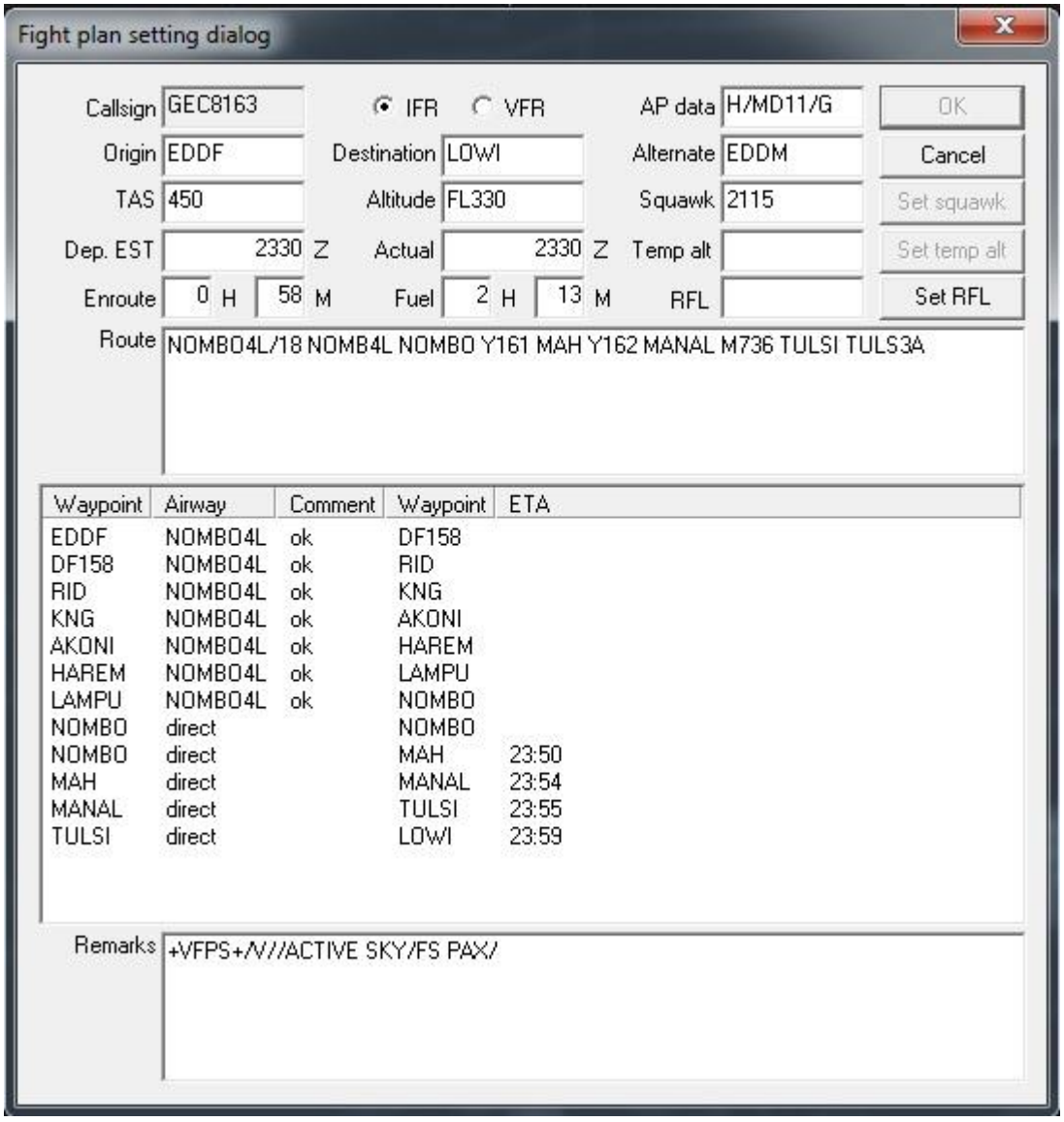
Optionally the active airports with runways assigned can be automatically added to the metar list.



- To make an airport active click on the first two boxed columns next to the airport name. In this example only LHBP and LHDC are selected (both DEP and ARR)
- To select the active departure and arrival runways click the DEP and ARR columns for the given runway. In this example departure runways 13L and 13R and arrival runway 13R are selected for LHBP. In addition to that, LHDC runway 05R is selected to allow EuroScope the calculation of the correct COPX points.
- You can reduce the list by showing only the active airports.

The Flight Plan Setting Dialog

The dialog looks like this:



Most of the dialog is straightforward and does not need too much explanation. It contains the most important pieces (not all of them) of a flight plan and makes it possible to be modified. Just edit the values you would like to modify then press *OK* to save or *Cancel* to forget it. You can open the flight plan dialog even if you are an observer or someone else is tracking the aircraft but, in this case, you will not be able to save your modifications.

Probably the route section is a little bit more interesting than the others. It is a simple text edit box. The addition is that for every single character modification the route is compiled from the string and the extracted point by point route is displayed in the list control below. There you can see all waypoints the airway to that waypoint and a comment about the airway usage. If the aircraft is flying, then the estimated time of arrival is also calculated for every point along the route.

There are three other buttons that work immediately and not when saving the dialog:

- *Set squawk* - It assigns the squawk value to the aircraft. If the field is empty a new squawk is generated based on the controller position.
- *Set temp alt* - It sets the temporary altitude.
- *Set RFL* - It sets the requested flight level. EuroScope makes a difference between the requested flight level (RFL), which is the level the pilot originally requested when filing his flight plan, and the current or cleared flight level (CFL) which is the level currently cleared by the control. CFL is the level accessed by the F5 key.

In *Professional Radar Simulation* mode, you can add an ETA for a waypoint directly in the waypoint list in the ETA column.

Message Dialog

With EuroScope v3.1, the old Message Dialog has been replaced by a message tab in the chat area. This tab shows you whenever an error occurs on loading some necessary files or data, and other system information. It will automatically appear when loading a file fails.

In this example the VATSIM data feed that provides the data for simulated traffic has been loaded successfully.

With v3.1 a new message confirmation system is introduced. The messages are moved two chars to the right and there are three different chars at the first column to indicate the message status:

- *SPACE* – this message does not need to be confirmed (mostly the outgoing messages).
- *O* – this message is not yet confirmed
- * - this message is already confirmed

To confirm a single message, click on the O. To confirm all messages of the tab, click on the handler with right button.

Some Common Error Messages

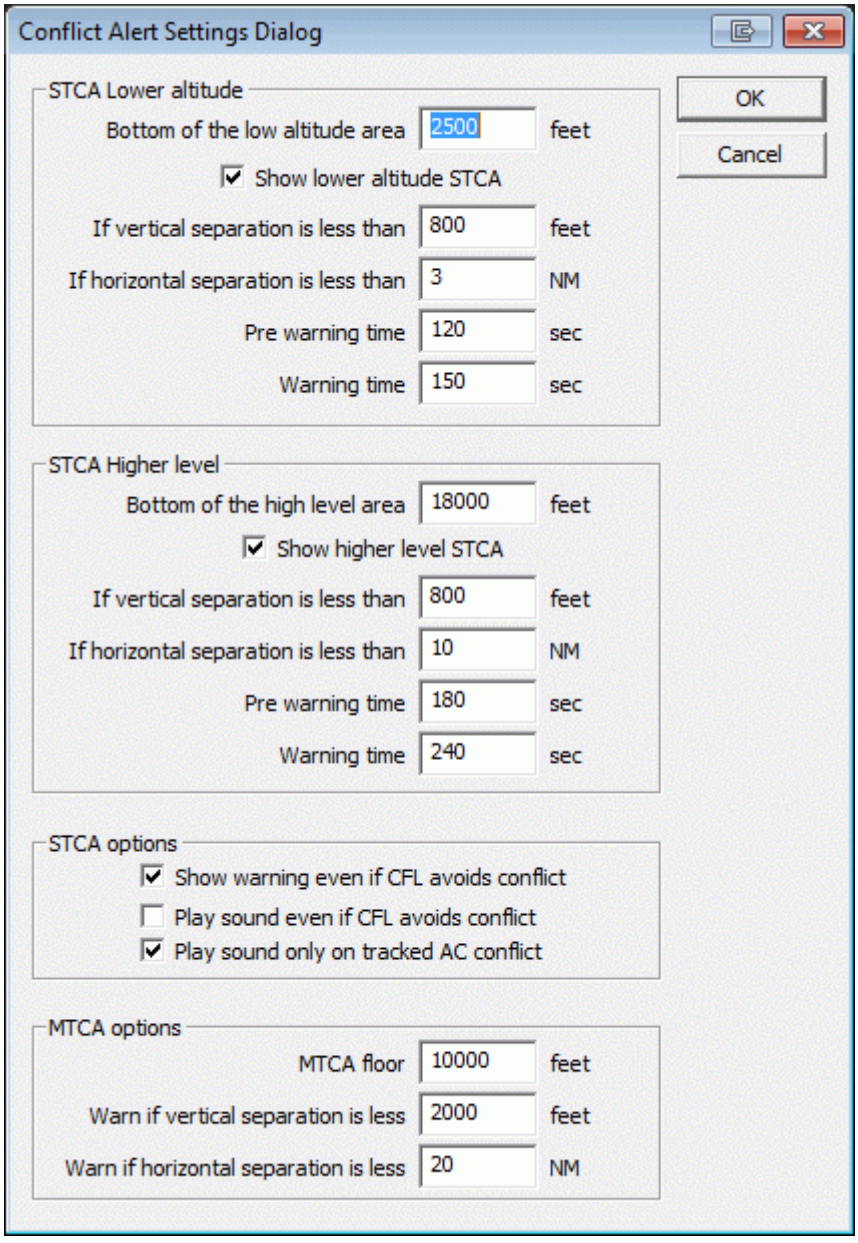
- *Sector definition DAOO_TWR_SECTOR is missing in line xxxx* - This message appears when you make a reference to a sector in a DISPLAY_SECTORLINE instruction and you have forgotten to define the corresponding sector.
- *Sectorline name not found in line xxxx* - This message appears if you make a reference to a sector line, and that you omit to define the corresponding sector line.
- *Invalid line name in sector BORDER : DAOO_TWR_SECTOR / DAOO_TWR_SCL in line xxxx* This message appears if you make a reference to a sector line in the BORDER line of a sector definition, and that you omit to define the corresponding sector line.
- *Invalid COORD in line xxxx* - This error message is generally due to a syntax error (comma instead of colon). May occur when you paste directly the coordinates copied after a '".distance"' command and if you forget to replace the comma by a colon. To avoid it, it's better to use the '".sline"' command.
- *Invalid keyword in line xxxx* - This error message occurs if you type a keyword that EuroScope does not recognize. It happens also if you have an empty line with a space character.
- *Failed to load xxxxx.7z* - This error message occurs if you download a sector file archive and EuroScope cannot find the associated resource on the network.

- *Failed to extract sector files from the xxxxx.7z archive* - This error message occurs if you downloaded a sector file archive and EuroScope cannot extract the sector files from the associated archive. This can be due to an incorrect archive file or a missing sct file in the archive (EuroScope always verifies that a sct file is included in the archive, this is mandatory).

TIP - For finding quickly the error line, one good idea is to load the ese file in Excel or in any other editor that displays the line numbers, and it's easy to jump directly to it.

The Conflict Alert Settings Dialog

In this dialog you can define the settings for the conflict alert systems, the STCA (Short Term Conflict Alert) and the MTCA (Medium Term Conflict Alert). As their names suggest, the STCA system warns about conflicts in the short term (a couple of minutes) whereas the MTCA looks further ahead.



The Short-Term Conflict Alert detector divides the world into three sectors vertically:

- The first sector is from the ground to the bottom of the lower altitude area. In this area there is no conflict alert detection at all.
- Between the bottom of the lower altitude area and the bottom of the higher-level area. Conflicts in this area are detected using the values from the *STCA Lower altitude* box.

- From the bottom of the higher-level area and up. Conflicts in this area are detected using the values from the *STCA Higher level* box.

STCA Lower altitude and STCA Higher level

- *Bottom of the ... area* - The lower level/altitude of the area. The settings are used above this value.
- *Show ... STCA* - Indicates to detect conflicts at all or not. Switching them off, no conflict alerts are ever fired.
- *If vertical separation is less than* - The minimum vertical separation for the alert.
- *If horizontal separation is less than* - The minimum horizontal separation for the alert.
- *Pre warning time* - if two aircraft are predicted to have less than the above specified lateral and vertical separation in less than this time from now, a pre-warning is given. It is a red dot above the callsign.
- *Warning time* - if two aircraft are predicted to have less than the above specified lateral and vertical separation in less than this time from now, a warning is given. It is a red box drawn around the tag as well as the predicted minimum distance as a red number above the callsign.

STCA options

- *Show warning even if CFL avoids conflict* - This setting controls whether the cleared flight levels should be considered in the predictions. When checked, the cleared flight levels of the aircraft are not considered. When unchecked, the aircraft are expected to level off at their CFL when climbing/descending, and if that avoids a conflict, a warning is not issued.
- *Play sound even if CFL avoids conflict* - This setting allows to silence the warning sound for those conflicts where the cleared flight levels are such that if the aircraft follow them, there will not be a conflict. When the option is checked, the CFL's are not considered.
- *Play sound only on tracked AC conflict* - This setting allows you to silence the warning sound for those conflicts where none of the involved aircraft are tracked by you. When checked, the sound will only be played for conflicts where at least one aircraft is tracked by you.

To see how the warnings are displayed in the TAG check the *Collision alert indicator* TAG item in *TAG Editor* page.

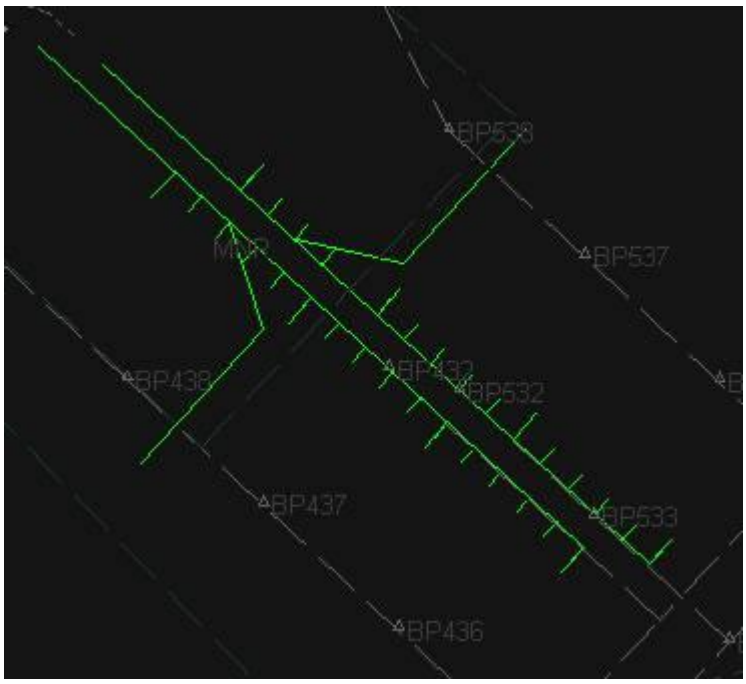
MTCA options

- *MTCA floor* - The lower level/altitude of the area. The settings are used above this value.
- *Warn if vertical separation is less* - The minimum vertical separation for the alert.
- *Warn if horizontal separation is less* - The minimum horizontal separation for the alert.

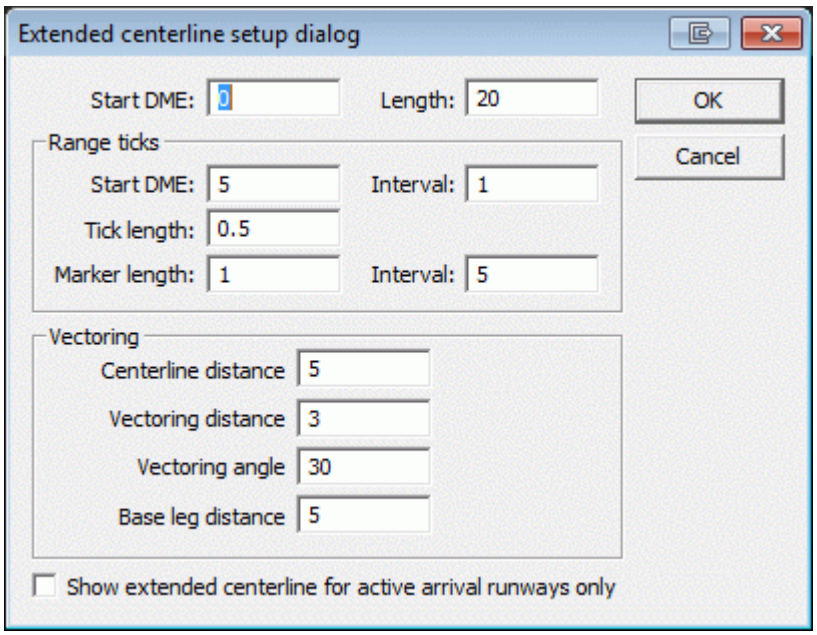
Extended Centerline Setup

The Result

Let us start with a picture with the result before going into details how you can configure the display:



The Setup Dialog



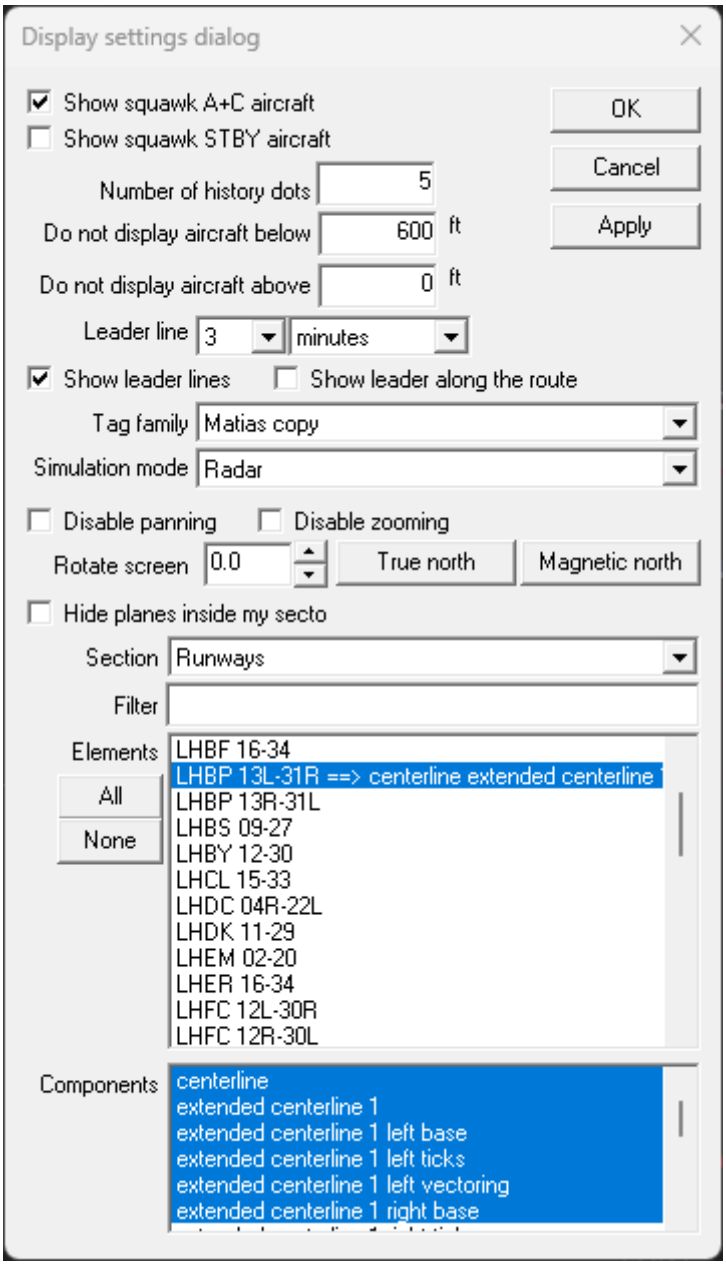
- Main centerline
    - *Start DME* - The offset in NM the main line of the centerline will be started.

  - *Length* - The length of the main line of the centerline. Note that the endpoint will be *Start DME* + *Length* distance from the runway threshold.

- Range ticks
  - *Start DME* - The first tick mark to be displayed distance in NM from the threshold. The tick marks will be displayed from here until the end of the main line.
  - *Interval* (after Start DME) - How often (in NM) a tick mark should be displayed.
  - *Tick length* - The length of the tick marks (orthogonally to the main line).
  - *Marker length* - The length of the marker tick marks (orthogonally to the main line).
  - *Interval* (after Marker length) - How often in (NM) a marker tick mark should be displayed.
- Vectoring lines
  - *Centerline distance* - The distance from the threshold of the end of the vectoring line in the main line (where vectoring line touches the main line).
  - *Vectoring distance* - The length of the vectoring line.
  - *Vectoring angle* - The angle between the main line and the vectoring line.
  - *Base leg distance* - The length of the base leg line (it always starts at the other end of the vectoring line).
  - *Show extended centerline for active arrival runways only* - shows the centerlines of your active arrival runways and hides all other centerlines.

How To Display Them

In this dialog you only can setup how the extended centerline pieces are built up. To display them you should go to the *Display Settings* dialog. There you can switch on and off individual runway centerline pieces:



The *centerline* and the *name* are the main components to be displayed. They are not related to the extended setup anyhow.

In the sectorfile there is only one definition of a runway, even it can be used from both directions and therefore has two names. In this picture you can see LHBP second runway 13L-13R. To distinguish between the directions all extended centerline items are duplicated and named as *extended centerline 1 …* or *extended centerline 2 …* where 1 refers to the first end (here 13L) and 2 refers to the other end (31R) of the runway. As the picture on top of this page shows a 31 configuration only the 31R end of the runway extended lines are displayed.

