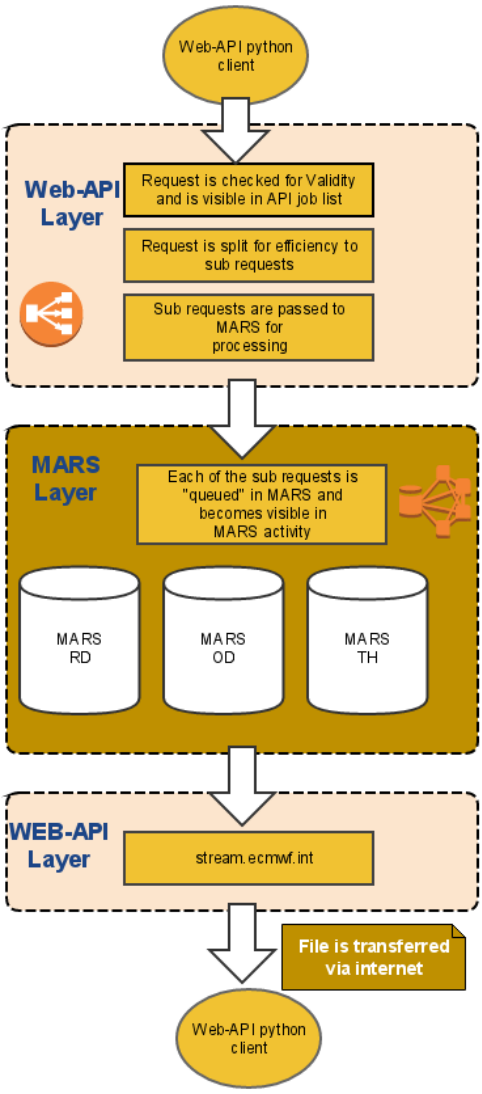
The Web API flow chart - Web API FAQ

Request submitted by the user and arrives in the Web API queue

- The request arrives to **the service back-end** and a **new record** is added in the service database. (**MongoDB).**
- At this phase, the request gets the status **"queued"** and it becomes **visible** on API jobs list and on Web API activity
- **Please note:**
    - The request is **not yet visible** on the MARS activity
    - Each **request** is stored in MongoDB. The corresponding record includes all the request's details (status, timers, host, user, etc).
    - The request record is updated **periodically** to reflect its **current** status.
- The **"queue time"** depends on several factors, ie priorities, limitations, current load, etc
- Please note that to improve the service some **QoS** limitations and priorities are applied, like:
    - The total maximum number of active requests
    - The maximum number of active requests per user
    - The maximum number of queued requests per user
    - etc
- Once an API slot is available and if all the QoS rules are met, the request will become **"active"** on the Web API level.



The request becomes active on Web API level

1. **Split: On the Web-AP, I level,** the request is **split** into a number of **smaller** requests to achieve better **performance from the MARS point of view.**
    a. For instance, if a request is requesting one year of "ERA-interim" daily data it is split per **month.** ie it is split into 12 requests.
2. **Validate:** Each of these **sub-requests** are validated and passed to a **MARS client** running on one of the available hosts. The hosts' names are visible in both Web API activity and MARS activity
3. **Create the file:** Once all the sub-requests have **completed suc cessfully** the corresponding sub-files are merged into a final one and the request status becomes **complete**
    a. If something goes wrong during the procedure above the request status will get the value "aborted"

The request becomes active on MARS level

- At this phase, the request becomes **visible** on the MARS activity (with status active or queued in MARS)
- Note that a request can be at status **active** on the level of API but **queued** on MARS.
- We always try to **tune** the Web API and MARS systems in order to improve the performance but it most cases it is not so straightforward.
- On the level of **MARS server,** there are several MARS QoS rules (**ie limitations, restrictions and priorities)** like the ones below.
    - *On marsod-core, the total number of Requests from ECMWF Web API with 1 tape mount [source] is limited to 6*
    - *On marsth-core, the total number of Requests from ECMWF Web API with 1 tape mount [source] is limited to 12*
    - *To avoid long queuing times it is strongly recommended to improve your Retrieval efficiency*

File transfer procedure

- The produced file is then transferred by the Web API client from the ECMWF to the user's local disk.
- Once the file has been transferred successfully the file will be removed from our disks and it won't be any more available.

If the transfer procedure fails

1. The file transfer procedure may fail due to several reasons (eg network connectivity problems between our end and the users)
2. If the transfer procedure fails difficult to trace back what has happened ⚠️
3. The API client checks the volume of the transferred file and if the size is not the expected one the transfer procedure will start again. The MAX number of retries is 10
4. If the client is not successful, the user should be able to manually download it from the Job List.

Related articles

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- My first Web API request - Web API FAQ
- How to start - Web API FAQ