Enroute Clearance

The **enroute clearance**, often also called IFR clearance, is usually the first clearance that an air traffic controller gives to any departing IFR pilot. As the name suggests, it contains important instructions for the flight route the pilot is cleared for.

Fortunately, the structure of an enroute clearance is always the same. It consists of the following elements:

- Clearance Limit
- Departure route
- Clearance of the route
- Initial Climb
- Transponder code

These elements will be explained in more detail below, followed by phraseological examples at the end.

Clearance Limit

The so-called clearance limit indicates the waypoint / airport up to which the enroute clearance is valid.

At this point, we briefly need to talk about different flight plans. While IFR and VFR are commonly known, the two more exotic flight plan types Y and Z are mostly unknown.

Flugpläne

I	IFR flight plan	• The entire flight is conducted according to instrument flight rules. • **Example**: EDDM to EDDN - Route: AKINI • Delivery must issue an enroute clearance.

V	VFR flight plan	• The entire flight is conducted according to visual flight rules. • Delivery is only responsible for the VFR startup clearance if necessary (regulated in the SOP of the respective airport).
Z	ZULU flight plan *VFR -> IFR*	• Take-off with visual flight rules, IFR will be flown from a certain point enroute. • **Example**: EDDM to EDDN - Route: WLD UPALA/N0120F070 • In this example, the pilot departs VFR from Munich and wants to fly IFR from UPALA. • As the flight departs VFR from Munich, Delivery treats this flight as a normal VFR departure. The fact that this flight wants to fly IFR later is not relevant.
Y	YANKEE flight plan *IFR -> VFR*	• The flight takes off according to instrument flight rules and flies VFR from a certain point enroute. • **Example**: EDDM to EDDN - route: INPUD Y102 UPALA VFR • In this example, the pilot flies IFR from Munich via INPUD and then to UPALA on airway Y102. From UPALA, the pilot wants to fly VFR. • As this flight is an IFR departure from Munich, Delivery must issue an enroute clearance.

Briefly summarized: For VFR and Z, Delivery must issue a VFR startup clearance (if necessary depending on the airport). For IFR and Y, Delivery must issue an IFR enroute clearance.

But why is all this in the Clearance Limit section?

With **IFR flight plans**, the pilot flies completely IFR up to the destination airport, which is why the IFR route clearance must also extend to the destination airport. The clearance limit for IFR flight plans is therefore always the destination airport.

With **Y flight plans**, however, the pilot only flies IFR up to a waypoint, VOR, NDB, etc. IFR. The clearance limit for Y flight plans is therefore not the destination airport, but the last waypoint before the pilot switches to VFR according to the flight plan

Phraseology

The clearance limit is expressed by the phraseology **CLEARED TO** (clearance limit). In our example for IFR flight plans, we would therefore say

> “CLEARED TO NÜRNBERG

In our example for Y flight plans (route: INPUD Y102 UPALA VFR) we would say:

> “CLEARED TO UPALA

Departure Route

In the second part of the IFR route clearance, the pilot is told which departure route to take off on. There are several possibilities for that:

Standard Instrument Departure (SID)

The SID is the most common and probably best-known departure procedure for instrument flights. A valid flight plan always contains the end point of a SID as the first waypoint like for example AKANU in Nuremberg and MERSI in Munich. From this point onwards, the pilot has various airways and waypoints listed in the flight plan that will ultimately take them to the destination aerodrome. If the airways are regarded as highways, the SIDs would be the highway access points, i.e. routes from a connection point (airfield) to the highways (airways). The published SIDs depend on the airport’s operating direction and contain information on flight direction, altitude and speeds. An easy way to access the corresponding charts is offered by the provider Chartfox, where you can easily log in with your VATSIM account. Follow this link and take a look at the departure routes of runway 26R in Munich for the MIQ, GIVMI and RIDAR waypoints.

Omnidirectional Instrument Departure (OID)

The OID is becoming increasingly common in Germany. It is regularly used at military airfields (where it is sometimes called "Operational Instrument Departure"), but more and more OIDs are also being implemented at civil airports.

Unlike SIDs (Standard Instrument Departures), OIDs do not end at specific waypoints but consist of one or more headings without a defined endpoint - often simply the runway heading. Therefore, the aircraft on an OID must receive instructions or radar vectors to the first enroute waypoint.

The main reason for the increase in OIDs is an EU regulation requiring all member states to convert their primary flight procedures to PBN (Performance-Based Navigation) procedures, which essentially means RNAV and RNP procedures. As a result, conventional SIDs based on VORs and NDBs will become increasingly rare. However, some aircraft are not RNAV-capable and therefore require an alternative—such as an OID. For this reason, OIDs often include the remark: "For Non-RNAV-1 equipped aircraft only."

An OID usually has to be coordinated between the delivery controller and the radar controller. Details can be found in the SOPs of the respective airport.

OIDs generally follow a specific naming convention:

- At civilian airports, they include the airport’s four-letter ICAO code, followed by a sequential validity indicator (1-9) and a letter for identification - often E/W/N/S representing East, West, North, or South (e.g., Leipzig: "EDDP1E").
- At military airfields, they typically consist of the last two letters of the ICAO code, a digit from 1-9, followed by the runway designation (e.g., Nörvenich (ETNN): "NN124").

Unlike a Vectored Departure, an OID is a published and clearly defined departure procedure that has been assessed for obstacle clearance, is published in charts, and is included in FMS databases.

OIDs also differ slightly from traditional SIDs in terms of phraseology - see the Phraseology section for details.