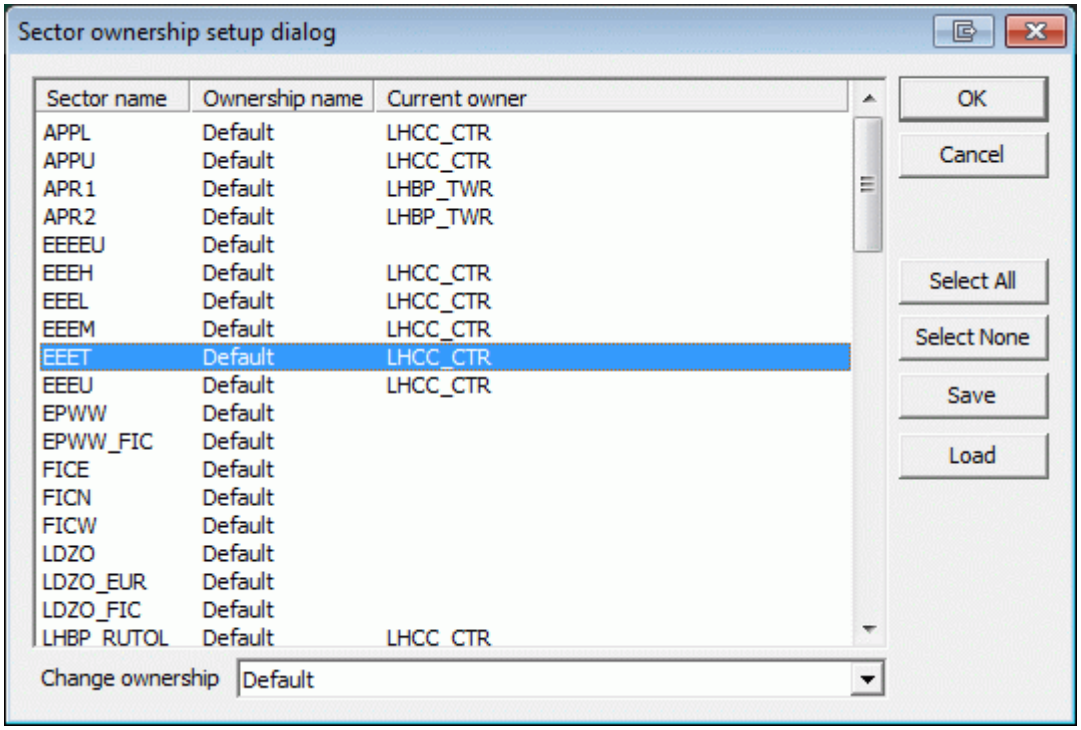
It is also not necessary to display the ticks, vectoring lines and base lines on both sides of the extended centerline. That is quite useful when you display them in a parallel runway airport. In the pictures you

can see that in this case only the right-side items are switched on for runway 31R while only the left side items for 31L.

If You are using the *how extended centerline for active arrival runways only* option, it is important to keep in mind, that You need to setup all extended lines in the *Display Settings* regardless of which will be used in the specific situation. When EuroScope automatically activates the centerlines for the arrival runways, it uses the display settings. On the other hand, with this option activated, ES will not show an extended centerline for an inactive runway, even though it is setup here.

Sector Ownership Setup

Sector Ownership Setup Dialog



Using this dialog one can change how the sector allocation works. In the main list there are the sectors defined in the ESE file. The first column is the sector name, the second is the ownership rule name while the last is the callsign of the actual owner (this is the situation of the dialog open moment and is not updated while the dialog is opened).

The most important idea one can change here is the ownership rule. That drives EuroScope to allocate the sectors to the controllers. Each sector can have one of the following three roles for allocation:

- *Default* - The default role. In this case the **OWNER** line of the sector definition defines the hierarchy of the controllers. The first controller in the list will own the sector.
- *An alternate ownership name* - If there are alternate ownership rules in the ESE file then it can be defined for every sector. It works the very same way as *Default* except that it uses an alternate ownership hierarchy. If the selected alternate name is not defined for a sector, then the *Default* will be used instead.
- *A position* - It is also possible to assign a sector directly to a controller. In this case if the controller is online he/she will own the sector but if offline there will be no alternative owner.

The controls can be used as follows:

- *Sector list* - It displays the actual assignment. One can select one or more sectors from the list. The combo box below will follow the ownership name of the selected sectors. If different rules are assigned, then there will be no selection there.

- *Change ownership combo* - Using this combo it is possible to change the ownership role. The combo box contains the *Default*, the *Alternate* role names and after them all *Position* definitions from the ESE file. The selected value will be assigned to all sectors.
- *Select all* - To select all sectors from the list.
- *Select none* - To deselect all sectors from the list.
- *Save* - Using this button you can save the ownership setup to a text file. This file can be published (e.g. for a fly in) and reloaded later.
- *Load* - To load a previously saved configuration.

Non-Standard Extensions

Why Non-Standard Extensions?

EuroScope needs to publish more information than possible in the current FSD version. Therefore, some of them are published using standard elements but in a special way. We tried our best to define an extension in a way that the other controller who are not using EuroScope could use this information, but it will work the best only if both parties are using EuroScope.

Scratch Pad Strings

One of the most significantly used elements is the scratch pad message. In ASRC and VRC this area is just a place for some short comments, but nothing more. In EuroScope some special formatted scratch pad strings are used to communicate additional information:

- *VOR, NDB, FIX name* - When a point name like VOR, NDB or FIX is entered to the scratch pad it is compiled as a *direct to* point assignment. The next route of the plane is updated accordingly. If you set a direct point using the popup menu in the COPX tag item, the name of the point is also published via the scratch pad.

- *HXXX* - Scratch pad string formatted as *H** followed by numbers is interpreted as if heading were assigned to the plane. When you assign the heading using the popup menu then the appropriate *HXXX* format scratch pad message is published. If you need a heading assignment that is not available via the popup menu, you can enter it manually to the scratch pad (e.g. H022). To avoid the real scratch pad data to be deleted, the original content is sent just after the heading data.

- *RXXXX* - An *R* followed by numbers are interpreted as assigned climb/descend rating.

- *SXXX* - An *S* followed by numbers are interpreted as assigned speed in knots.

- *MXXX* - An *M* followed by numbers are interpreted as assigned speed in Mach number. Actually, the value is used as Mach number multiplied by 100. M75 is used for Mach .75.

- *CLEA* - Special scratch pad content to indicate clearance received flag.

- *NOTC* - Special scratch pad content to indicate clearance not received flag.

- *STUP* - Special scratch pad content to indicate startup approved ground status.

- *NSTS* - Special scratch pad content to indicate not started up.

- *PUSH* - Special scratch pad content to indicate push back approved ground status.

- *TAXI* - Special scratch pad content to indicate taxiing ground status.

- *DEPA* - Special scratch pad content to indicate departure (take off) clearance.

- *ARR* - Special scratch pad content to indicate arrival traffic.

- *TXIN* - Special scratch pad content to indicate taxiing in.

- *PARK* - Special scratch pad content to indicate parked at gate.

Temporary Altitude

Special values in the temporary altitude assignment:

- *1* - If the temporary altitude is set to *1*, EuroScope indicates that the plane is cleared for an ILS approach.
- *2* - If the temporary altitude is set to *2*, EuroScope indicates that the plane is cleared for a visual approach.

Flight Plan Route Section

The flight plan route section is free text area. It is not easy to interpret the content in all cases but allows additional information to be stored. The so-called "standard" route elements like point names, airway names, EuroScope interprets the following items:

- *SID/STAR name* - The name of the SID or STAR (with or without '+' sign) is interpreted as SID or STAR and if found in the sectorfile extension then the points are added to the route.
- *SID/<RWY name>* or *STAR/<RWY name>* - If the SID or the STAR is followed by a slash then a RWY designator then it is interpreted as the plane will depart/land on the specified runway and will follow the specified SID/STAR. This format is important when the same SID/STAR name is used for different runways. This selects the right SID/STAR from the extension file. When you assign a SID/STAR using a popup menu from the new aircraft lists EuroScope will amend the flight plan adding this format to the beginning or to the end of the route section. Assigned SID/STAR and RWY data can be shown in the aircraft lists or even in the TAG.
    - BADOV3D/31R - It indicates a 'BADOV3D' departure from RWY 31R
    - VEBOS3R/31L - It indicates a 'VEBOS3R' transition to RWY 31L
- *AIRPORT/<RWY name>* - If the route section starts with the departure airport name followed by a slash, then a RWY designator then it is interpreted as departure RWY is assigned. Same if the destination airport is at the end followed by the slash and the RWY. It is interpreted as RWY assigned for arrival. If an aircraft has an assigned RWY only the SIDs/STARs of this RWY will be used in the popup menu and in the route extraction.
- *POINT/M085F320* (and *M085F320/POINT*) is accepted. The F320 is compiled as the requested level from the next point. This value is used for profile calculation and used as the RFL (if no controller overrides it).

Flight plan remarks section

- *EOBT=HHMM* - If the remarks section contains the following format string, then HHMM will be compiled as Expected Off Block Time for ground operations.
- *START=HHMM* - Similarly to the above it sets HHMM as the expected engine startup time.

Editing And Function Keys

Function Keys and Other Key Shortcuts

This paragraph describes the meaning of several keyboard elements which behave differently than a simple text editor. Many things come from ASRC, so if you have ever used ASRC, you will find them familiar. However, in some cases we changed the meaning of the key completely or made it work slightly differently.

- *F1 key* - As in EuroScope the TAG up and TAG down is available with a double click on the TAG this key has been freed up. Its role is to accelerate issuing commands that are important, yet not so often used. When you first press the F1 key, then *F1* will appear in the command line. Then there are some shortcuts:
    - *F1+1* to *F1+9* - ASR fast load keys as defined in *General Settings*
    - *F1+0* - closes the current ASR file
    - *F1+a* - changes to **`.am`**
    - *F1+c* - changes to **`.chat`**
    - *F1+d* - changes to **`.distance`**
    - *F1+f* - changes to **`.find`**
    - *F1+i* - changes to **`.inf`**
    - *F1+k* - changes to **`.kill`**
    - *F1+s* - changes to **`.sep`**
    - *F1+u* - changes to **`.SS`**
    - *F1+w* - changes to **`.wait`**
- *F2 key* - It places the **`.QD`** command to the command line to display METAR information on selected stations.
- *F3 key* - It places the **`.QT`** command to the command line to start tracking an aircraft or to accept handoff. Like **`.contactme`** it also works on the aircraft that is under the cursor making it very simple to accept handoffs.
- *F4 key* - It places the **`.QX`** command to the command line to drop an aircraft or initiate handoff. Like **`.contactme`** it also works on the aircraft that is under the cursor. **Important**: **`.QX`** without parameter initiates a handoff to the next controller (if available) instead of dropping target.
- *Shift+F4 key* - It places the **`.QY`** command to the command line to drop an aircraft. Like **`.contactme`** it also works on the aircraft that is under the cursor.
- *F5 key* - places the **`.QZ`** command to the command line to change the final altitude.

- *F6 key* - It displays the flight strip of the selected aircraft in the place of the standard CHAT window.
- *Shift+F6 key* - It places the `.QU` command to the command line to draw the route of an aircraft. It is very rarely used as this function works far better than the TAG.
- *F7 key* - If you are using more than one radar layout at a time press this key to switch between them.
- *F8 key* - It places the `.QQ` command to the command line to set or clear temporary altitude.
- *F9 key* - It places the `.QB` command to the command line to set squawk code or communication type (/t, /v, /r). For aircraft that is under the mouse it assigns the next available squawk automatically.
- *F11 key* - This key zooms in the radar screen. This is a replacement for the mouse wheel zoom.
- *F12 key* - This key zooms out the radar screen. This is a replacement for the mouse wheel zoom.
- *Ctrl+HOME* - combination sets the original zoom and screen center position for the current ASR file.
- *FREQ key* (as default the numeric STAR keyboard) - First it opens your primary frequency chat window. If the command line is not empty (e.g.: a message to a pilot is written in there) then it sends the command line content to the primary frequency, addressing the message to the selected aircraft.
- *ASEL key* (as default the numeric PLUS keyboard) - This is the aircraft selector key. To use there should be some letters typed from the callsign. Pressing this button the first callsign that matches the letters typed before will be selected. You can press the *ASEL* key again to select the next match. You can do it in a loop to see all matching callsigns. From version 3.2 the selection of the planes is ordered by their state. The function will search for the planes in the following order:
    - Assumed
    - Transfer to me initiated
    - Transfer from me initiated
    - Redundant first 30 seconds
    - Redundant
    - Coordinated
    - Notified
    - Non concerned
- *HOME* - If the command line is not empty then it is the good old *HOME* key that moves the cursor to the beginning of the line. But if the command line is empty then it places the

`.contactme` command to the editor. Important, if there is an aircraft whose TAG is in detailed mode (the mouse is over it) then the command is executed immediately.

- *INS* - The insert button places the `.QS` command to the command line to set or clear the scratch pad of an aircraft. Like the *HOME* key it is executed immediately on the aircraft which has the mouse over its detailed TAG. In this way you can clear the scratch pad fast.

- *Left Click* + *Right Click* - Using this combination on a TAG will stick it on the screen in its present position and will not move with the aircraft's target. Moving the TAG will cancel the ticking function.

Editing In the Command Line

Some buttons do not have a real function connected to but simple change the content of the command line in some way.

- *TAB* - The TAB key has two different meanings depending on the content of the command line:
    - If the line is empty, then it selects the next displayed chat window.
    - If the line is not empty, then it extracts the function names from the command line and selects next parameter. See it later in the *Aliases* section.

- *ESC* - The escape button has three different meanings:
    - If the command line is not empty, then it simply clears it.
    - If it is empty but has an aircraft selected, then it deselects all aircraft. This way you can send messages on your primary frequency to anyone, even if you are unable to select him/her.
    - If it is empty and no aircraft is selected, then it closes the chat window. You can open it again by a double-click on any chat name or initiating a new chat (see *Command Line Reference*).

- *Ctrl+Up arrow* - The Up key with Ctrl pressed gets the previous line from the CHAT window and puts it into the command line. There you can edit, copy part of it to the clipboard, etc.

- *Ctrl+Down arrow* - Like the previous but it goes to the next line.

- *Shift+Up arrow* - The Up key with Shift pressed gets the previously entered command to the command line.

- *Shift+Down arrow* - The Sown key with Shift pressed gets the next entered command to the command line.

- *Up arrow* - It scrolls the chat content one line down to see one more line on top.

- *Down arrow* - It scrolls the chat content one line up to see one more line on bottom.

- *Page Up* - It scrolls the chat content three lines down to see more lines on top.

- *Page Down* - It scrolls the chat content three lines up to see more lines on bottom.

Note: The primary and the secondary PTT buttons are disabled in the chat window. If you select a key as PTT you will not be able to use it in the command line.

Aliases

Alias files are the same that you used for ASRC. You can load them as they are and if the functions are implemented in EuroScope as well then you can use them. The general format of one alias line is:

```
.<alias name> <alias value>
```

Where alias name is the short name, you would like to type, and the value is what should be inserted into the command line as replacement. The alias value string can contain several function calls (see later), parameters $1, $2, ... $9 and of course free text. An alias value should not contain another alias name. Well, it can, but it will not be extended.

The way you can use the aliases is completely different from ASRC. It replaces the alias name to value as you type not only when you send it too somewhere. Just type your message as you like. Whenever a SPACE is pressed EuroScope tests the last word typed and if it starts with a DOT and matches any alias name it will replace the word immediately. It is not necessary to start the alias at the beginning of the line; it is not necessary to be at the end of the line. Only to press a SPACE. This idea makes it possible to see the extracted message before sending it.

As the alias name is replaced immediately the parameter definition should work also differently. As the name replaced EuroScope searches for the parameters. When it finds the first one it becomes selected in the command line. In this way you just simply type the parameter and the selected portion of the text will be replaced as it works in a normal edit box. When you finish with the parameter just press the TAB key to search for the next parameter to be selected. When the TAB is pressed EuroScope first test if the same parameter is used in the alias again or not. If used, then it will replace that occurrence with the newly typed value too. After that it tries to evaluate all the functions in the line once again. In this way an alias parameter can be parameter of a function too. See the next example:

The original alias is:

```
.cont Contact $radioname($1) on frequency $freq($1)
```

After typing **`.cont`** and a space the command line will be extended to:

```
Contact $radioname($1) on frequency $freq($1)
```

and the first **`$1`** will be selected. As you overwrite it with e.g. AP and press *TAB* key the line will be changed to:

```
Contact Budapest Approach on frequency 129.700
```

Using this method, you should not memorize what parameters come after as you see the context before specifying the value. One backward of the method is that it could not recognize if the same parameter is in the line more than once. So, in that case one should specify the same value several times.

Autotext messages

All *autotext* messages use built-in aliases now. If you want to change any of these, just put the respective entries in your alias file. EuroScope will then use this entry instead of the built-in text.

The default aliases are as follows:

- .autoproceed Proceed direct to $1
- .autoclearedils Cleared ILS approach RWY $1
- .autoclearedvisual Cleared visual approach RWY $1
- .autoclimblevel Climb to FL $1
- .autoclimbaltitude Climb to altitude $1 ft by QNH $altim($dep)
- .autodescendlevel Descend to FL $1
- .autodescendaltitude Descend to altitude $1 ft by QNH $altim($arr)
- .autospeed Speed $1 KT indicated
- .automach Mach number $1
- .autonospeed Resume normal speed
- .autoturnleft Turn left heading $1
- .autoturnright Turn right heading $1
- .autocontact Contact $1 on frequency $2. Have a good flight and landing. Bye.
- .autosquawk Set squawk $1

Command Line Functions

In alphabetical order.

- *.am* - This command opens the flight plan amendment dialog of an aircraft.

```
.am <click on a TAG or AC in the list>
.am <ASEL to use selected aircraft>
.am <aircraft callsign>
```

- *.antennaoff* - This command disables one RADAR station.

```
.antennaoff <the name of the RADAR station>
```

- *.antennaon* - This command enables one RADAR station.

```
.antennaon <the name of the RADAR station>
```

- *.arrival* – It opens a new ARRIVAL screen for the specified airport.

```
.arrival <AIRPORT code>
```

- *.atis* - This function asks for the ATIS information of a specified controller. The answer will come as private chat message. If no controller is specified, then it will send the query to the controller whose chat window is active.

```
.atis [<controller callsign>]
```

- *.break* - Request for relief. It changes the status of the controller to
- *.busy* - Signal that you are too busy for private chats. In EuroScope there is only one level simple busy status. When set the following are changed:
    - No sounds for ATC messages,
    - No sounds for Broadcast messages,
    - An automatic *Sorry but I am busy, I may not read your message* answer for all incoming private messages. And no sounds for them.
- *.callsign* - This function allows you to change the ICAO_Airlines.txt file from EuroScope. Enter the name of the airliner then click on the TAG. EuroScope will replace the original entry in the file. **Note**: when you download a newer version of the ICAO_Airlines.txt your changes will be lost.

```
.callsign <airline name> <click on a TAG or AC in the list>
.callsign <airline name> <ASEL to use selected aircraft>
```

- *.center* - It moves the center of the view to the selected location. Location can be any object: VOR, NDB, fix, airport, controller callsign (in that case the center of the visibility area is used) or an aircraft callsign. Sending the command without parameter will go back to the original center position (the one before the previous **.center** command).

```
.center <any object name>
.center
```

- *.chat* - It opens a chat window to a specified controller or pilot.

```
.chat <controller or pilot callsign> [<callsign2>] [<callsign3>] ...
.chat <click on a TAG or AC in the list>
.chat <ASEL to use selected aircraft>
```

- *.connectdialog* – It opens the connect dialog box

- *.contactme* (available via the HOME button if command line is empty) - This command sends the *Please contact me on XXX.XXX* private message to the selected aircraft.

```
.contactme <click on a TAG or AC in the list>
.contactme <ASEL to use selected aircraft>
```

This command can be executed by pressing the HOME key when the command line is empty and the mouse is over an opened TAG and therefore the detailed TAG is visible. In this case it is executed immediately no ENTER or click on TAG is required.

- *.correlate* - The command correlates a radar target with a flight plan.

```
.correlate <radar target ID> <FP callsign>
.correlate <FP callsign> <radar target ID>
.correlate <radar target ID> <click on FP track>
.correlate <FP callsign> <click on radar target>
```

- *.dcenter* - Use this command to override the default latitude/longitude aspect ratio center. As default EuroScope calculates the length of one degree at the position defined in the sectorfile then uses it everywhere. That could be quite incorrect if you are too far from the equator. By defining another point, you can change the center point of the display.

```
.dcenter <object>
```

Where object can be anything: vor, ndb, fix or coordinate. The coordinate can be defined by clicking in an empty place by mouse.

- *.distance* (available as toolbar icon) - The distance command shows distance between two objects or points on the radar screen. When this command is active then pressing the mouse button on a TAG or on an AC in the list its callsign goes to the command line as parameter. If you click to a position where nothing can be found, then the coordinates are copied to the command line. If the first parameter is specified, then moving the mouse displays the distance data from the selected point to the cursor. If the first selected object is an aircraft and the second is not, then the distance and the time needed for the distance will be displayed. Otherwise only the distance.

```
.distance <object1> <object2>
.distance <object1> <angle>/<distance>
```

Where object can be anything: aircraft, VOR, NDB, fix or coordinate. In the second place not only an object but an angle/distance pair also can be entered. In this case it will be calculated as relative to the first.

- *.distance2* - The same as before but displays the heading data too.
- *.est* - Estimate a position for a flight plan track.

```
.est <point name> <time (4 chars in ZULU)> <click on FP>
```

- *.find* - Using this command you can find an aircraft on the radar screen. It draws a wide white line from the center of the radar screen to the aircraft specified as parameter. The line remains on the screen for 5 seconds.

```
.find <aircraft callsign>
.find <click on a TAG or AC in the list>
.find <ASEL to use selected aircraft>
```

- *.findac* - A supervisory only command. It collects valuable information about the client.

```
.findac <aircraft callsign>
```

- *.ff, .fn, .fv, .fa, .fc, .fw* - These commands are changing the display settings from the command line. The commands change the display of the following element types (in the same order): FIX, NDB, VOR, Airport, Low airways, High airways.
  All works in a way that looks for all the parameter names, tests if any of the components are displayed or not. If any is displayed then the command hides them, otherwise it displays some of them. The following components are tested and displayed using this command:
  - FIX symbol and name,
  - NDB symbol, name and frequency,
  - VOR symbol, name and frequency,
  - Airport symbol and name,
  - Airways name and line.
- *.fpquery* - A supervisor only command. It sends an information request to the servers to query the controller who modified the flight plan of the selected aircraft. The answer will come back as message to the "server" chat window. The command needs selected aircraft.

```
.fpquery <aircraft callsign>
.fpquery <click on a TAG or AC in the list>
.fpquery <ASEL to use selected aircraft>
```

- *.fpsep* (available as toolbar icon) - Same as .sep, but it displays the flight plan separation tool. In v3.2 this tool can show the distance and time to the first common points. Then shows the closest points too.

```
.sep <aircraft1> <aircraft2>
```

- *.getfp* - It sends a request to the server to retrieve the flight plan of the selected aircraft. Use it if somehow you feel that the FP is not updated correctly.

```
.getfp <aircraft callsign>
.getfp <click on a TAG or AC in the list>
.getfp <ASEL to use selected aircraft>
```

- *.inf* - It sends an information request to the selected controller or aircraft. The answer will come back as private message.

```
.inf <controller or aircraft callsign>
.inf <click on a TAG or AC in the list>
.inf <ASEL to use selected aircraft>
```

- *.kill* - A supervisor only command. It sends a disconnect message to the selected controller or aircraft and disconnects him/her from the network immediately.

```
.kill <controller or aircraft callsign> [<a free text reason message>]
```

If the .kill message is active, then clicking on a TAG will copy the callsign to the command line but never executes the command automatically. Only an explicit ENTER will do that.

- *.metar* - It opens the METAR selection dialog in the simulation session.
- *.msg* - It sends a private message to the selected pilot or controller.

```
.msg <controller or aircraft callsign> <free text>
```

- *.nobreak* - Request for relief is withdrawn. It changes the status of the controller back to normal.
- *.nobusy* - It clears the busy status.
- *.novis* - It clears the visibility centers and sets only the default one. **Note**: It is not an immediate function as there is no way to call back your visibility centers from the server. It must be timed out. In that way it takes about 1-2 minutes to stop receiving position updates from the cleared area.
- *.point* - To point out an aircraft to a controller. When an aircraft is pointed to you it is displayed in the AC list with an arrow then the name of the controller who pointed out the aircraft.

```
.point <controller ID> <click on a TAG or AC in the list>
.point <controller ID> <ASEL to use selected aircraft>
```

- *.qb* (available by pressing F9) - It sets the squawk code (manually or automatically) or the communication type of an aircraft. If there is no additional parameter, then an automatic squawk value is assigned. The available squawk range comes from the POSITION definition part of the ESE file (see *ESE Files Description*). If a 4-letter valid squawk is specified, then that value will be assigned. If V, R or T letter is defined that it sets the communication type to *voice*, *receive only* or *text* respectively.

```
.qb <V or R or T> <click on a TAG or AC in the list>
.qb <V or R or T> <ASEL to use selected aircraft>
.qb [<valid squawk>] <click on a TAG or AC in the list>
.qb [<valid squawk>] <ASEL to use selected aircraft>
```

- *.qd* (available by pressing F2) - It toggles the display of the metar of the specified stations.

```
.qd <station1> [<station2>] [<station3>] ...
```

- *.qq v/i/1/2* - It allows you to set the approach flag by text.
    - v or 2 for visual approach
    - i or 1 for instrument approach

```
.qq <v or i or 1 or 2> <click on a TAG or AC in the list>
.qq <v or i or 1 or 2> <ASEL to use selected aircraft>
```

- *.qs* (available by pressing the INS key) - It sets or clears the scratch pad text of an aircraft. If no text is specified, then it clears the previously set value. In EuroScope there is no limit for the length of the scratch pad message (but your TAG will look awful). But only the first 5 characters of the text will be published to the servers and to the neighbor controllers. There is also a trick in EuroScope that if the scratch pad text is a waypoint name along the route (from 2.8h any named point not only from route) then it will change the calculated track of the aircraft as the next point is the specified. The display of such scratch pad message is in the heading (AHDG) indicator in the TAG.

```
.qs [<free text or waypoint name>] <click on a TAG or AC in the list>
.qs [<free text or waypoint name>] <ASEL to use selected aircraft>
```

- *.qt* (available by pressing F3) - It accepts handoff initiated to me or starts tracking an untracked aircraft.

```
.qt <click on a TAG or AC in the list>
.qt <ASEL to use selected aircraft>
```

This command can be executed by pressing the F3 key when the mouse is over an opened TAG and therefore the detailed TAG is visible. In this case it is executed immediately no ENTER or click on TAG is required.

- *.qu* (available by pressing Shift+F6) - It simply deletes all displayed route lines. It is an easy way to switch off all airplane route display if you have shown too many.

- *.qq* (available by pressing F8) - This function changes the temporary altitude of an aircraft. If no altitude data is specified, then it clears the previously set temporary altitude.

```
.qq [<altitude in 100 feet>] <click on a TAG or AC in the list>
.qq [<altitude in 100 feet>] <ASEL to use selected aircraft>
```

- *.quit* - This function leaves the system.

- *.qx* (available by pressing F4) - It is used to drop track or initiate handoff to the next controller. **It is important** that a simple .qx without any additional parameter will drop the target as in ASRC but initiates a handoff to the next controller defined by the sectors and the logged in controllers. If you would like to hand off the aircraft to a specific controller then type the short (normally two letter) ID before defining the aircraft. If an aircraft is displayed as tracked by someone but assumed that it is false type a /ok after .qx. In this way EuroScope will clear the owner flag of the aircraft and asks the system if someone is tracking it. If it is so, then it will return to tracked state in a second.

```
.qx [/ok] [<controller id>] <click on a TAG or AC in the list>
.qx [/ok] [<controller id>] <ASEL to use selected aircraft>
```

This command can be executed by pressing the F4 key when the mouse is over an opened TAG and therefore the detailed TAG is visible. In this case it is executed immediately no ENTER or click on TAG is required.

- *.qy* (available by pressing Shift+F4) - It is used to drop track of the aircraft.

```
.qy <click on a TAG or AC in the list>
.qy <ASEL to use selected aircraft>
```

- *.qz* (available by pressing F5) - This function changes the final altitude of an aircraft. **It is important** that it does not change the flight plan, just assigns a final altitude.

```
.qz <altitude in 100 feets> <click on a TAG or AC in the list>
.qz <altitude in 100 feets> <ASEL to use selected aircraft>
```

- *.rcenter* - Use this command to override the default range center position. The range position is calculated in EuroScope as follows: The default value is the one defined in the sectorfile. But if the login name first four letters match any airport name from the sectorfile, then the airport will be the center of the visible range (this way TWR positions with small range values will surely see what they need). By defining another point, you can change the center of your visual range anytime. EuroScope needs some 10-15 seconds to publish the position and to update the visible elements.

```
.rcenter <object>
```

Where object can be anything: VOR, NDB, fix or coordinate. The coordinate can be defined by clicking in an empty place by mouse.

- *.rings* - It draws range rings on the screen

```
.rings <centerpoint> <spacing> [<number>]
.rings
```

Where *centerpoint* is the point on which the rings are centered. It can be a VOR, NDB, fix, airport code, aircraft callsign or coordinate (*latitude*, *longitude*). *Spacing* is the distance between adjacent rings and *number* (optional) is the number of rings. If not specified, 10 rings are drawn. The command .rings without any other parameters removes the range rings from display.

- *.seeall* - A supervisor only command. It opens up all TAGs. Be careful! It just changes the display of the TAGs to be the same as they were up. But it is only a display setting, and the TAGs remain down. You will see that moving the mouse over a TAG like tis will not get the detailed TAG.

- *.selcal* - It sends a SELCAL call for the selected aircraft. You may enter code manually or allow EuroScope to detect it from the flight plan remark section. When manually entered then no - can be entered, just the four letters without separators. When the code is not explicitly specified then the remarks field is scanned for SEL or SELCAL strings and extracts the code from the following letters. If EuroScope fails, then an error message is displayed.

```
.selcal [<CODE>] <click on a TAG or AC in the list>
.selcal [<CODE>] <ASEL to use selected aircraft>
```

- *.sep* (available as toolbar icon) - It displays the separation tool between two aircraft. This function calculates the closest point of two converging aircraft current path. It displays the minimum distance and the time they need to reach that point. If the paths become diverging, then the display shuts down automatically. The separation data is also displayed on top of the screen and can be switched off by a double-click on that line.

```
.sep <aircraft1> <aircraft2>
```

- *.simtime* - Using this command yo may manipulate the simulator time. It can be executed after the session is started. The time is also published to all clients as well as to the P3D connections. The command itself can be used only with local FSD server and disabled on SweatBox. The date and time format is YYYYMMDDHHMI (where HH is 24 hours format).

```
.simtime 202007211955
```

- *.sline* - The most useful command for an ese file developer. It collects successive geographic coordinate points in the clipboard in a ready to be pasted form in an ese file. To use it, type .sline in the command bar and enter. Then *LEFT* click on every point you want to be included in your definition. When you have finished collecting points, just *RIGHT* click to end the command. You can now paste your resulting data everywhere you need to. The data are formatted in a correct manner for direct insertion as COORD points.

- *.sline2* - The same as above, but it saves the points in the format used in the SCT file.

- *.showantenna* - It displays defined RADAR stations and range rings.

- *.showvis* - It displays the current visibility centers and radiuses. Using it you can visualize they are of you range.

- *.ss* (available via right click on the flight strip) - Push flight strip annotation. It sends the flight strip annotation to another controller. When you initiate a handoff, it will be done automatically, you do not need to use this command.

```
.ss <controller ID> <click on a TAG or AC in the list>
.ss <controller ID> <ASEL to use selected aircraft>
```

- *.velo* or *.velocity* – It switches on or off if EuroScope requests velocity packets from servers.

```
.velo on
.velo off
```

- *.vis, .vis1, .vis2, .vis3, .vis4* - These commands set the multiple visibility centers of the current session. The .vis command may have 1-4 parameters to set all visibility centers in one command. The others may have only one.

```
.vis <center definition> [<center definition> [<center definition> [<center definition>]]]
.vis1 <center definition>
.vis2 <center definition>
.vis3 <center definition>
.vis4 <center definition>
```

The *center definition* can be one of the following:

- A comma separated latitude longitude pair.
- An aircraft callsign.
- VOR, NDB, FIX or airport name.
- Click on the position on the screen.
- *.x* - It closes the active chat.
- *.wall* - A supervisor only command. It sends a broadcast message.

```
.wall <a free text message>
```

- *.wallop* - This function sends a message to all supervisors.

```
.wallop <a free text message>
```

Built In Functions

Available Functions

Functions are quite similar to aliases. There are some kind of string patterns that will be replaced by the system. The real difference is that on the one hand their names are fixed coming from the code not from a file, on the other hand the result depends on the current session rather than a fixed value.

A function may stand on its own or may have parameters. Parameters can come from anywhere even it can be a result of another function or can be an alias parameter.

Functions are evaluated in the command line and in the ATIS message lines. And since version 2.8h the letter-by-letter voice ATIS elements also use them. Aliases are not forgotten but as they are extracted by typing in the command line the functions in them will be evaluated there as well.

- **`$aircraft`** - The callsign of the selected aircraft.
- **`$alt`** - The temporary, the sector entry/exit or the final altitude (if none of the preciouses are specified) of the selected aircraft.
- **`$altim(station)`** - The altitude pressure value from the METAR of the station. For availability see **`$metar`**
- **`$arr`** - The destination airport of the selected aircraft.
- **`$arrrwy [(airport ICAO code)]`** - A comma separated list of the runways set as active for arrivals. If no parameter is defined, then the assigned arrival RWY of the ASEL aircraft.
- **`$asquawk`** - The assigned SQUAWK code.
- **`$atccallsign [(handoffid)]`** - The callsign of the specified controller. If empty, then the logged in controller callsign.
- **`$atisairport`** - The ICAO code of the airport selected to be served with voice ATIS in the *Voice ATIS* dialog. For backward compatibility you may still use the **`$atisairportA`**, **`$atisairportB`**, **`$atisairportC`**, **`$atisairportD`** functions for the four ATIS stations.
- **`$atiscode`** - The actual ATIS letter specified in the *Voice ATIS* dialog. For backward compatibility you may still use the **`$atiscodeA`**, **`$atiscodeB`**, **`$atiscodeC`**, **`$atiscodeD`** functions for the four ATIS stations.
- **`$bear(position)`** - It returns the bearing of the selected aircraft to the specified position. Position can be vor, ndb, fix or airport.
- **`$calt`** - The current altitude of the selected aircraft.
- **`$callsign`** - The login callsign of the controller.
- **`$com`**, **`$com1`** - The primary frequency of the controller. It will return 199.998 if no primary frequency is selected.

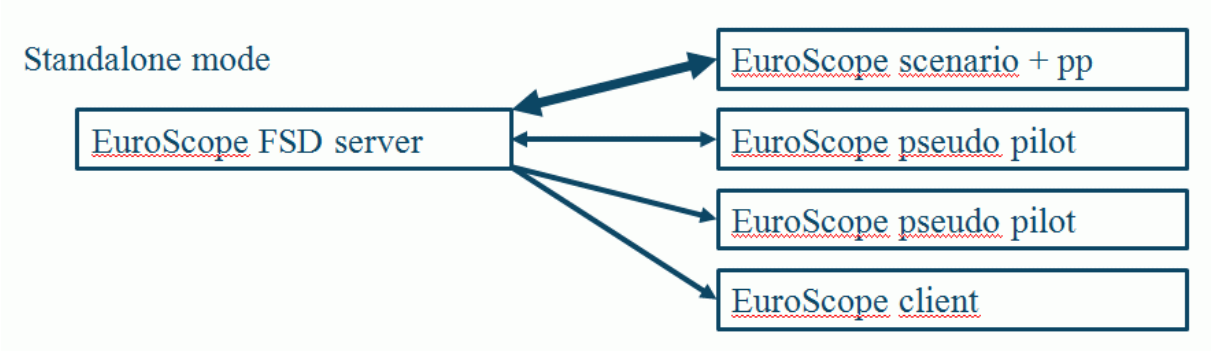
- **$cruise** - The final cruise altitude of the selected aircraft.
- **$dep** - The departure airport of the selected aircraft.
- **$deprwy [(airport ICAO code)]** - A comma separated list of the runways set as active for departures. If no parameter is defined, then the assigned departure RWY of the ASEL aircraft.
- **$dist(position)** - It returns the distance of the selected aircraft to the specified position. Position can be vor, ndb, fix or airport.
- **$freq[(controller id)]** - If no parameter is given then it returns the primary frequency of the logged in controller (the same as $com). If parameter is specified, then it returns the primary frequency of the specified controller.
- **$ftime(minutes)** - The actual GMT time plus the specified minutes. Formatted to seconds.
- **$lc(anything)** - It simply makes the parameter to be lowercase.
- **$metar(station)** - The complete METAR string of the station. When you first call this function, it may return to an empty string. It is because when the METAR is needed EuroScope asks for it from the servers, but the evaluation is not suspended to wait for the result. Therefore, an empty string will come, but next time as the METAR arrives it will be displayed correctly.
- **$myrealname** - The real name of the controller. The name you specified in the login dialog.
- **$oclock(position)** - It returns the relative bearing of the selected aircraft to the specified position based on the current heading of the selected aircraft. Position can be vor, ndb, fix or airport.
- **$radioname[(controller ID)]** - If no parameter is specified then returns the radio name of the active controller. Otherwise, it looks for the controller based on the short ID. The radio names are defined in the POSITIONS section of the ESE file.
- **$route** - The route strings from the flight plan of the selected aircraft.
- **$sid** - The assigned or assumed SID of the selected aircraft.
- **$squawk** - The squawk of the selected aircraft.
- **$star** - The assigned or assumed STAR of the selected aircraft.
- **$temp** - The temporary altitude of the selected aircraft.
- **$time** - The actual GMT time in seconds without the Z sign.
- **$type [(callsign)]** - The type of selected aircraft. If the callsign is empty, then the type of ASEL aircraft.
- **$uc(anything)** - It simply makes the parameter to be uppercase.

- **`$wind [(airport)], $winds [(airport)]`** - The wind component of the METAR of the selected station. For availability see $metar. If no airport is defined, then look for the selected aircraft. On the ground it displays the departure airport metar, otherwise the destination airport.

Built in Simulator

Architecture

The following picture shows the new architecture from 3.2.



The architecture changed in two ways:

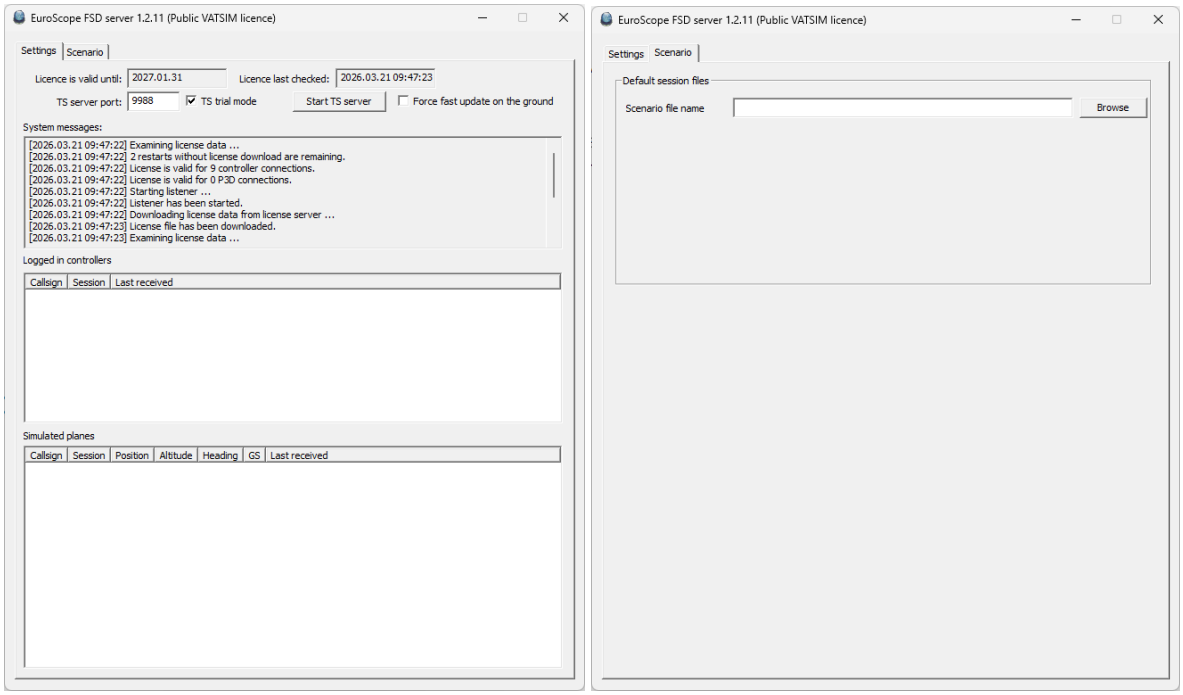
- The built in FSD server is moved out from the code of EuroScope. It is available as a standalone executable.
- We separated the simulator engine, the EuroScope instance that runs the planes, from the pseudo pilots.

The first one is easier. This helps us clean the code by not supporting two different kinds of architecture. The EuroScope FSD server is the same lightweight server that was originally inside EuroScope. No permission checking, nothing special is built inside. Be sure to use it for your own environment, and not too often as public. But this way the structure is completely the same as the SweatBox version. It also made us possible to build the tower simulator - see below.

The second improvement makes it possible to run the scenario itself in a dedicated EuroScope session and meantime connect several other EuroScope as pseudo pilot. The pseudo pilot only connections does not simulate plane movements at all but sends instructions to the scenario runner one. The pseudo pilots can get /driver/ access and transfer of it like tracking the AC in a normal session. It is still possible to connect to the server as normal trainee client.

EuroScope FSD server

The server is installed on your computer along with EuroScope. You can run it from the start menu. It looks like this:



There are not too many things you can do with the simulator itself. Just run and minimize. You may check the messages if something is not straight.

The EuroScope FSD simulator is free to be used by the VATSIM community. But as it is a central item of a commercial product, it has active license checking. The server will connect to EuroScope WEB site and download license information from there. The license is “time” limited (we will update the validity from time to time), and connection number limited. The VATSIM license allows 2 controllers and 2 P3D connections. That is more than you were able to do with the built in FSD server, but still not enough to build a complete 360-degree tower simulator. The server has limited number of restarts without access to EuroScope servers for licensing data. Even though it is not planned, we have all the right to cancel the license upgrade of EuroScope FSD server any time without prior notice.

- *Licence data* - The first line contains the licence validity and the last time download.
- *TS server port* - The FSD server contains a TeamSpeak server for voice communication.
- *Force fast update on the ground* – It forces plane updates from 5 seconds to 1 second when they are on the ground.
- *System messages* - You may see what is happening around the server, who is connected and how.
- *Simulated planes* - A list of the planes currently simulated.