Vectored Departure

Sometimes it is not possible to assign a SID. There can be various reasons for this: Some airfields require certain aircraft equipment (e.g. GPS) for certain departure routes, sometimes the pilot has problems with their FMS and therefore cannot fly the SID. A third reason that occurs from time to time is pilots who want to fly so-called IFR patterns. These are often flown during landing training. After departure from the approach, the pilot is guided to the ILS via vectors and then handed back to the tower. After the touch and go, the pilot is handed back to APP and the game starts all over again. With such procedures, it makes no sense to release the pilot to a SID, as this is designed to bring the pilot into the airway system. With IFR patterns, however, the pilot does not want to go to an airway, but to remain at our airfield.

A vectored departure must ALWAYS be coordinated with **Approach** or the **Center** station above. If you control Delivery, the Tower also needs to be informed.

Example of coordination:

> EDDN_TWR: Approach, Nürnberg Tower
> EDDN_APP: Go ahead
> EDDN_TWR: Request vectored departure DLH414 for IFR Pattern
> EDDN_APP: Approved, on RWY Heading climb FL070

Phraseology

- **SID:** The SID is cleared by simply stating the SID's name and the addition 'departure'. In the example of the GIVMI departure in Munich from runway 26R:

  > *VIA* GIVMI1N DEPARTURE

  The word **via** is optional. It is not necessary to specify the runway in this case, as the SID GIVMI1N only starts from runway 26R. If the pilot knows their SID, they therefore also know their runway. However, there are also SIDs that can be flown from several runways (e.g. in Frankfurt for runway 25C/L). In this case, the runway must be defined in the enroute clearance unless the departure runway is obvious due to the ATIS

- **OID:** The OID is also cleared by stating its name followed by the addition of "Departure." However, between "Departure" and the "flight planned route," additional information is provided on how the pilot should transition to their planned route. Depending on coordination between the delivery and radar controller, this could look something like this:

  > *VIA* EDDR1W DEPARTURE, EXPECT RADAR VECTORS TO TOMPI, THEREAFTER FLIGHT PLANNED ROUTE
  > oder
  > *VIA* EDDH1G DEPARTURE, LEFT TURN TO IDEKO, THEREAFTER FLIGHT PLANNED ROUTE

- **Vectored Departure:** After Approach has told you how they want the departure, you must pass on the relevant information to the pilot:

  > *VIA* VECTORED DEPARTURE RWY 28, CLIMB ON RWY HEADING FL70

The **tower controller** must then also be informed of the vectored departure so that they know where the aircraft is going to fly initially.

Clearance of the route

After the first two items of the clearance, we have told the pilot up to which point their route clearance applies and how they should fly to the first waypoint in the flight plan. What is still

missing, however, is how they should fly from the first waypoint or the SID endpoint to the clearance limit.

In many cases, this is supposed to happen via the route filed in the flight plan. We express this with the following speech group:

> FLIGHT PLANNED ROUTE.

Initial Climb

Even if every SID has a permanently assigned initial climb in the charts or in the AIP, since 2020 this has had to be explicitly mentioned in every IFR enroute clearance. The initial climb is the altitude up to which the pilot may climb independently after take-off without further clearance.

There are, however, two different versions of this speech group:

There are SIDs that have neither altitude nor speed limits. Here we use:

> **CLIMB** TO *ALTITUDE* 5000 FT

There are SIDs that have either altitude or speed limits or both. Here we use:

> **CLIMB VIA SID** TO *ALTITUDE* 5000 FT

In the case of a vectored departure, this speech group is omitted, as the altitude instruction is already given when the flight route is communicated (e.g. ON RWY HEADING CLIMB TO FL70).

The word *Altitude* or *Flight Level* is optional. However, it is recommended, especially in the case of altitude, to avoid misunderstandings with the "*to*" ("Climb ***to four*** thousand feet" vs. "Climb ***two four*** thousand feet").

Transponder code

Last, but not least, the transponder code. The purpose of this is to uniquely identify an aircraft on radar.

The transponder code is simply added after the word SQUAWK, e.g.

> SQUAWK 2001

Each digit is pronounced individually, unless the transponder code consists of full thousands. In this case, the code must be pronounced as follows: SQUAWK 1000 = *SQUAWK ONE TOUSAND*.

Phraseology examples

If we bring these items together we can create our first IFR enroute clearance.

As an example, let’s assume a flight from Nuremberg to Munich with the route AKANU from runway 28. The transponder code is 1000. We assume that there is little traffic and therefore also issue the startup clearance. The callsign is DLH414.

The complete transmission is:

> DLH414, **STARTUP APPROVED**, **CLEARED TO** MÜNCHEN, ***VIA*** AKANU8K **DEPARTURE**, **FLIGHT PLANNED ROUTE**, **CLIMB TO** FL70, **SQUAWK** 1000, (additional information or instructions)

The words printed in bold are always the same, the words in normal print must be adapted to the respective flight.

The phraseology for a Vectored Departure is:

> DLH414, **STARTUP APPROVED**, **CLEARED TO** MÜNCHEN, ***VIA* VECTORED DEPARTURE RUNWAY** 28, CLIMB ON RWY HEADING TO FL70, **FLIGHT PLANNED ROUTE**, **SQUAWK** 1000, when airborne contact München Radar 129.525.

Perhaps you are now wondering why the departure frequency is mentioned in the Vectored Departure. Well, all SIDs in Nuremberg state on the charts that the pilot should call 129.525 after take-off, so if a pilot is cleared for the AKANU8K, for example, they are also instructed to call 129.525 after take-off. For a vectored departure, however, there is no chart on which the pilot can find this information. We must therefore give them this instruction separately with the enroute clearance.

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