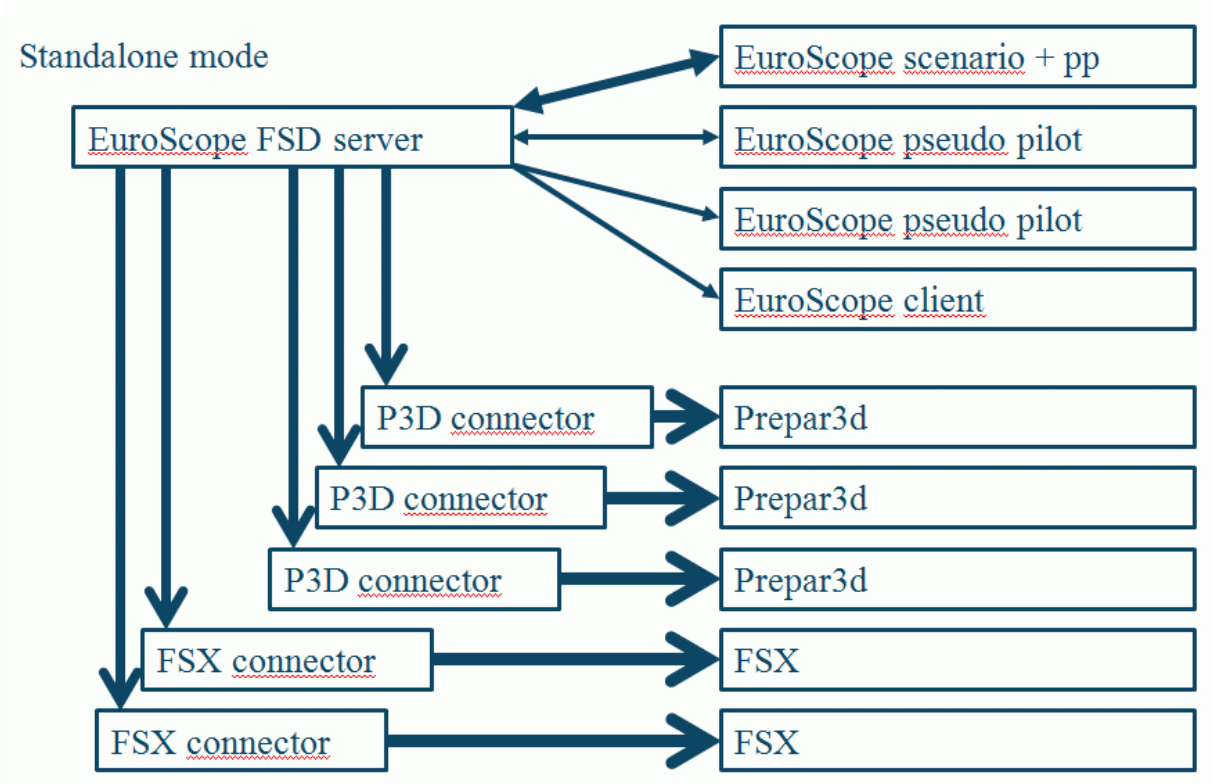
Note: Session value is always 0. The server can run multiple sessions parallel, but it is not utilized from EuroScope.

Note 2: If you would like to give access to your FSD server to external clients you need to open (and/or forward) the following ports:

- *6809* - Standard FSD port for EuroScope client connections. This will be used by simulated planes as well.
- *6811* - This port is used by the P3D connector. The connector itself should run on the same machine as the P3D itself.
- *9988* (or any other specified in the dialog) - For TeamSpeak client connections.

Tower Simulator

Using the EuroScope FSD server it is possible to connect multiple sessions that show the simulated traffic from tower view:



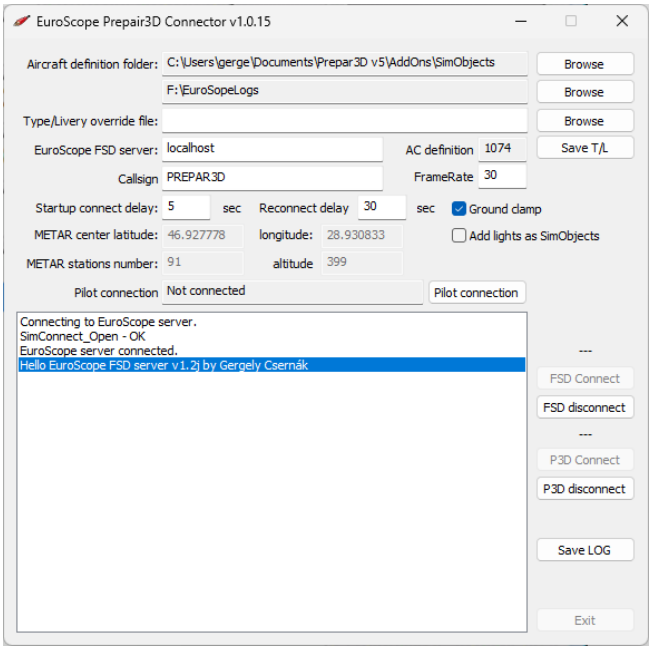
Using the P3D connector program, you can connect to the FSD server and a running P3D session. There may be as many P3D connector uses as needed for the size of the view. Note that it is limited to 2 in VATSIM licence.

To enable the most from the tower view you need an AI plane package like *Ultimate Traffic* (http://ut2.flight1.net/) or *MyTraffic 2013* from Aerosoft (http://www.aerosoft.com/). These packages have several thousands of different aircraft types and liveries.

Once a connector is connected to the FSD server, the scenario runner is informed about it. That increases the position update from 1 update/5-6 seconds to 1 update/1 second. That enables a real smooth movement of the planes in tower view.

P3D Connector

The connector is installed on your computer along with EuroScope. You can run it from the start menu. It looks like this:



- *Aircraft definition folder* - It points to the P3D library that holds the available aircraft paintings. The connector scans all aircraft.cfg files under tis folder. The connector checks the types, the liveries, the engine positions, the lights, etc. When the simulator is looking for a specific type/painting planes from this folder will be created in P3D. You can enter two independent folders.

- *Type/livery override file* - It is just a backdoor. The file is a TAB delimited text file with AC type, livery and FSX model name. If the requested type/livery pair is in the file, then defined model will be created. It is much better to define the exact plane in the SIMDATA. That utilizes the full data of the aircraft.cfg files.

- *EuroScope FSD server* - the computer name or IP address of the FSD server.

- *AC definition* - An information window with the number of different aircraft types scanned.

- *Callsign* - Use this callsign when connecting to the FSD server.

- *FrameRate* - How many times the simulated planes should be updated in a second. Check the best value for your environment.

- *Startup connect delay* - The connector automatically connects to the FSD server as well as to FSX after startup. Define the delay in seconds here.

- *Reconnect delay* - If the connection fails then try connecting again after this number of seconds.
- *Ground clamp - To specify ground clamp flag for objects*.
- *Add lights as SimObjects* – This check box is experimental only.
- *METAR entries* - These are not used now. METAR data is set as global, not by stations.
- *Pilot connection* – It is possible to use the P3D session as active plane in the simulation. To specify that you would like to send plane data back to the server open the *Pilot connection* dialog.

In the lower area you can find a message LOG. You can check here how P3D connector translates events.

In the lower right side, you can see the actual connection states:

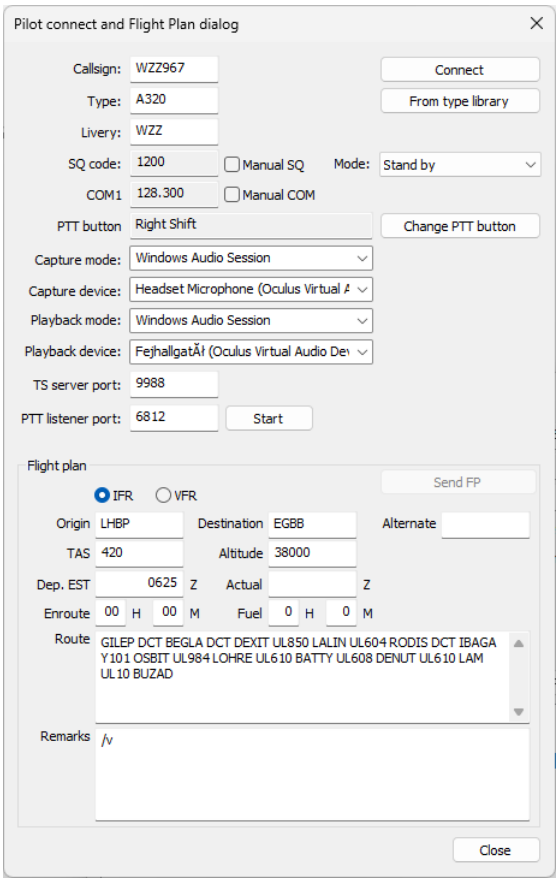
- *Connection to FSD server*
- *Connection to P3D session*

Use the buttons to connect or disconnect from the servers.

Note: The *Save LOG* is experimental only.

Pilot connection

When you press the *Pilot connection* button, you will have the following dialog to set your connection data:



When you enable pilot connection then it will create a separate connection to the FSD server. Therefore, you must define all data for that:

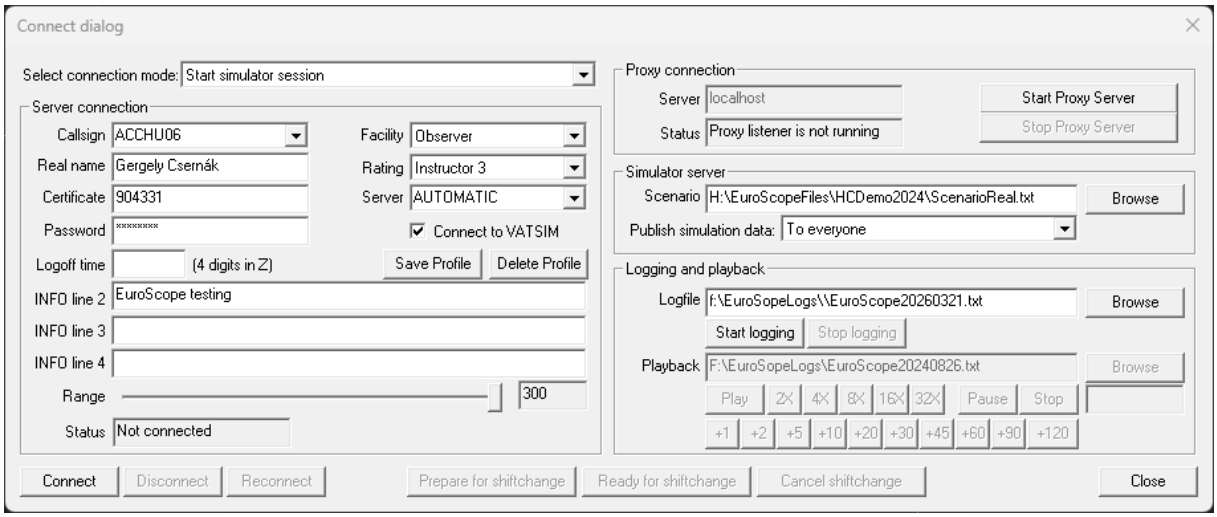
- *Callsign* – the callsign of the pilot connection.
- *Type* – Aircraft type.
- *Livery* – Aircraft livery. You may select type/livery directly from library files.
- *SQ code* – Transponder code. It is normally read only, and the data is extracted from P3D. But you have the chance to override it.
- *COM1* – Radio 1 frequency. It is normally read only, and the data is extracted from P3D. But you have the chance to override it. The value specified here will change the voice room in TeamSpeak when voice is connected.
- *PTT button* – Push to Talk button of the pilot connection.
- *Capture/Playback device/mode* – Set how to use you voice hardware.
- *TS server port* – How to connect to TeamSpeak server.
- *PTT listener port* – It is just experimental. If you need to use external device for PTT in your simulator.
- *Flight plan area* – Fill here all the plight plan data. It will be sent to all clients when pilot is connected.

Starting a simulator session

Start sessions

To participate in a simulation session, you have three options:

- Run the session on your EuroScope.
- Join a running session as pseudo pilot.
- Join a running session as a trainee or any other kind of controller.



To run a session in your EuroScope, select the *Start simulator session* option from the top combo box. Be sure to check the *Connect to VATSIM* checkbox when you are about to be connected to SweatBox. Let it be unchecked if EuroScope FSD server is in use. To start the simulation, select the appropriate scenario file.

There is new option in v3.2. As the simulator and the pseudo pilots are separated a new set of commands and state updates are sent between them. The *Publish simulation data* drives how much data is transferred between them:

- *Never* - Using this option the detailed simulation state of the aircraft is available in the scenario runner EuroScope. This option has less network traffic, but it is usable if there is only one pseudo pilot.
- *To pseudo pilot only* - This option sends detailed state data to the pseudo pilot, but not anywhere else. Using SweatBox with multiple pseudo pilot you should use this option.
- *To everyone* - In this case all pseudo pilots receive all plane data. This requires a lot of network traffic. We tested and it is too much for SweatBox. Use it with EuroScope FSD server only.

Note: If you run a simulation session you are a pseudo pilot too.

When you join a session as pseudo pilot, then log in the same way as above, but let the scenario file empty. That indicates to EuroScope not simulate any plane but allows you to control them.

The last option is easy. Use the *Direct to VATSIM* connection type. Be sure to uncheck the *Connect to VATSIM* when connecting to a EuroScope FSD server.

Running a simulator session

EuroScope simulator

The EuroScope simulator in version 3.2 has been integrated into a new system for controlling traffic. This system is like the one used as a controller in that you control the aircraft mainly from the tag or by selecting it though any of the means available (clicking it on map, the lists or ASEL) and using the new Simulator Control Ribbon to send commands.

Note: You must *Get Simulation* of the sim-plane before you can send commands to it. Use the {} field to *Get Simulation*. See below for more information.

Pseudo pilot tag elements

The main control of the simulator is done from the aircraft tag. The following assumes the default Matias (built in) tag, but you may build your own tag. There are multiple optional simulator control tag items available in the tag editor so see the *TAG Editor* section of the manual for more information.

When using the tag to control the sim-planes you will be using the same assign commands that you use when controlling. However, the function to share the cleared altitudes/speeds/DCT is inhibited in the sim therefore the trainee will not be able to see your orders.

- *{}, {*}, {TMA}* - this field is at the top of the tag, and it is used to take control as a pseudo pilot. You will not be able to move this plane if you do not assign yourself as the plane's pseudo pilot:
    - {*} shows you are the owner,
    - {POS} shows *POS* pseudo pilot is owner
    - {} shows there is no pseudo pilot assigned and you can take control of it. Pressing on it opens the Simulation pop-up. Then you can *Get simulation*.
- *ROT801* - callsign. Clicking on it when you own the sim-plane lets you transfer simulation to another pseudo pilot (if connected).
- *COPX* - can also be used to give rerouting direct order
- *140(120)* - Temp Altitude. When in sim this is expanded to show on the left the altitude set by the controller/trainee and on the right in brackets you can see the assigned altitude in the

simulator. Clicking on it opens the Temp Altitude pop-up which sends climb/descent commands to the simulator.

- *ASP(200-)* - Assigned Speed. This shows on the left the assigned speed set by the controller (if set) and on the right in brackets the speed order for the simulator and the comply instruction.
    - - means less than - the plane will be at the set speed as far as the normal is above that but *may* reduce the speed later.
    - + means more than - the plane will be either at or faster than the set speed as far as the normal is below that but may increase the speed later
    - = means fixed - the plane will be exactly at the assigned speed and will not slow down or speed up
    - The Assign Speed pop-up opens when clicking on it. You can assign a speed or clear a speed instruction by pressing ---
- *ARC* - Assigned Rate of Climb. Opens the assigned rate pop-up where you can give a rate of climb/descent restriction order. This is not displayed anywhere.
- *AHDG(230>)* - Assigned heading. Displays the assigned heading by the controller first then in brackets the simulator assigned heading and the turning direction if the plane is still turning. It has 2 functions:
    - Clicking opens the Heading Assign pop-up where you can assign a heading. It opens centered on the present heading and scrolling up means a right turn while scrolling down means a left turn.
    - Click and drag opens the elastic vector. Just drag off to the direction you want it to fly. The turn radius is also calculated.

The Simulator Control Ribbon

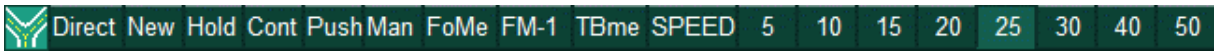
The Simulator Control Ribbon appears below the main menu area at the top when connected with *Start Simulator session*. It is grouped into the following areas:

A fixed information area

Route ribbon

Status ribbon

Approach ribbon



Ground simulator ribbon


Takeoff ribbon

Emergency ribbon

Lights ribbon

System ribbon


Pause/play button

Clicking on any of the ribbon buttons will expand a ribbon with the functions to the right pushing remaining remaining buttons at the right side of the bar. To open another ribbon either collapse this ribbon first by pressing either button of the expanded ribbon (first or last - shown as pressed) or just press another ribbon button. Some remaining buttons may be right of the expanded ribbon.

Information Area

It shows the status of the selected plane.

Present heading, and commanded heading with direction of turn between as < or > symbol when still turning.

Flight level and commanded level.

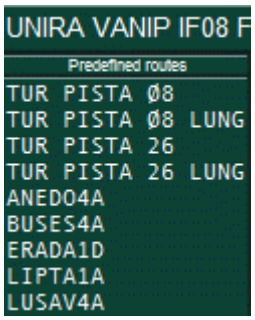
Speed and commanded speed.

Route Ribbon

The next waypoint along the route. You can click here to type a new point as direct.

It sends the plane to a holding pattern over the next waypoint. The holding must be declared in the scenario file.

It is the list of the next waypoints. Click here to edit the route in place. Right click to open the Predefined Route menu.



The Predefined Route is used to quickly insert routes into the routes field (such as Go Around or STARs). It is opened with the right button clicking on the route sequence of waypoints. The system can also join routes in the middle. First the system finds the closest leg then it inserts the points starting with the end of that segment.

Jump to the next waypoint.

Skip next waypoint.

Status Ribbon

The SQ value was sent by plane. Click here to edit the value in place or use the next buttons.

Squawk emergency.

Squawk radio failure.

Squawk the right code, the controller assigned value.

Squawk standby.

Squawk "C" mode.

Squawk ident.

This area is an indicator and a button too. The icons indicate if the plane is climbing or descending or does not change its level. It also indicates fast climb and fast descends. Clicking on the button will change fast to non-fast and vice versa.

It shows the actual speed restriction. Clicking on the area will change the restriction type in a loop.

- *Free* - the simulator decides the best speed
- *Exact* - the plane will follow the speed set by the trainer
- *Less than* - the plane will be slower than the set speed as far as the normal is above that but may reduce the speed later
- *More than* - the plane will be faster than the set speed as far as the normal is below that but may increase the speed later

It pauses/resumes the selected plane.

Accept handoff from the trainee.

Ignores Crash Detection. After two planes collide this button will be pressed. Depress it to cancel the crash mode and resume flight.

Delete the plane completely from simulation.

Approach Ribbon

Runways that are available for approach. When aircraft can start approach from its position this icon is expanded to show the following buttons.

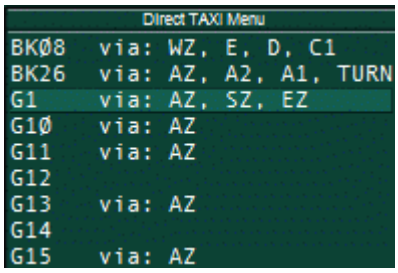
Cleared for approach, landing and stopping on the runway waiting for instructions.

Cleared for landing and vacate left or right according to the icons. For this you need to have configured the Ground Network for Tower Simulator in the ESE. In version v3.2.1.18 you may define the actual exit taxiway from a drop-down list.

Cleared for touch and go.

Low pass at different elevations from 50 feet to 200 feet above airport.

Ground Simulator Ribbon



Opens the Direct Taxi Routing menu. Here you can select any defined end point (defined as gates in *ESE Files Description*) and the shortest connected route between the current position and the end point will be calculated and drawn as you move the mouse over the list. Press one and it will taxi via that route.

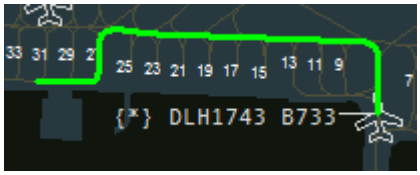
New taxi route. You use left mouse clicks on the ground map to route the plane and send with right click, as described below:

Using Taxi Tools

When you create a new taxi command you get an elastic vector from the present position of the target to the position of the mouse on screen.

If the aircraft/vehicle is on a taxiway/road, or at a gate/stand/parking (and if GROUND network has been created in *ESE Files Description* you can do the following:

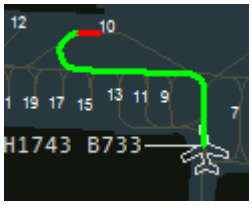
When you move the mouse over a taxiway the shortest route over the taxi network is calculated and displayed dynamically in *green*.



The route snaps to the beginning or the end of each taxi segment. This is to facilitate taxi to precise positions.

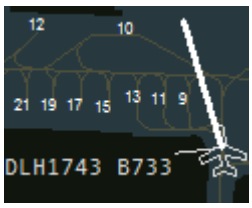
If this is not intended and you want a flexible position on the taxiway press and hold *Control* button on your keyboard. This will make positioning fluid.

When you move the mouse over an end point (Gate, Holding Point) a *red* line appears at the end of the routing displaying the final position of the end point. This is to facilitate correctly selecting the end point.

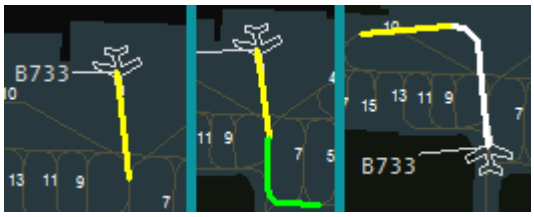


When you move the mouse over an area that does not have any taxi routing or a routing which is not available for the vehicle you get a straight *white* line. This allows you to command routes off the ground

network. This is the only mode available if the *ESE Files Description* section has not been created. It is similar to the old TAXI mode from EuroScope v3.1. Turns are a little bit smoothed.



If the aircraft/vehicle is not on a taxiway or gate/parking or when last selected point in generating the taxi route instruction was off the ground network (*white line*) you can farther either, make a route off the network or you can join a taxiway. When you move the mouse over a taxiway/road a straight yellow line appears to the join point. Subsequently the route can be done on the taxiway network with *green lines*.



You *create a taxi routing command* using the above tools combined by adding multiple points on the map by left clicking to build your route. If you use the route network, it may be enough to select the destination directly and the shortest taxiway route will be selected. If the route calculated is not the one intended to be followed, first add one or more intermediary restriction points that the route must pass then click the destination. After you have built your route and you are happy you can *start it by right clicking anywhere*. If you are not happy with the route you have built, before you press right click you can cancel creating the route by pressing *Escape* on your keyboard. You can also pan the map while you are creating the route by pressing and dragging with Right Click. If you have sent the taxi order and you want to cancel it, you can use the following button to cancel: *Hold*.

Note: The simulator is designed to handle different types of traffic on an airport, such as aircraft, ground service vehicles, follow me, and even taxiways restricted to specific aircraft. See the *ESE Files Description* and the *Scenario File* on how to create this.

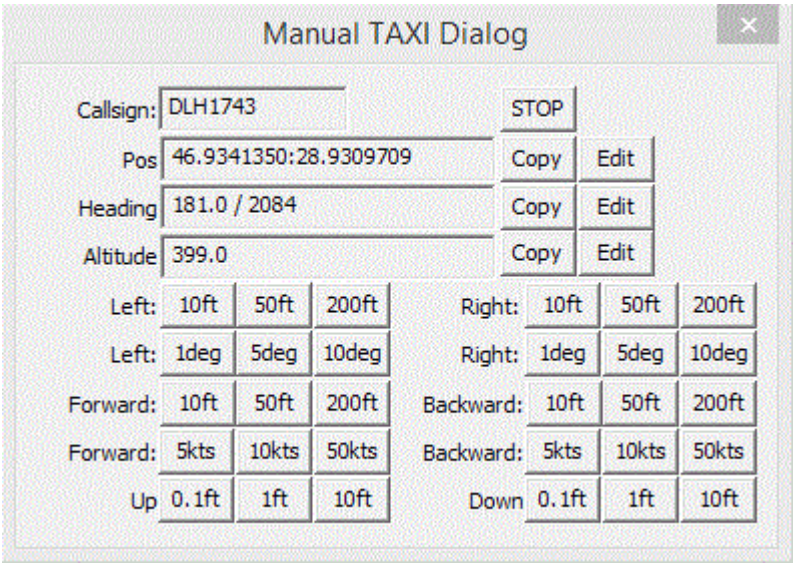
Hold position. Aircraft will slow down and stop at the required distance from its speed. The route is still maintained so you can continue taxi.

Continue taxi. After a hold position the aircraft will continue taxi on the route.

Pushback. This tool works in the same way as the New Taxi Routing, but the aircraft is pushing back and moving slower.

Man

Manual slew. Allow you to manually send move commands directly to the simulator. Opens the following window:

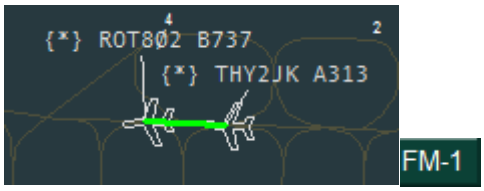


Here you can:

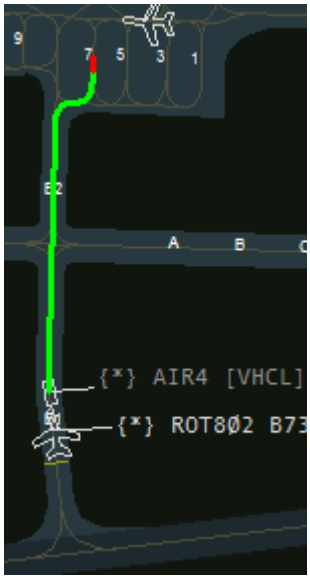
- read the *CALLSIGN*, instantly *STOP* any movement,
- see the present position coordinates, *COPY* them, or dynamically *EDIT* them,
- see the present heading in magnetic format and FSD format, and *COPY* or *EDIT* it,
- see the present altitude in floating point and *COPY* or *EDIT* it,
- move the airplane in 4 axes (left/right, forward/backward, up/down and left/right rotation) by multiple fixed values,
- for the forward/backward axis you can also command a fixed speed constant movement,
- it can also be useful to create the *ESE Files Description* section by moving and copying coordinates.

FoMe

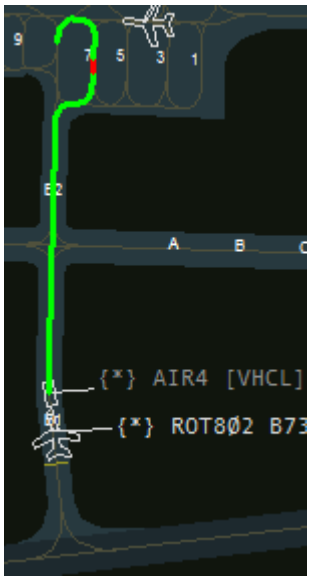
Follow Me command. With the follower plane selected click the button. A *red* elastic vector appears. When you move the mouse over another vehicle the line turns green. Click to make it the leader. Both vehicles must be holding position. The follower plane will taxi straight to near the leader and stop. After selecting the leader and giving new taxi order. The follower will follow close behind on the route. The leader will not accelerate and go too far. If the follower remains too far behind the leader will stop. To leave the Follow Me mode select the follow me and give another taxi command, or a Hold order.



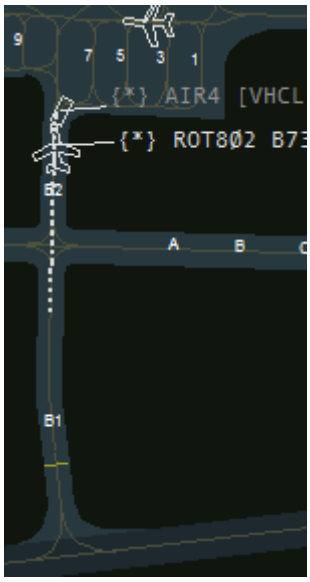
Follow Me then Hold One Point Behind command. Activate it the same as the Follow Me command. When giving new taxi route to the leader, make the taxi route to the point where you want the follower to Hold.



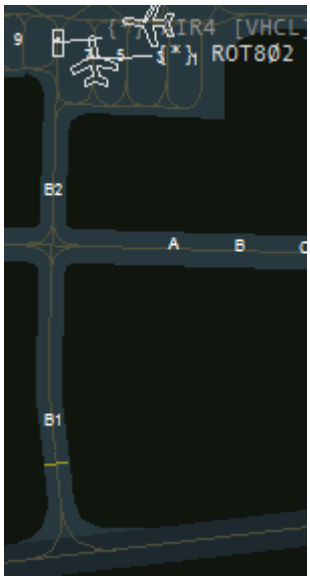
Then make just one more click where you want the leader to go to get out of the way.



The follower will stop at the position enter Hold mode and the leader will continue to the final point.

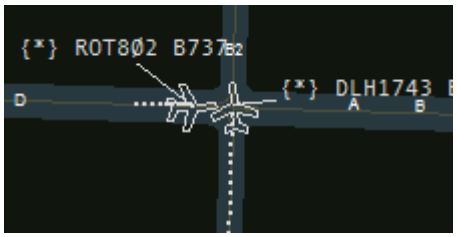


This is normally used for Follow Me vehicles to guide the aircraft to the parking position, then move to one side to free the aircraft parking. Just taxi the Follow Me vehicle to the taxiway used to vacate by the aircraft, turn around and move a bit forward (to avoid crashing). After arriving aircraft lands, vacates and stops on the taxiway, select it and press *FM-1* button. Then select Follow Me and create the taxi route to the Gate and press once on the *red* end point then add one more point a bit to the side where you want the car to come to rest. The aircraft will stop at the gate, and the vehicle will park nearby.



TBme

Taxi Behind Me. Use the elastic vector that appears to give priority to another aircraft. It will remain on the same route but if it is on intersecting routes, it will slow down and stop if needed to allow the other aircraft to go ahead of it. It is also used for aircraft on the same route or holding point to stop behind the stopped or slow aircraft in front, not collide and continue taxi only when the aircraft in front has started moving again.



It is very useful to daisy chain aircraft at the runway holding point. When you line up an aircraft all the others move forward.

SPEED	5	10	15	20	25	30	40	50

Speed change. Speed is completely automated. Vehicles have a maximum speed specified in the Scenario File, taxiways have a maximum speed specified, vehicles slow down before turns, in follow me mode speed is managed on both vehicles as to not go too far apart or collide and the acceleration and slowdown is accurately simulated. But if you want to override at the maximum speed you can change here, in knots.

Takeoff Ribbon

Lineup command. When the aircraft is near the runway it will taxi ahead to it and line up toward the direction which has the most remaining runway. Alternatively, you can use new taxi routes to line up more precisely.

Takeoff/Abort Takeoff/Go Around. This button has triple function depending on the state of the aircraft. When pressed when on the ground it will line up the aircraft (if not already done), and takeoff. If during takeoff roll and not yet airborne it will cancel takeoff and start braking. If it is on approach or landing but not yet touched down, it will go around and climb to 2000 feet on runway heading.

Emergency Ribbon

Following functions will only have effect if the tower view is connected via the EuroScope P3D Connector.

LGR	RGR	NGR

Gear Retracted. You can inhibit any of the gears from coming down: Left Main Gear, Right Main Gear or Nose Gear.

LGC	RGC	NGC

Gear Collapsed. The selected gear is displayed as in between extended and retracted as collapsed.

E1S	E2S	E3S	E4S

Engine Smoke. It generates smoke at the selected engine 1 through 4. For 2 engines planes use the first 2 buttons.

Engine Fire. It generates engine fire at the selected engine.

Lights Ribbon

Following functions will only have effect if the tower view is connected via the EuroScope P3D Connector.

Lights are selected on *AUTO*. Click to disable automatic mode. On pushback the *BEACON*, *NAVIGATION* and *WING* lights are turned on. On taxi the *TAXI* lights are added. On *LINEUP/TAKEOFF* command the *STROBE* and *LANDING* lights are turned on, and the *TAXI* light is turned off. After landing and when vacating the *TAXI* light is turned on and the *STROBE* and *LANDING* lights are turned off. When reaching gate end point the taxi light is turned off. After a while all lights are turned off.

Turn off AUTOMATIC mode and toggle Beacon lights on or off.

Turn off AUTOMATIC mode and toggle Strobe lights on or off.

Turn off AUTOMATIC mode and toggle Navigation lights on or off.

Turn off AUTOMATIC mode and toggle Landing lights on or off.

Turn off AUTOMATIC mode and toggle Taxi light on or off.

Turn off AUTOMATIC mode and toggle Wing lights on or off.

Turn off AUTOMATIC mode and toggle car Emergency lights on or off. These are turned on for vehicles while moving in AUTO mode.

System ribbon

In the system ribbon you can modify how the simulator engine works:

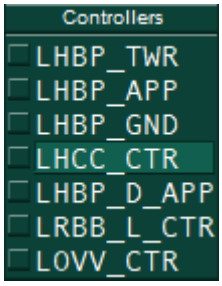
Simulation session acceleration. Press the acceleration rate and the session will be sped up by that rate. To turn off press once more.

The *AUTO* is a check-box button. When selected the simulator engine does some work automatically:

- Automatically connects simulated controllers.
- Automatically takes off planes from the runway.
- Automatically start tracking planes by simulated controllers.
- Automatically initiates handoff from simulated controllers.

It is recommended for self-training.

This button opens a pop-up menu. Here you can connect/disconnect simulated controllers.



Pause/play button

Toggle Pause/Play for the whole session. Sessions start as paused and you need to resume them.

Scenario editor

Loading data

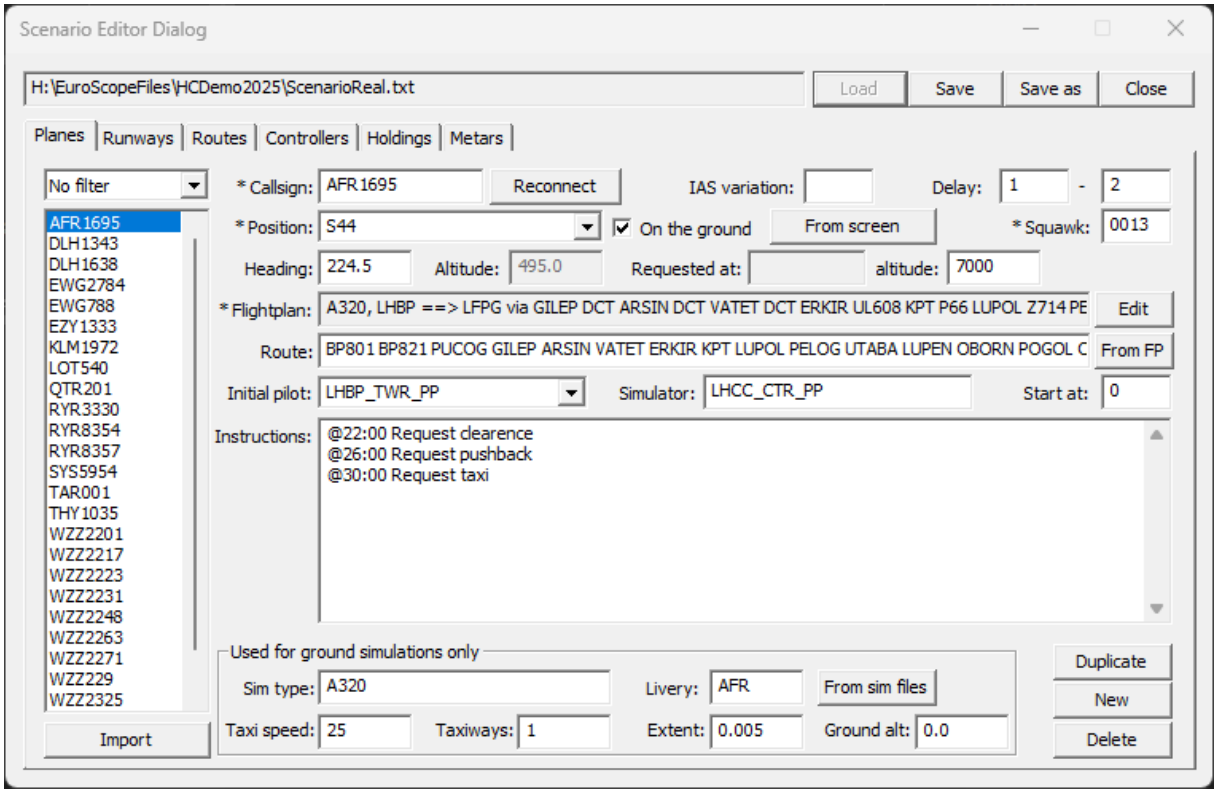
After opening the dialog box is completely empty. You should load the scenario first or start editing a new one from scratch. To load some existing data, click the *Load* button. A popup menu appears where you can define what you would like to edit. You have the following options:

- *Load from file* - Just load a scenario, edit and save. This is the most common way of the editor.
- *Load current situation* - With this option the current radar client situation is loaded. It may be a live VATSIM connection or a simulation session, a playback or even a live situation when connected to an SBS. All planes and flight plans are loaded. You may filter, change and save for a further scenario.
- *Load current simulation* - Like the prior one, but it loads the data from the simulator.
- *Attach editor to the simulator* - using this you may edit the currently running simulation. While you are editing the simulator is paused. You may add, delete planes. Then save the situation or continue the session with the new data.

After loading the data, you may see the file name at the top edit box. Use the other buttons:

- *Save* - Save the edited scenario to the file it was loaded or saved before.
- *Save as* - Save the edited scenario to a new file.
- *Close* - Close and discard all the changes.

Planes TAB



The left of TAB contains all the simulated planes. Select one from the list to edit its attributes.

- *Callsign* - The callsign of the plane.
- *Reconnect* - If you change the callsign of a plane while editing a live simulation session data, press this button to force a reconnect of this plane to the server.
- *IAS variation* - The average variance of the speed from the performance defined value.
- *Delay* - Obsolete. Since the new architecture the simulated planes are reacting immediately.
- *Position* - The initial position of the plane. You may enter the coordinate here manually. Or drop down the combo box. It is filled with the positions defined for the TAXI network in the ESE file (*ESE Files Description*). Or press the *From screen* button to position the plane with mouse clicks.
- *On the ground* - Set this check box to indicate if the simulation starts on the ground. The altitude is set to the airport level automatically.
- *From screen* - After clicking on this button you may define the plane position by mouse. The first click defines the position, and the second one defines the heading.
- *Squawk* - The code transmitted by the plane.
- *Heading* - The initial heading of the plane. It is used on the ground only. Otherwise, it is calculated from the route and position.

- *Altitude* - The initial altitude/level of the plane.
- *Requested altitude* - The initial climb or descend altitude/level.
- *at* - At which point should the plane be at *Requested altitude*.
- *Flightplan* - Short extract of the flight plan data. It is read-only here.
- *Edit* - Press this button to edit the flight plan via the *Flight Plan Setting Dialog*.
- *Route* - The point-by-point route the plane should follow. From v3.2 it may be empty. That case the route extracted from the flight plan will be used. Every route point may have an optional altitude request using a / after the name. This will climb/descend the simulated plane to the requested altitude/level at the point. These altitude requests will be used automatically, without any pseudo pilot command, except when pseudo pilot and tracking controller is the same.
- *From FP* - Press this button to extract the route data from flight plan just now. It opens a popup menu to define how the altitude profile is added to the route section:
    - *Include all profile altitudes* – Using this will add altitude requests to all points.
    - *Include initial profile altitude only* – Using this only the first altitude constraints will be added to the route. It may happen that prior points will have altitude constraints if the last segment is not long enough for the climb/descend.
    - *Do not include profile altitudes* – This option will convert the points only without any altitude requests.
- *Initial pilot* - Who will be the initial pseudo pilot of the plane. If empty, someone must get the simulation manually before issuing any command.
- *Simulator* – In general you may leave it empty. It is used only in complex scenarios, when the simulation is distributed between simulator engines. This value will define which simulator engine will simulate the selected plane.
- *Start at* - How many minutes after the session starts should the plane appear on the screen.
- *Instructions* - Here you can add messages that will appear at the pseudo pilot workstation as private message. Using that you can configure various actions at specified time or altitude. Every line is a single message. The message is built up from constraint and message. The constraints can be:
    - Simulation time (@37:00) - In this case the message will be sent when simulation time passes the specified time. It is in HH:MI format.
    - Altitude (@2400ft) - In this case the message will be sent when the plane first passes the specified altitude (ascending or descending).
- *Sym type* - The type data to be sent to P3D connector (see *Tower simulator*). If empty, then the plane type from the flight plane will be used.
- *Livery* - The livery data to be sent to the P3D connector (see *Tower simulator*). If empty, then the first three letters of the callsign are used.

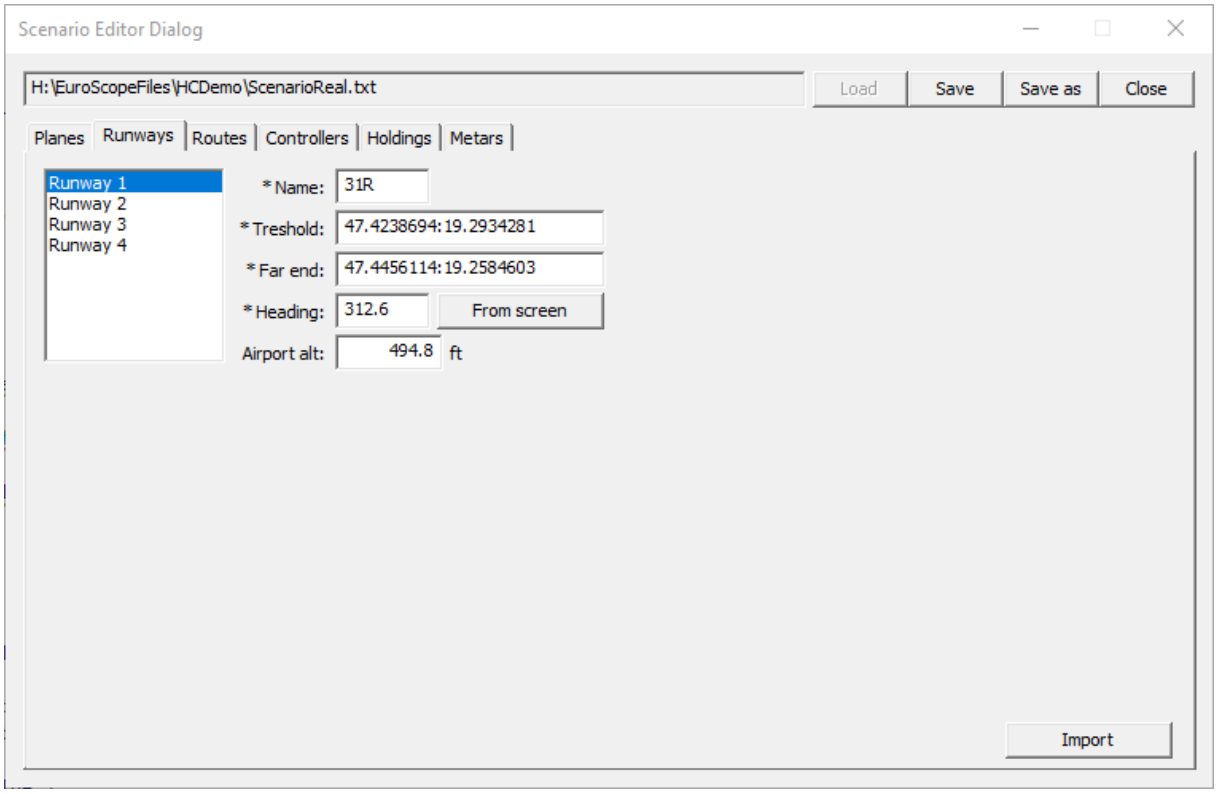
    - If you have trouble connecting the correct plane in P3D from *sym type* and *livery*, then enter the actual code from aircraft.cfg file to *sym type* and let livery empty. In this case the model matching is not used in P3D connector.

- *From sim files* - Using this button you can open a selection dialog. In that dialog you can specify the P3D SimObjects folder, and system scans all CFG files and lists the available type/livery pairs.
- *Taxi speed* - The maximal taxi speed of the plane/object.
- *Taxiways* - The code value that defines which taxiways the plane/object can use. See the taxiway definitions in *ESE Files Description*.
- *Extent* - The size of the aircraft/object. It is used for collision detection.
- *Ground alt*: - If nonzero, then P3D will insert the plane to that altitude above airport altitude. It should be used if ground clamping does not work correctly.

Editing buttons:

- *Import* – Using this button you can load plane definitions from another scenario file. It can also be used to import *.DAX scenario files used at HungaroControl.
- *Duplicate* – It creates a new plane in the scenario using all data from the selected one.
- *New* – It creates a new plane in the scenario using default data.
- *Delete* – Id removes the selected plane from the scenario.

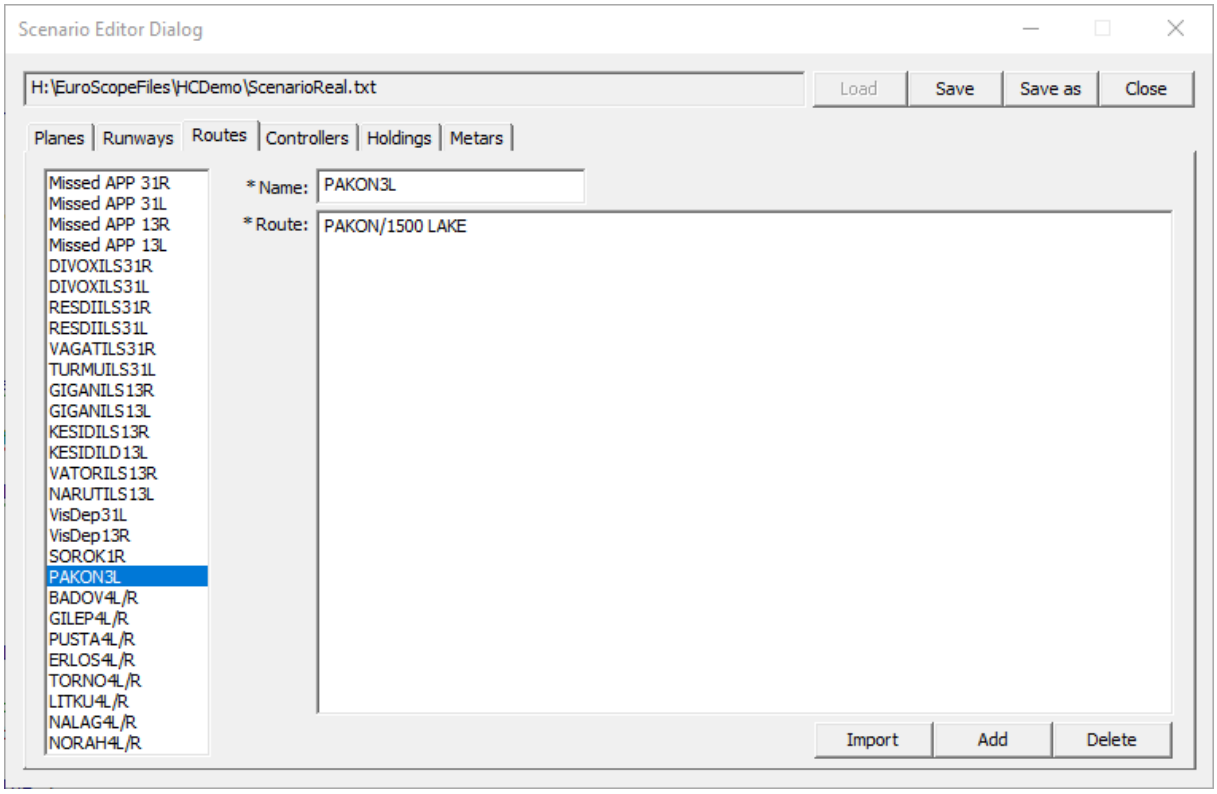
Runways TAB



The number of runways you may define for a scenario is still limited to 4. They can be edited in the ILS section:

- *ILS list* - Select the RWY you are to be edited.
- *Name* - The name of the RWY.
- *Threshold* - The position of the threshold.
- *Far end* - From 3.2 you may define the RWY not only by its direction but by two points. Fill the far end coordinates here.
- *Heading* - The old method is still available; hence the precision of the heading is increased.
- *From screen* - Using this button you may define the RWY by clicking the threshold and the far end on the screen.
- *Airport altitude* - It is independent from the selected RWY and saves the ground level of the airport.
- *Import* - Use this button, select an existing scenario file and import the ILS section from it.

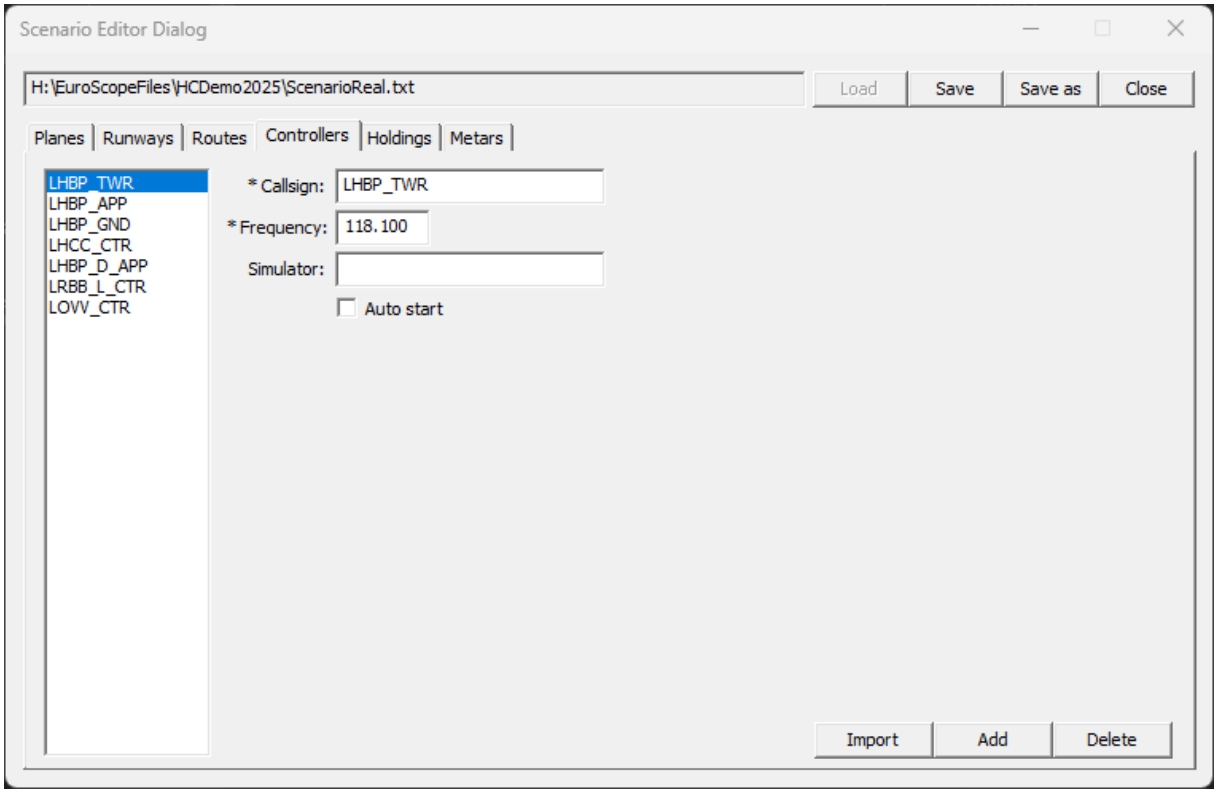
Routes TAB



Here you can add, delete or modify predefined routes for the session:

- *List* - Select any of the routes to be modified.
- *Name* - The name of the predefined route.
- *Text box* - In the text box you can define the route point by point. After each point you may define altitude with a /.
- *Import* – Use this button to import routes from another scenario file.
- *Add* – Add a new route.
- *Delete* – Delete an existing route.

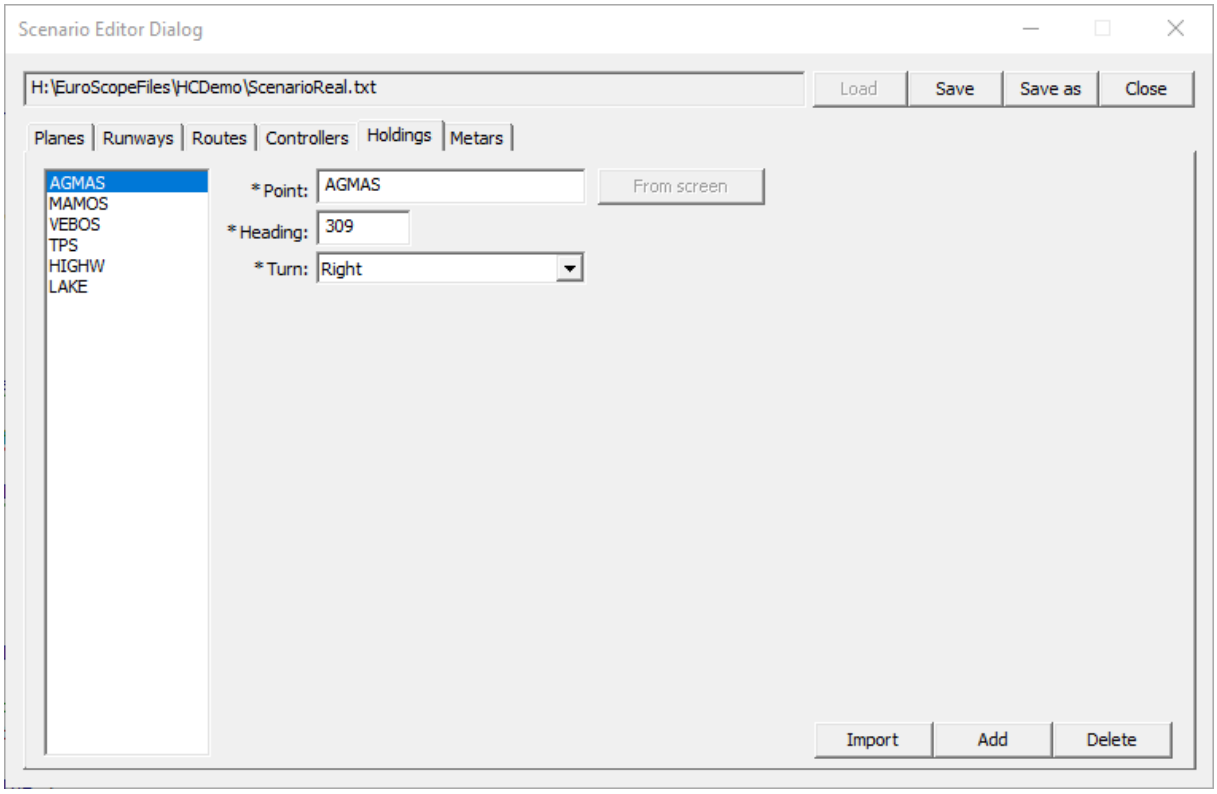
Controllers TAB



Here you can add, delete or modify the simulated controllers:

- *List* - Select any of the controllers to be modified.
- *Callsign* - The desired callsign of the simulated controller.
- *Frequency* - The primary frequency of the controller.
- *Simulator* - In general you may leave it empty. It is used only in complex scenarios, when the simulation is distributed between simulator engines. This value will define which simulator engine will simulate the selected plane.
- *Auto start* – Check this box to start simulating the controller from the scenario start.
- *Import* – Use this button to import controllers from another scenario file.
- *Add* – Add a new controller.
- *Delete* – Delete an existing controller.

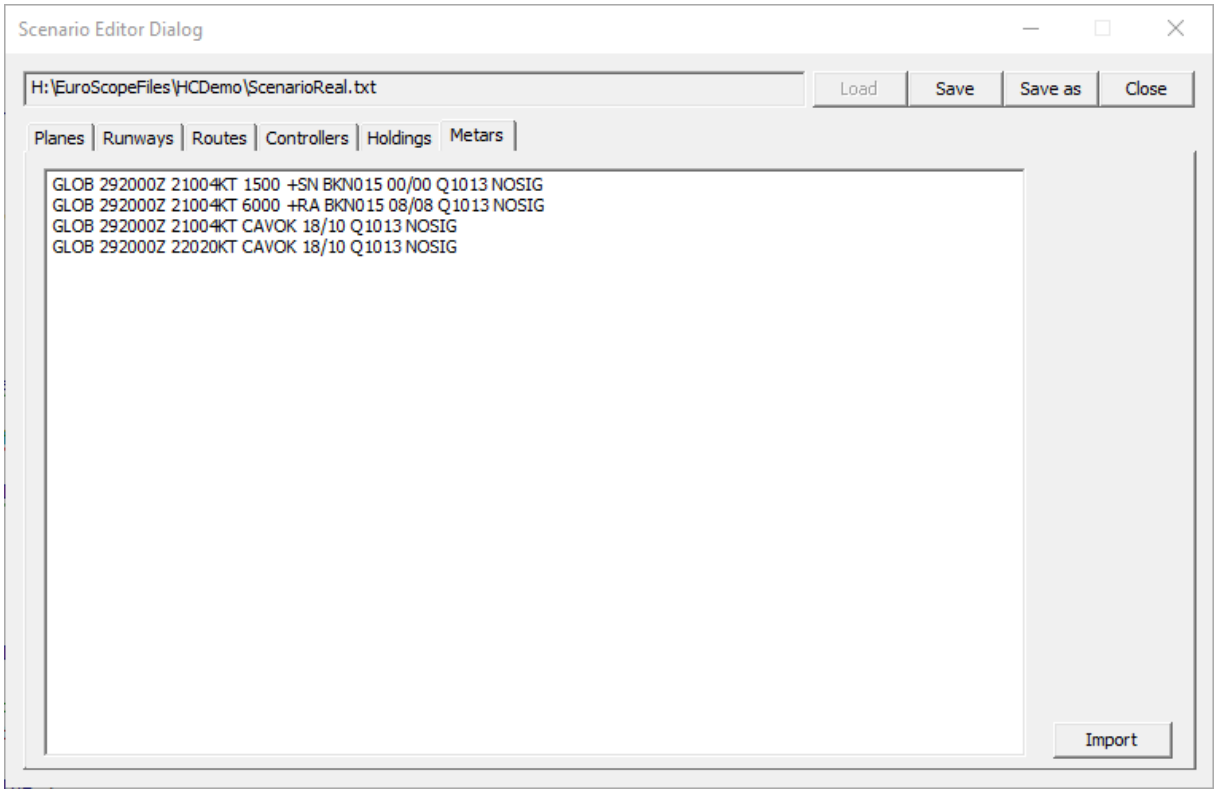
Holdings TAB



Here you can add, delete or modify the holdings data:

- *List* - Select any of the holdings to be modified.
- *Point* - The main point of the holding.
- *Heading* - The inbound course.
- *Turn* - The turning direction.
- *Import* - Use this button to import holdings from another scenario file.
- *Add* - To add a new holding pattern.
- *Delete* - To delete the selected one.

METARs TAB



Here you can add, delete or modify quick METAR descriptions:

- *Text box* - Here you do not have *Add* and *Delete* buttons. Edit the METAR lines in the text box in a way that each line should form a complete, well defined METAR. The station's name should be GLOB to work perfectly with P3D v4 or above.
- *Import* - Use this button to import METARs from another scenario file.

Tower Simulator

The tower simulator uses the Simconnect API to connect and display traffic, weather and effects in Lockheed Martin's Prepar3D.

Requirements

- Lockheed Martin's Prepar3D v4 or v5. So far v4 and v5 is tested against the connector.
- AI Traffic package for model and livery (only Ultimate Traffic 2 and MyTraffic 5.4c has been tested)
- Effects package - included with installation (optional - will add engine fire, engine smoke, crash explosion and aircraft lights)

Installation

- AI Traffic package needs to be obtained separately and installed according to manufacturer's instructions.
- (optional) In the EuroScope installation location (by default C:\Program Files (x86)\EuroScope) find the compressed folder named "ATCOsim_Effects_v1.zip". Uncompress it and move the folder "ATCOsim_Effects" into your flight simulator SimObjects\Airplanes folder.
- From your EuroScope installation location run "EuroScopeP3DConnector.exe".
- Press *Browse* next to *Aircraft definition folder* and select the folder containing the AI Traffic package.
- For accurate touchdown at the *altitude* field type the airport elevation.
- Close the EuroScopeP3DConnector. Nota bene: to close you must first disconnect from both P3D and FSD servers. Press *Disconnect* on both and press the *Exit* button below. The Windows X button will not work.

Running

- Start the P3D simulator and select the airport location. Select *Clear Weather* for weather and turn off AI traffic.
- Run EuroScopeP3DConnector on the same computer where P3D is running.
- Start *EuroScopeFsdServer.exe* from your EuroScope installation location.
- Select the scenario file by pressing *Browse*. Or you can leave it blank and build one in the new Scenario Editor.
- Start EuroScope. On the Connect popup type the server address ("*localhost*" if on the same computer), select *non-VATSIM server checkbox* below, Select Connection Mode as *Start Sweatbox Simulator session*. You can leave the Simulator *Scenario file* field blank. Or alternatively you can load the scenario from here instead of from the server if you are not using a distributed session. Choose the intended callsign and *Connect*.

- Refer to *Using the simulator* manual page to use the simulator. Any aircraft activity will be displayed in the Flight Simulator.

Other Details

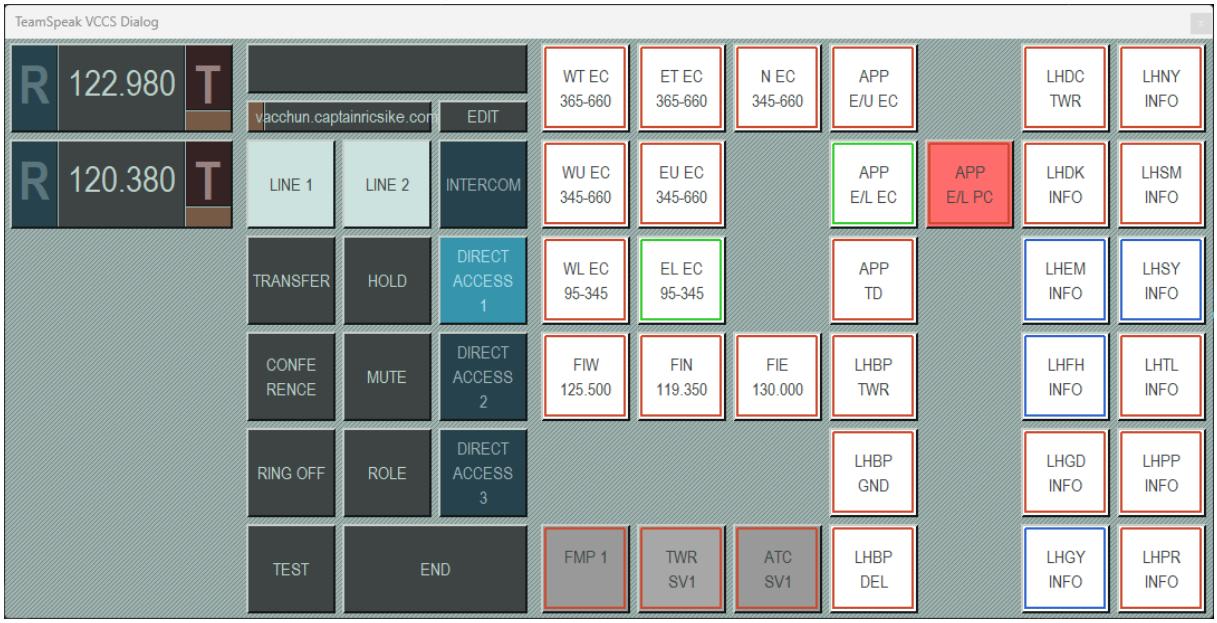
- The EuroScopeP3dConnector can only be closed after you first disconnect from both P3D and FSD servers. Press *Disconnect* on both and press the *Exit* button below. The Windows X button will not work.

- Prepar3D has a new feature called *Observer Management* in the View menu where you can create accurately positioned views anywhere in the world. Obtain the tower coordinates and altitude and Create New Observer. Use a higher horizontal field of view (between 90 and 135) to have better coverage on a single monitor. Lock the Field-of-view (H) and press *Apply Display Aspect Ratio* to automatically calculate the vertical field of view. Save, select the created view and adjust to taste.

This tower view is from LHBP. It uses 4 monitors to capture a bit more than 180 degrees view.

TeamSpeak VCCS

The VCCS dialog was originally part of the voice communication section. It was used as controller-to-controller communication tool during VASTIM online sessions. But since the introduction of VACS program, it is no longer used in daily controlling sessions. But it is still part of the installation and can be used in any session. The paragraphs are moved to simulator section as VCCS is still the main voice communication tool for standalone (non-SweatBox) simulator sessions.

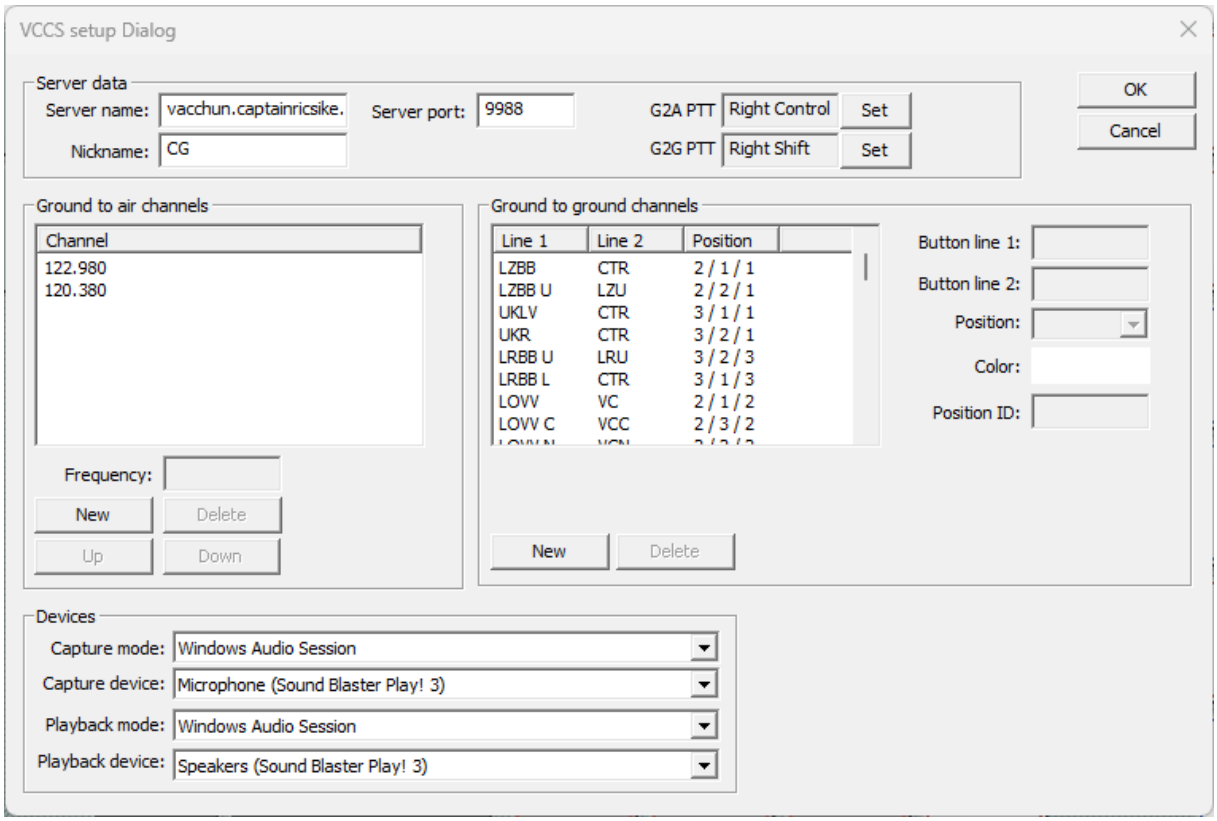


The dialog box can be split into three areas:

- On the left side the air to ground channels are visible.
- The middle section contains buttons to set up the communication. Also, many of them are just dummy and have no functionality behind.
- The right side contains buttons for ground-to-ground communication.

VCCS setup

Before going into details of each area, let's look at how you can change what is visible in the dialog. To open the setup dialog, press the *EDIT* button next to the TS server name. You can set up the content only when there is no active connection to the server.



You can enter the following data to the dialog:

- Server data group
  - *Server name* – The computer name where TS server is running. You can use *localhost* when you run TS server (e.g. using EuroScope FSD server) on the same machine. You can enter IP address or a registered domain name.
    Note: Custom TS3 clients can connect to only custom TS3 servers. Therefore, you need a EuroScope version of the TS3 server. It can be EuroScope FSD server, EuroScope TeamSpeak server (Windows or Linux).
  - *Server port* – The port used for connection on server side.
  - *Nickname* – The users nick name to be visible on server side.
  - *G2A PTT* – The PTT button for ground-to-air communications.
  - *G2G PTT* – The PTT button for ground-to-ground communications.
- Ground to air channels – It is actually just a list of frequencies:
  - *Frequency* – Edit here the frequency value of the selected item.
  - *New* – To add a new entry to the list.
  - *Delete* – To delete the selected item.
  - *Up*, *Down* – To move the selected item up or down in the list.
- Ground to ground channels
  - *Button line 1* – The upper line text of the button.
  - *Button line 2* – The lower line text of the button.
  - *Position* – Select the position of the button. The values are: <page>/<row>/<column>.
  - *Color* – The background color of the button.
  - *Position ID* – The ID of the position to be called by the button. It can be used in two different ways:

        - You can enter ESE file position ID here. This case EuroScope can check when the controller with this ID is online or not. When online the border color of the button changes from red to green. When you press a button like this a direct message is sent to the controller as invitation for voice communication.
        - A non-controller position ID. Like FIRE, POLICE, etc. This case EuroScope cannot help determining if anyone is on the other side. So, it sends a broadcast message to everyone. To serve a position like this you should press the button with right click. It will change the border from red to blue. This solution allows a controller (or more a pseudo pilot) to serve multiple positions in the session.
    - *New, Delete* – To add or delete a position from the dialog.
- Devices
    - *Capture mode* – In which mode the voice is captured.
    - *Capture device* – What device is used for capturing voice.
    - *Playback mode* – In which mode the incoming voice is played back.
    - *Playback device* – What device is used for playing incoming voice.

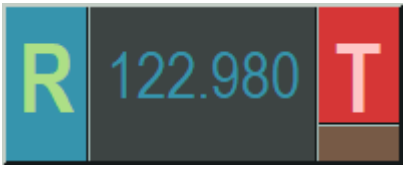
Ground to air channels

Ground to air communication does not require invitation call and call accept/refuse events. Just join the frequency, listen or transmit whenever you would like to do so. Use the *G2A PTT* button to transmit.

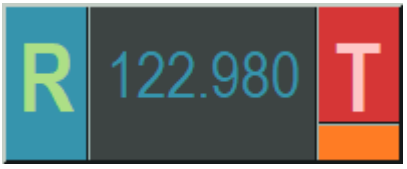
One item here represents a single frequency channel.

- Press R to start/end receiving on frequency.
- Press T to start/end transmitting on frequency.

When connected to the server for both receiving and transmitting, the background is changed:



When receiving the background of R is changing. So as the box below T indicates when transmitting.



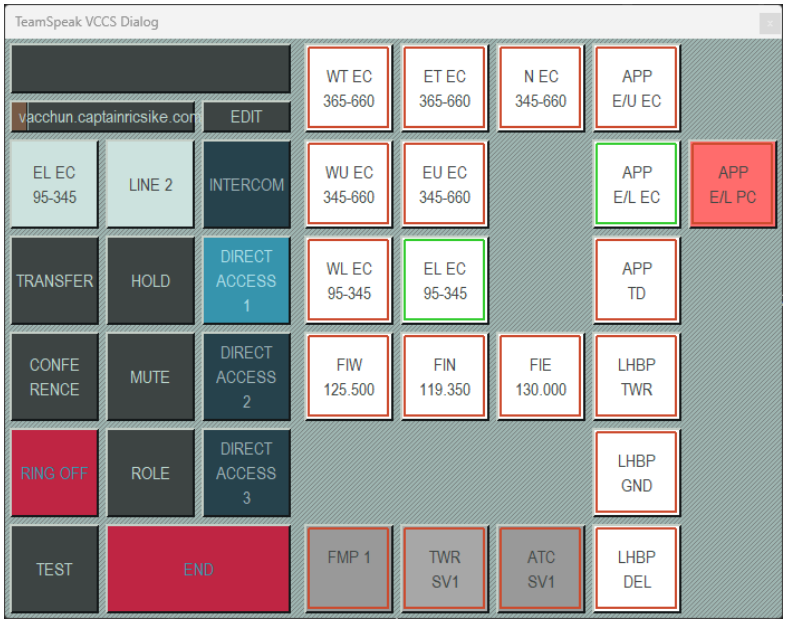
Air to Air channels

This is the opposite of ground to air. When you would like to call another ground station you must initiate the call. The other party should accept is. When the connection is established, you can talk to each other.

The call initiation message contains the caller server and port, so the connection will be made using that server. Therefore, that server should be reachable from the other party. It is not a good idea to use *localhost* when using G2G.

To call another party press the appropriate button:

It changes *LINE 1* to the name of the called party while the *END* button shows the running call. You can use the *END* button to cancel it anytime.



At the caller controller the dialog changes similarly. The caller will be at *LINE 1*, the *END* can be used to cancel the call. It also has the option to mute the ring using *RINF OFF* button. Pressing the incoming ID (in place of *LINE1*) the position called can accept and enter the call.

Accepting the call stops the button flashing and starts the conversation. Both parties should use the *G2G PTT* for transmitting and use *END* to finish the conversation.

The *TEST* button can be used to test server connection. In this case EuroScope opens two channels to the server. One is transmitting voice while the other receives the voice back.

ESE Files Description

The standard sector file and position file do not provide enough functionality so a new format has been developed, called *ESE*. This file includes information about controller positions, call signs and frequencies in the **POSITIONS** section, standard departure and arrival routing in the **SIDSTAR**s section, additional static map elements such as **FREETEXT** and **AIRSPACE** section with the sector definition and auxiliary boundary information. This file is in addition to other resource configuration files.

This file may be edited and created with any text editor and saved as a standard text file. It must then be renamed to the file name of the sector file plus the .ese" extension. And it also must be placed in the same folder where your .sct file is, as in EuroScope you can load the .sct file only and the .ese will be loaded automatically.

OFFSET

Offsets can be used in both SCT and ESE files in any place in the file. Defining an offset will change all coordinates next to this line to be shifted accordingly. Use offset back to 0, 0 to resume normal operation. That way you can use offset *brackets* to shift your content.

OFFSET has two forms:

```
OFFSET:0.01:0.02
```

This will move all coordinates by 0.01 degrees to the north 0.02 degrees to the east.

```
OFFSET:N047.25.50.442:E019.16.05.320:N047.25.51.548:E019.16.16.327
```

This will calculate the offset values to ensure `N047.25.50.442, E019.16.05.320` is moved to `N047.25.51.548, E019.16.16.327`

Free text Section

This section provides additional map drawing elements. It provides the ability to display any ASCII character on the radar video map. The free text section must be prefixed by this line:

```
[FREETEXT]
```

Free text definition lines have the following format:

```
<latitude>:<Longitude>:[<group name>:]<characters>
```

The separator between each element is the *:* character. The coordinates of latitude and longitude are prefixed by the letter of the hemisphere and then the geographical coordinate. The format for the coordinate may be the decimal format (eg. N013.32861) or in the degrees.minutes.seconds.decimals format (eg. N013.19.43.327). You can group the free texts using the group name. If you omit the group

name, then a *Default group* will be used. The character section may use any number of ASCII characters except carriage return. A finished line may look like this:

```
N044.34.6.524:E026.06.27.632:LROP texts:TORA-D/26L 2490m
```

A finished free text section may look like this:

```
[FREETEXT]
N044.34.37.952:E026.05.53.935:LROP taxiways:W
N044.34.34.336:E026.05.28.289:LROP taxiways:O
N044.34.6.524:E026.06.27.632:LROP texts:TORA-D/26L 2490m
```

Terminal Routing Section

This section contains the routing for the standard terminal procedures such as SID and STAR. It also contains the rules for assignment of those procedures by runways in use and the route end point/route start point. This section must start with the following line:

```
[SIDSSTARS]
```

The format of a routing line is:

```
<type of route (SID or STAR)>:<airport of destination/departure>:<runway related to that route>:<routing name>:<route points>
```

The lines priority is from top to bottom. The topmost line has most priority. The first line that completes all conditions will be chosen as the correct route. The type of route can be SID or STAR and declares whether the next condition, airport, should be the departure or the arrival airport for that aircraft. The airport is declared as the full ICAO code for that airport. The next condition is the runway in use. Declare a new line for each runway that uses that respective route. The name will be the name of the SID/STAR with the discrete identifier. The route will be declared by any FIX, VOR or NDB that makes part of the routing with spaces between each route element. An example of a routing, below:

```
[SIDSSTARS]

STAR:LROP:08R:TUSET2E:TUSET BAREM MADIT OBELA OPW
STAR:LROP:08L:TUSET2E:TUSET AMETI ABATU DILAS OTL
STAR:LROP:26L:TUSET3F:TUSET FLR AMODA LEVTA OPE
STAR:LROP:26R:TUSET3F:TUSET FLR AMODA RARIT OTR

STAR:LROP:08R:VALPA1E:VALPA FLR OBELA OPW
STAR:LROP:08L:VALPA1E:VALPA FLR DILAS OTL
STAR:LROP:26L:VALPA2F:VALPA FLR AMODA LEVTA OPE
STAR:LROP:26R:VALPA2F:VALPA FLR AMODA RARIT OTR

SID:LROP:08R:VALPA1A:OPE BSE BSW MEGIK VALPA
SID:LROP:08L:VALPA1A:OTR BSE BSW MEGIK VALPA
SID:LROP:26L:VALPA1C:OPW FLR VALPA
SID:LROP:26R:VALPA1C:OTL FLR VALPA

SID:LROP:08R:NILOV1A:STJ NILOV
SID:LROP:08L:NILOV1A:STJ NILOV
```

```
SID:LROP:26L:NILOV1C:OPW NILOV
SID:LROP:26R:NILOV1C:OTL NILOV
```

The Positions Section

This section contains information about all recognized controller positions. It is used to recognize what controller is what position using information from the callsign and the frequency. This is a slightly modified POF file used before in ASRC and VRC. Users may simply copy that file and modify it accordingly. The Positions section must begin with the following line:

[POSITIONS]

The format of the Position line is the following:

<name of position>:<radio callsign>:<frequency>:<identifier>:<middle letter>:<prefix>:<suffix>:<not used>:<not used>:<A code start of range>:<A code end of range>[:<VIS center1 latitude>:<VIS center1 longitude>[: ...]]

The name of the position can be anything used to help in identifying the line inside the ESE file. Radio callsign shall be the official radiotelephony callsign that shall be used for that station. Frequency shall be in full of "." as decimal separator. The identifier is used in many places in the software and may be as short as one character and as long as required. It is recommended to use a standard length. In ASRC/VRC and FAA systems the length of that ID is 2 characters. Prefix and suffix are the first and last parts of the callsign used to identify the position. A code ranges are used to preset the assignment A code ranges from which the system will assign the codes for a specific position. Optionally there can be some visibility centers defined for the position. One center can be defined by two parameters: latitude and longitude. There can be maximum 4 visibility centers defined (that is altogether 8 optional elements in the line)

Some examples of the finished Position section below:

```
[POSITIONS]
ARGES_TOP:Bucharest Radar:121.170:AST:A:LRBB:CTR:-:-:5401:5477
ARGES_MID:Bucharest Radar:124.250:ASM:1:LRBB:CTR:-:-:5401:5477
NERDI_TOP:Bucharest Radar:122.020:NIT:N:LRBB:CTR:-:-:5401:5477
NERDI_MID:Bucharest Radar:125.150:NIM:4:LRBB:CTR:-:-:5401:5477
BUCHAREST_TMA:Bucharest Approach:118.250:TMA:-:LROP:APP:-:-:5401:5477
OTOPENI_S_CTR:Otopeni Tower:120.900:TOI:S:LROP:TWR:-:-:5401:5477
LHCC:Budapest Radar:133.200:BUD:-:LHCC:CTR:-:-::
LYBA:Beograd Radar:123.770:BEG:-:LYBA:CTR:-:-::
EUE:Eurocontrol
East:135.300:EE:C:EURE:FSS:EURE:FSS:0200:0277:N050.54.1.002:E019.49.42.216:
N042.40.42.169:E022.28.7.307
```

The Airspace Section

The airspace section is the section containing information about the sectors in the delegated area and auxiliary boundary information. To understand the Airspace section, one must understand the functions of EuroScope well. It has a first section prefix with SECTORLINE which defines actual broken line that is common for only two lateral sectors. Then the sector is built by two or more of these lines and then additional boundary information is added such as COP (Coordination Points).

The Airspace section must start with the following line:

```
[AIRSPACE]
```

The Sector line Subsection

Each sector line piece is usually comprised of three sections. The first line/section is prefixed with SECTORLINE then ':' separator and the name of that respective sector line.

```
SECTORLINE:MOPUG_LHCC
```

Then the declaration of that respective sector line continues with an optional section prefixed with DISPLAY. It is used to declare when that respective border will be highlighted. More exactly, what sectors must be covered discretely by different controllers for that line to be highlighted.

```
DISPLAY:MGT:MGT:BUD
```

The prefix is DISPLAY with the ':' separator. The next item is the sector you are covering. In this case, for this line to be considered you must be covering MGT sector. **NOTE**: this sector is not from the POSITIONS section but in the SECTOR section which will be described next. So, it does not have to be your sole sector, and it does not refer to your callsign. The next two items are the two SECTORs that are compared to having different owners for this line to be highlighted. In this example the sectors MGT and BUD must be covered by a different controller, and you must be controlling sector MGT. **NOTE**: the compared sectors do not have to match the sector you are covering. They usually do, but you can also display lines for nearby sector if you need them for reference.

Then the actual line must be declared using coordinates. Each coordinate point must be declared with the COORD prefix then followed by the *LATITUDE* and then the *LONGITUDE*.

```
COORD:N047.59.23.032:E023.30.49.151
```

A new *COORD* line will be made for each point making up the respective SECTORLINE. Make sure the end point of the SECTORLINE is common with the start point of the next SECTORLINE.

There is an easy way to create circle sectors without defining so many coordinates that form a circle on the screen. Just use the CIRCLE_SECTORLINE definition. Using that you can make a circular sector around any object (FIX, VOR, airport), or a coordinate defined in the line. In the first version it needs three parameters: sector line name, center point name, radius. In the second version it needs four parameters: sector line name, latitude, longitude, radius.

```
CIRCLE_SECTORLINE:LHBP_APP:LHBP:30
CIRCLE_SECTORLINE:LHBP_APP:N047.25.2.968:E019.21.31.221:30
```

Tips: A SECTORLINE is a border line which is common with only two lateral sectors.

```
SECTORLINE:BUDOP_LHCC
DISPLAY:BPT:BPT:BUD
DISPLAY:BPM:BPM:BUD
COORD:N046.37.12.101:E021.19.19.610
COORD:N047.29.04.510:E022.00.35.050
COORD:N047.57.13.950:E022.53.46.100
```

Translated this means: the SECTORLINE has been assigned a name of BUDOP_LHCC. It will be highlighted when condition [you are controlling BPT AND BPT and BUD sectors are controlled by

different controllers] or [you are controlling BPM AND BPM and BUD sectors are controlled by different controllers]. The sector line is created by two segments, created by 3 coordinates/points.

You have the possibility to define the sector line display away from the sector line definition. We found that sometimes it is far easier to define this when defining the sectors. So, whenever you need to just add a DISPLAY_SECTORLINE entry (after the sector line definition). Its syntax is the same as DISPLAY except that you must define the sector line name at the beginning.

```
DISPLAY_SECTORLINE:BUDOP_LHCC:BPM:BPM:BUD
```

The Sector Subsection

This is the subsection where you define the limits of a sector and controller assignments priorities.

```
SECTOR:MGT:34500:66000
OWNER:MGT:BPT:NIT:EUE
ALTOWNER:When no BPT:MGT:NIT:EUE
BORDER:MOPUG_LYBA:LOMOS_MOPUG:MOPUG_NERDI:BUDOP_MOPUG:MOPUG_LHCC
```

In the first line you declare the sector name and the vertical limits. Prefixed by SECTOR followed by the ':' separator then the assigned Sector Name (MGT) then followed by the lower altitude limit in feet (34500) then the upper altitude limit in feet (66000).

The next line is prefixed by OWNER and defines which controller will be recognized and controlling that respective sector and their priority. After the ':' separator will follow a list of position identifiers from the Positions section. The first has most priority and the last, the least priority. For example, if MGT position is identified as online by the Positions table, the MGT sector will be assigned to it. If not, it will move on to the next position, verify it and if it is open the sector will be assigned to the BPT sector. This line also defines which sector you will be controlling when you are online as a specific position.

The alternate owner line (ALTOWNER) makes it possible to define an alternate setting of the sector ownership. The alternate rules can be selected at the *Sector Ownership Setup*. Its syntax is the same as the OWNER line with an additional name after the ALTOWNER tag.
Next follows the Border sector in which you define which borderlines make up the sector. Make sure a borderline and the next borderline have the end/start points common so it will be able to create a continuous border. Also make sure that it is a closed border, that is, that the last line ends at the start point of the first line.

The order of the sectors in the file is extremely important. EuroScope will check if an airplane is inside a sector in the order defined in the file. Therefore, the first match will be used, and the rest is not tested at all. You can use this behavior and create overlapping sectors. But be sure that the smaller is earlier in the list.

```
ACTIVE:LROP:08R
```

All sectors are active by default and are used in your session. However, you may define sectors that are not always used but just in some runway configuration. After the ACTIVE keyword you should define the airport and runway configuration. The sector will then be used only if the specified runway at the specified airport is active for arrival or departure. An example is the *Traffic Director* in Hungary. He has the role of moving the planes from downwind to the final and is used only on real busy events. Because

of its role he controls at the arrival end of the active runway. But as the runways have two ends, we defined two *Traffic Director* sectors, but only one of them should be used in one session.

```
GUEST:APP:LROP:LROP
```

The GUEST line is a formal way to handle exceptions to the general roles. After the keyword you should define a position a departure airport (or a * for all airports) and a destination airport (or a * for all airports). When an aircraft is flying in this sector and its current owner is the controller defined in this line and the departure and the destination airport match the flight plan then the sector owner will be the current controller. This may be a special solution to a normal situation over Slovak airspace. Normally this area is controlled by Prague, but the arrival from Austria is passed to Budapest Radar even the route crosses this sector for a while and never enters to the sector of Budapest Radar but goes directly to the Approach. So, the Bratislava sector has a guest controller, Budapest Radar. And all arrival traffic to LHBP will accept it and EuroScope will not show the frequency of Prague indicating a necessary handoff.

```
DEPAPT:LHBP:LHDC:LHNY
ARRAPT:LHBP:LHDC:LHNY
```

The DEPAPT and the ARRAPT can be used to activate airports for departure and for arrival depending on what sectors belong to you. If there are airports defined for the sectors whenever you controlling sectors are changed the active airports data is updated. And as a side effect your METAR list might be changed also as they depend on the active airports.

The Coordination Point Subsection

This section defines the COP (COordination Points) used for coordination with adjacent sectors and ACCs. Here you can also add LOA (Letter of Agreement) details and EuroScope will show you the appropriate action based on the LOA for each radar track.

Each line defines a different set of conditions for a LOA point to be recognized.

Syntax:

```
<TYPE>:<DEP|FIXBEFORE>:<DEP RWY>:<FIX>:<ARR|FIXAFTER>:<ARR RWY>:<FROM SECTOR>:<TO SECTOR>:<CLIMBLEVEL>:<DESCENDLEVEL>:<COPNAME>
```

- TYPE
    - *COPX* - The COPX points are considered for the Sector entry and exit points.
    - FIR_COPX - The FIR_COPX points also for the FIR exit points.
- DEP/FIXBEFORE
    - departure airport code
    - any point name on the route before the coordination point
    - * - any airport or point
- DEP RWY
    - departure runway

- * - any runway

- FIX
  - the point name where this coordination point applies
  - * - *any point*
    Note: if '*' is entered, the climb or descent altitudes for this coordination point have no effect on the aircraft profile calculation and are only used for display on the tags and aircraft lists. The point is used only in case the AC will leave FROM SECTOR and will enter to TO SECTOR in the future without additional sectors between.

- ARR/FIXAFTER
  - arrival airport code
  - any point name on the route after the coordination point fix
  - * - any airport or point

- ARR RWY
  - arrival runway
  - * - any runway

- FROM SECTOR and TO SECTOR
  - sector names - if these two sectors are owned by the same controller, this COPX line is bypassed

- CLIMBLEVEL
  - altitude to climb the aircraft to (in feet)
  - * - no climb level

- DESCENDLEVEL
  - altitude to descend the aircraft to (in feet)
  - * - no descent level

- COPNAME - name for the coordination point (usually the point name associated with it)

The COP lines have priorities from top to bottom. So, the topmost line that verifies all rules will be chosen even if lower is a more suitable line which should be chosen. Therefore, place the lines with most rules at the top and the lines with least rules at the bottom.

Examples:

```
FIR_COPX:*:*:BUDOP:LHBP:*:BPM:BUD:*:28000:BUDOP
FIR_COPX:*:*:NARKA:*:*:BPT:BUD:*:*:NARKA
FIR_COPX:*:*:NARKA:*:*:BUD:BPT:*:*:NARKA
```

```
COPX:*:*:NEPOT:*:*:BPT:NIT:*:*:NEPOT
COPX:*:*:NEPOT:*:*:NIT:BPT:*:*:NEPOT
```

The MSAW Subsection

This subsection defines the areas and their minimum safe altitudes for the MSAW (Minimum Safe Altitude Warning) system. When an aircraft is within one of the areas and below its minimum safe altitude, a yellow text MSAW is displayed in its tag above the callsign.

Each area must start with the following line:

```
MSAW:<Name>:<Altitude>
```

- *Name* - The name for the MSAW area.
- *Altitude* - Minimum safe altitude in feet within the area.

Then the actual area must be declared using coordinates. Each coordinate point must be declared with the COORD prefix then followed by the *LATITUDE* and then the *LONGITUDE*.

```
COORD:N047.59.23.032:E023.30.49.151
```

The COORD definition is identical to the one for SECTORLINEs.

The Radar Section

This section defines the radar coverage and radar outage areas used in Professional Mode by defining radar stations and radar holes.

The Radar section begins with the line:

```
[RADAR]
```

Then define each radar station. There are two ways to define a station. One has been available before but the other is new with EuroScope version 3.2

The New Radar Definition

```
RADAR2:<Name>:<Latitude>:<Longitude>:<P range>:<P altitude>:<P cone slope>:<S range>:<S altitude>:<S cone slope>:<C range>:<C altitude>:<C cone slope>
```

- *Name* - A user readable name of the station.
- *Latitude* and *Longitude*: The position of the radar station.
- *P range* - The primary radar range.
- *P altitude* - The altitude of the radar antenna in feet. It is used in a simplified formula for how to handle the curvature of the Earth(http://www.tscm.com/rdr-hori.pdf).
- *P cone slope* - It defines the slope of the cone of silence above the antenna in feet per nautical mile(http://www.radartutorial.eu/18.explanations/ex47.en.html). 3100 is a good value to here.

- *S range* - The S-mode transponder range. Our experience shows that S-mode transponder answers can be seen some 10-20% further away than primary radar positions.
- *S altitude* - The same as P altitude, but for the S-mode transponders.
- *S cone slope* - The same as P cone slope, but for the S-mode transponders.
- *C range* - The C-mode transponder range. Once again from real word experience we found that C-mode transponder answers can be seen nearly 200% the distance of the primary positions.
- *C altitude* - The same as P altitude, but for the C-mode transponders.
- *C cone slope* - The same as P cone slope, but for the S-mode transponders.

Some examples from Hungary:

```
RADAR:Püspökladány:N047.21.22.79:E021.02.39.55:140:2000:3100:180:2000:3100:
250:1000:3100
RADAR:Kőris-
hegy:N047.17.40.08:E017.45.13.65:140:2000:3100:180:2000:3100:250:1000:3100
RADAR:Ferihegy
TAR:N047.25.36.182:E019.17.52.700:100:450:3100:120:450:3100:150:450:3100
HOLE:<P top>:<S top>:<C top>
```

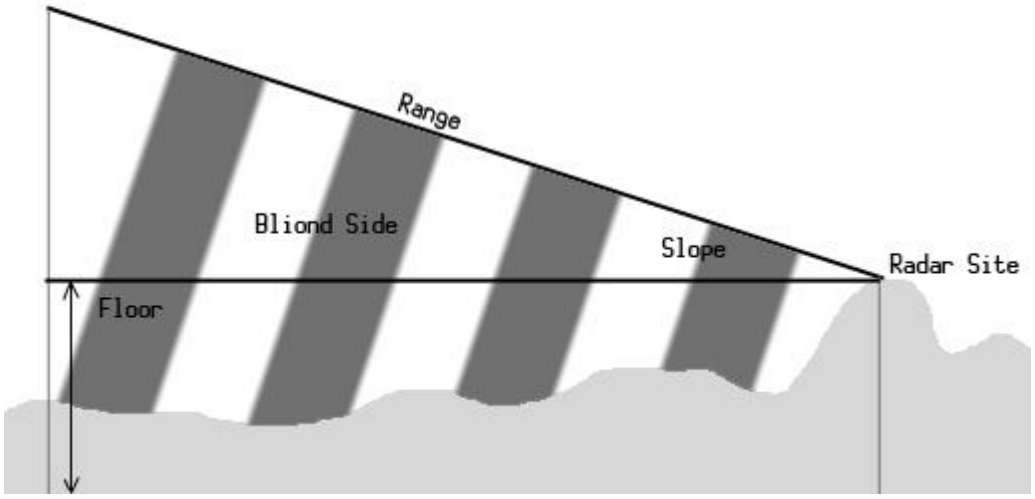
- *P top* - The top of the radar hole for primary radar positions.
- *S top* - The top for the S-mode transponders.
- *C top* - The top for the C-mode transponders.

```
COORD:<latitude>:<longitude>
COORD:<latitude>:<longitude>
```

The COORD definition is identical to the one for SECTORLINEs.

The Old Radar Definition

This type of definition is treated as obsolete, but still available in v3.2.



RADAR:<Name>:<Latitude>:<Longitude>:<P range>:<P floor>:<P slope>:<S range>:<S floor>:<S slope>:<C range>:<C floor>:<C slope>

- *Name* - A user readable name of the station.
- *Latitude* and *longitude* - The position of the radar station.
- *P range* - The primary radar range.
- *P floor* - The minimal altitude of the radar positions. No plane below that will be seen as primary target. In this version the curvature of the earth is not used in the calculation, just the slope value. Please use the new version of the RADAR for better simulation.
- *P slope* - This a linear slope that levels the visibility floor up by the distance. The value itself is the feet to be climbed in one NM. I used value 60 that levels the visibility floor from 2000ft to 11000 at 150 NM away.
- *S range* - The S-mode transponder range. Our experience shows that S-mode transponder answers can be seen some 10-20% further away than primary radar positions.
- *S floor* - The same as P floor, but for the S-mode transponders.
- *S slope* - The same as P slope, but for the S-mode transponders.
- *C range* - The C-mode transponder range. Once again from real word experience, we found that C-mode transponder answers can be seen nearly 200% the distance of the primary positions.
- *C floor* - The same as P floor, but for the C-mode transponders.

- *C slope* - The same as P slope, but for the C-mode transponders.

Some examples from Hungary:

```
RADAR:Püspökladány:N047.21.22.79:E021.02.39.55:140:2000:60:180:2000:60:250:
1000:60
RADAR:Kőris-
hegy:N047.17.40.08:E017.45.13.65:140:2000:60:180:2000:60:250:1000:60
RADAR:Ferihegy
TAR:N047.25.36.182:E019.17.52.700:100:1000:60:120:0:0:150:0:0
```

The ground taxi network

To make the ground plane movements more precise and easier for the pseudo pilots, from v3.2 the ESE file has a completely new section. It should start with the

```
[GROUND]
```

section name.

Then define the complete TAXI network:

Runway exits

```
EXIT:<RWY name>:<exit name>:<direction>:<maximum speed>
COORD:<latitude>:<longitude>
...
COORD:<latitude>:<longitude>
```

The EXIT lines define RWY exits. When a simulated plane lands it looks for the exits along the RWY. It selects the first that is far enough to slow down, and the direction is the one selected by the pseudo pilot. The plane decelerates to the given speed and follows the point of the exit route. EuroScope looks for the exit in the order they are defined in the file and selects the first one it can use. Therefore, the order of the exit definitions is important. They should follow the order from the runway end.

- *RWY name* - The name of the RWY in the simulation.
- *EXIT name* - The name of the exit.
- *Direction* - It can be LEFT or RIGHT.
- *Maximum speed* - It defines the maximum speed of the AC during exiting the RWY.
  Note: The RWY exits should be defined with as many points as necessary for smooth plane movements. ES simply calculates the speed, the distance, then the actual heading and moves the plane to there. Using huge turns makes the planes turn erratically, that destroys the tower view.

```
EXIT:31L:D:LEFT:20 COORD:N047.26.56.203:E019.13.14.197
COORD:N047.26.56.724:E019.13.12.426 COORD:N047.26.56.531:E019.13.10.935
COORD:N047.26.55.628:E019.13.08.998 COORD:N047.26.54.933:E019.13.08.118
COORD:N047.26.54.141:E019.13.07.751
```

Taxiways

To define the taxiways on the ground, use the following lines:

```
TAXI:<TWY name>:<maximum speed>[:<usage flag>][:<gate name>]
COORD:<latitude>:<longitude>
...
COORD:<latitude>:<longitude>
```

- *TWY name* - The name of the taxiway. Use the following naming convention to enable the direct taxi instructions:
    - Use real name for full length taxiways: S, A2.
    - Use a / to define part of the taxiway: S/G42.
    - Use a - to define a taxiway connector: P1-P2.
- *Maximum speed* - It defines the maximum speed of the AC during taxiing on the TWY.
- *Usage flag* - This flag allows you to define sometimes common, sometimes separated taxi networks for different ground vehicles. A vehicle can use all the taxiways if the *taxiway usage* value of the vehicle with bitwise AND this *usage flag* is not 0. Typically define all real taxiways with *usage flag* of 1. Then all ground car taxiways with 2. If there is a way that can be used both, then use value 3 to allow it.
- *Gate name* - If the far end (last coordinate) is a gate or a stand, then mark it with the name. Be sure that the name starts with a letter (like G or S), to make it different from the *usage flag* that is a number. This end be used for other *end points* such as holding points, lineup or backtrack positions to have Direct Taxi capability to those positions: [[Running a simulator session / Ground Simulator Ribbon / Ground Simulator Ribbon]].

Notes: Taxiway should create a complete network. They MUST meet each other at their endpoints (the direction does not matter). If taxiways have joins, intersections, you should define the taxiways from the shortest pieces.

Same note as for the EXITs. The TWYs should be defined with as many points as necessary for the smooth plane movements.

Scenario File

The File

The scenario file is a pure TEXT file. You can edit it with any text editor, or the built in *Scenario editor*, or use the built-in editor. The file is processed line by line. There are no sections in this file, you can mix all kinds of definition lines with the others. There are some exceptions to that. We will explicitly define what line should precede another one.

ILS/Runway Definitions

You can define four active runways for one session. It can be defined as an ILS:

```
ILS<runway name>:<threshold latitude>:<threshold longitude>:<runway heading>
ILS<runway name>:<threshold latitude>:<threshold longitude>:<far end latitude>:<far end longitude>
```

The name of the runway will be shown in the four buttons.

Two different examples of the runway definition:

```
ILS31R:N047.25.24.615:E019.17.35.260:310
ILS31R:47.4230787:19.2947038:47.4460265:19.2577522
```

Since 3.2 the heading is a floating-point number.

Holding Definitions

You can define as many holding patterns as you need. The definition line is the following:

```
HOLDING:<fix name>:<inbound course>:<direction>
```

Where *fix name* can be anything (VOR, NDB, FIX) from the sectorfile. The *direction* can be *1* to indicate a right turn and *-1* for a left turn. Here are some examples:

```
HOLDING:AGMAS:310:1
HOLDING:MAMOS:130:-1
HOLDING:VEBOS:95:-1
HOLDING:TPS:160:-1
```

Airport Altitude

It is a single line definition:

```
AIRPORT_ALT:<altitude>
```

An example:

```
AIRPORT_ALT:494.8
```

With the introduction of tower view via Preair3d more precision was needed for this value. Since 3.2 the altitude is a floating-point number.

Controllers Definitions

There can be an unlimited number of simulated controllers in the simulation session. They also can be configured in the scenario file:

```
CONTROLLER:<callsign>:<frequency>
```

An example:

```
CONTROLLER:LHCC_CTR:133.2
CONTROLLER:LHBP_TWR:118.1
```

Predefined routes

The *predefined routes* are a new feature in v3.2. Using it you can define some often-used patterns that planes may follow in a session. Then you can initiate the plane to follow this route by selecting it from the list. The route is a list of point names with optional altitude values after each of them. The plane will follow the point one by one and try to reach the altitude/level defined for the point. The format is the following:

ROUTE:<route name>:<point[/altitude]>[<point[/altitude]> ...]

Typical usage of the predefined routes is:

- Missed approach procedures
- Traffic patterns
- Visual approaches

```
ROUTE:Missed APP 31R:BP042/900 TPS/3000
ROUTE:Visual 31R:PUSTA HM/1000 R
```

METAR lines

When using the Prepar3d tower view in a simulation session, it is possible to define the meteorological conditions at the airport. Just define a standard well formatted METARs. When you select the METAR button the defined lines will be displayed, but you will be still free to edit the METAR itself before sending it. The station of the METAR does not matter as the definition is sent as global METAR data to FSX or P3D.

```
METAR:<well formatted METAR>
```

Some examples:

```
METAR:LHBP 292000Z 21004KT 1500 +SN BKN015 02/02 Q1016 NOSIG
METAR:LHBP 292000Z 21004KT 6000 +RA BKN015 02/02 Q1016 NOSIG
METAR:LHBP 292000Z 21004KT CAVOK 02/02 Q1016 NOSIG
```

Aircraft Positions

You can define as many aircraft as you need for the session. Be aware that simulating an aircraft probably needs more concentration than controlling them. To define an aircraft, you should define the starting position and altitude:

@<transponder flag>:<callsign>:<squawk code>:1:<latitude>:<longitude>:<altitude>:0:<heading>:0

Where

- *transponder flag* can be N for normal or S for stand by transponder mode
- *latitude* and *longitude* can be the format found in the sectorfile or simple double values
- do not forget static 1 at the 4th position and the two static 0 values at the end (they are there for some technical reasons only)
- the *heading* value is a bit complicated, use the requested heading in degrees and use the following formula to decide the value to be put here: ((int) (Heading * 2.88 + 0.5)) << 2) - or if it is easier: (Heading * 2.88 + 0.5) * 4.
- when *transponder* is set to 0000 the simulator will display it as a vehicle.

Examples:

@N:MAH661:2622:1:N048.10.38.498:E018.10.36.537:15000:0:0:0
@N:MAH1501:2632:1:46.793880004674:17.795807317989:17000:312:4192376:450
@N:AZA525:2606:1:N047.26.41.961:E019.15.29.777:550:0:0:0

Flight Plans

Every aircraft position line should follow a flight plan line. Do not change the order as EuroScope can save the flight plan only for aircraft with position. The flight plan line looks like this:

$FP<callsign>:*A:<flight plan type>:<aircraft type>:<true air speed>:<origin airport>:<departure time EST>:<departure time ACT>:<final cruising altitude>:<destination airport>:<HRS en route>:<MINS en route>:<HRS fuel>:<MINS fuel>:<alternate airport>:<remarks>:<route>

Where *flight plan type* can be I or V. Do not forget static *A from the second place. I think that the rest stands for the content.

Examples:

$FPMAH661:*A:I:B736:370:EHAM:1720:1720:390:LHBP:1:40:2:23:LOWW:/V/:ARNEM UL620 BIRKA UZ21 OMELO UL620 KOPIT UM748 RUTOL

$FPMAH1501:*A:I:B738:430:GCTS:1730:1730:340:LHBP:1:20:2:0:LOWW:/V/:KORAL UG5 ESS UN871 VJF UN851 MHN UM603 ALG UL5 VALMA UL865 ANC UM986 KOPRY UY53 VEBOS

```
$FPAZA525:*A:I:MD87:430:LHBP:1730:1730:360:LIMC:1:20:2:0:LIRF:/V/:BAKOT
UY52 SUNIS Q114 GRZ UP976 DETSA UM984 LUSIL
```

Route Description

From v3.2 the route description is optional. If not specified, then the route is extracted from the flight plan and the current position. But using this line you may override it. It must come later than the position line. The route is a point-by-point list of the route the plane should follow. It should not contain any information, just the list of the waypoints and optionally altitude values with slash separator.

There are still two ways to define the route:

- *With callsign* - In this case you are still able to use some optional parameters. They are obsolete now as all of them can be entered to separate lines.
- *Without callsign* - In this case only the route with altitude values can be defined.

```
$ROUTE:<callsign>:<point by point route with altitude
values>[:<start>][:<pilot minimum delay>][:<pilot maximum delay>][:<descend
to waypoint>:<descend to altitude>]

$ROUTE:<point by point route>
```

The *start* value here is a wait time in minutes after that the aircraft will be added to the simulation. This is an optional parameter. If you omit a 0 will be used that means join immediately. The delay is calculated on simulation time only. When the whole simulation is paused then the delay time is not counted further down.

The *pilot minimum* and *maximum delay* determine how fast the pilot will respond to an order. For every order you make in the simulation the aircraft will respond and start following it by random seconds of time between the minimum and the maximum value. The minimum is between 1 and 30, the maximum is between 2 and 31 seconds. If you omit these parameters, then a minimum 12 and maximum 17 seconds will be used that were measured by real-life controllers as average response time.

The *descend to waypoint* and the *descend to altitude* parameters are used to set up an initial descent for the arrival of planes. That makes the trainer's life easier as the initial values should not be set for every plane. The planes with specified descend to values will reach the altitude at the given point.

From v3.2 the route may include optional altitude values. They work in the very same way as in the *Predefined Routes* section. Be careful with it as the planes will follow the altitude values defined here even without the pseudo pilot instruction.

Examples:

```
$ROUTE:MAH661:RUTOL/19000 BP523 MAMOS BP522 BP521 BP520 BP519 BP518 BP512
BP416 BP415 BP414 BP413 BP049

$ROUTE:MAH663:RUTOL BP523 MAMOS BP522 BP521 BP520 BP519 BP518 BP512 BP416
BP415 BP414 BP413 BP049:10:5:10:RUTOL:19000
```

```
$ROUTE:MAH1501:VEBOS/17000 BP421 BP420 BP419 BP418 BP417 BP416 BP415 BP414
BP413 BP049:0:15:20

$ROUTE:AZA525:BP713 MNR BP612 BP610 BP614 BAKOT SIRDU SUNIS:10:5:10
```

Note that both MAH661 and MAH663 will descend to FL190 by RUTOL.

You can also split the ROUTE line into several lines. The callsign can be omitted and all the parameters from the end of the line can be put in subsequent lines.

```
$ROUTE:ABONY AGMAS BP539 TPS BP538 BP537 BP536
START:2
DELAY:2:5
REQALT:ABONY:12000
```

You can enter two special words into the route section:

- FP - This is the same as it was empty. In this case EuroScope builds route data based on the flight plan route without any altitude constraints.
- FPA - It is the same except it adds all the altitude restriction data from COPX lines to the route string.

Additional data

Since v3.2 there are new parameters, you can specify for a plane:

- IASVARIATION - How much the plane should deviate from the normal IAS. It can be between 0 and 20.
- INITIALPSEUDOPILOT - This line defines who will be the pseudo pilot of the plane. If the call sign is logging in, the pseudo pilot state is transferred to that controller immediately.
- SIMDATA - It determinates some additional data for tower view and ground simulations.

Examples:

```
INITIALPSEUDOPILOT:<callsign>
INITIALPSEUDOPILOT:ACCHU06
SIMDATA:<callsign>:<plane type>:<livery>:<maximum taxi speed>:<taxiway
usage>:<object extent>:<ground alt>
```

Where:

- *plane type* - can be
    - * to use the one from the flight plan,
    - another type to override it. This type of aircraft should be available in the P3D SimObjects. Here you can also set the *title field* from aircraft.cfg from the simulator to display other vehicles such as Follow Me. You also must set the callsign with [VHCL] suffix.

- *livery* - can be:
    - * to use the first three letters from the callsign,
    - another type to override it. This livery should be available in the P3D SimObjects.
- *maximum taxi speed* - When you simulate other types of ground vehicles you may like to define the maximal taxi speed of them. The value can be between 5 and 200.
- *taxiway usage* - It determines which taxiways can be used by the vehicle. It is very useful when you would like to simulate other ground vehicles than planes. See the taxiway definitions in the *ESE Files Description*. If the vehicle taxiway usage value with bitwise AND to taxiway usage value is 0 the taxiway is not used by this vehicle.
- *object extent* - The size of the vehicle. This value is used to detect collision on the ground. Set to 0 to disable this feature.
- *ground alt* – Here you can define how high the plane should be placed above ground level to look good in P3D. Leave 0 to use ground clamping.

```
SIMDATA:MAH782:B737:MAH:25:3:0.010:0.0
```