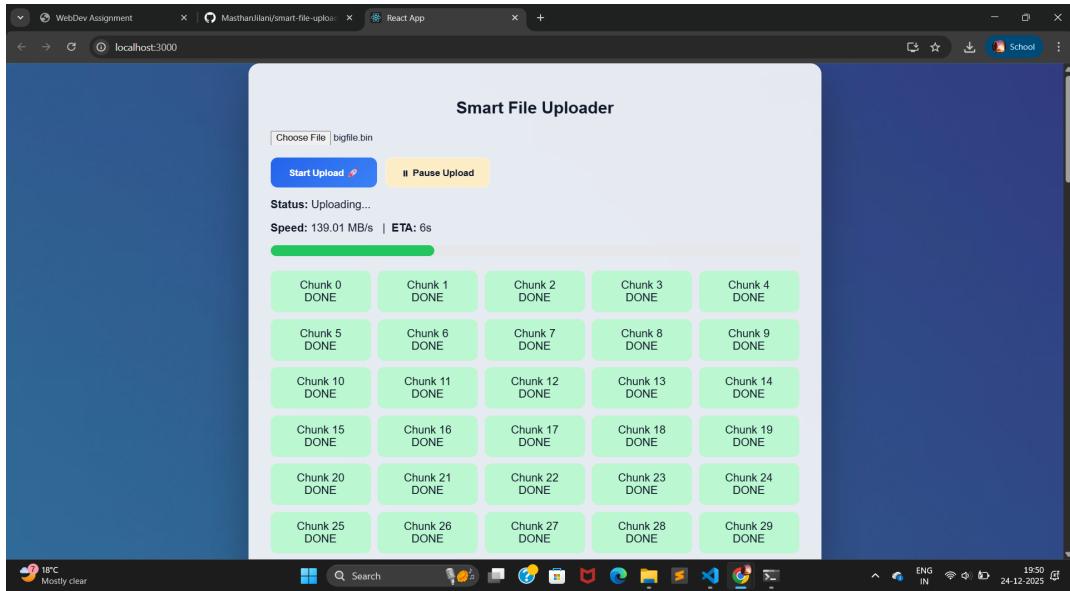


## 1. Upload Started

This screenshot shows the upload of a 1GB file beginning successfully. Chunks are being uploaded concurrently and progress is visible.



## 2. Network Disconnected

Here, a manual network disconnect is simulated using Chrome DevTools (Network → Offline). The upload encounters network errors.

The screenshot shows a web application interface for a file upload. On the left, there is a grid of 110 chunks, each labeled with its index and status. The first 89 chunks are green ('DONE'), while the remaining 21 are pink ('FAILED'). The last two rows of the grid show the following states: Row 9: Chunk 90 FAILED, Chunk 91 FAILED, Chunk 92 FAILED, Chunk 93 FAILED, Chunk 94 UPLOADING; Row 10: Chunk 95 UPLOADING, Chunk 96 UPLOADING, Chunk 97 PENDING, Chunk 98 PENDING, Chunk 99 PENDING. To the right of the grid is the Chrome DevTools Network tab, which is set to 'Offline' mode. The table in the Network tab shows 673 requests, with most being 'upload-chunk' type and failing with '(failed) net... xhr'. The last few requests in the list show errors related to 'ERR\_INTERNET\_DISCONNECTED'. The DevTools also includes a Console tab showing several error messages from the browser's JavaScript environment.

Row	Column 1	Column 2	Column 3	Column 4	Column 5
1	DONE	DONE	DONE	DONE	DONE
2	Chunk 65 DONE	Chunk 66 DONE	Chunk 67 DONE	Chunk 68 DONE	Chunk 69 DONE
3	Chunk 70 DONE	Chunk 71 DONE	Chunk 72 DONE	Chunk 73 DONE	Chunk 74 DONE
4	Chunk 75 DONE	Chunk 76 DONE	Chunk 77 DONE	Chunk 78 DONE	Chunk 79 DONE
5	Chunk 80 DONE	Chunk 81 DONE	Chunk 82 FAILED	Chunk 83 FAILED	Chunk 84 FAILED
6	Chunk 85 FAILED	Chunk 86 FAILED	Chunk 87 FAILED	Chunk 88 FAILED	Chunk 89 FAILED
7	Chunk 90 FAILED	Chunk 91 FAILED	Chunk 92 FAILED	Chunk 93 FAILED	Chunk 94 UPLOADING
8	Chunk 95 UPLOADING	Chunk 96 UPLOADING	Chunk 97 PENDING	Chunk 98 PENDING	Chunk 99 PENDING
9	Chunk 100 PENDING	Chunk 101 PENDING	Chunk 102 PENDING	Chunk 103 PENDING	Chunk 104 PENDING
10	Chunk 105 PENDING	Chunk 106 PENDING	Chunk 107 PENDING	Chunk 108 PENDING	Chunk 109 PENDING
11	Chunk 110 PENDING	Chunk 111 PENDING	Chunk 112 PENDING	Chunk 113 PENDING	Chunk 114 PENDING

### 3. Upload Paused Due to Network Failure

The upload pauses with several chunks marked as FAILED or PENDING. Already uploaded chunks remain intact, demonstrating fault tolerance.

The screenshot shows a web application interface for file uploads. On the left, there is a grid of 110 small squares representing file chunks. The colors of the squares indicate their status: green for DONE, red for FAILED, and yellow for UPLOADING. Some squares also have text labels like 'Chunk 89 UPDATING' or 'Chunk 94 UPLOADING'. On the right side of the screen, the developer tools are open, specifically the Network tab. This tab lists all the requests made by the browser, showing details like the URL, status, type (preflight/xhr), initiator, size, and time taken. Several entries in the list show errors related to network connectivity, such as 'net::ERR\_INTERNET\_DISCONNECTED' and 'net::ERR\_INTERNET\_DISCONNECTED'. The browser's status bar at the bottom indicates the date and time (24-12-2025, 19:55) and the weather (18°C, Mostly clear).

Name	Status	Type	Initiator	Size	Time
upload-chunk	(failed) ne...	xhr	App.js:130	0.0 kB	91 ms
upload-chunk	200	preflight	Preflight	0.0 kB	2 ms
upload-chunk	(failed) ne...	xhr	App.js:130	0.0 kB	74 ms
upload-chunk	200	preflight	Preflight	0.0 kB	1 ms
upload-chunk	(failed) ne...	xhr	App.js:130	0.0 kB	39 ms
upload-chunk	200	preflight	Preflight	0.0 kB	2 ms
upload-chunk	(failed) ne...	xhr	App.js:130	0.0 kB	37 ms
upload-chunk	200	preflight	Preflight	0.0 kB	1 ms
upload-chunk	(failed) ne...	xhr	App.js:130	0.0 kB	44 ms
upload-chunk	200	preflight	Preflight	0.0 kB	3 ms
upload-chunk	(failed) ne...	xhr	App.js:130	0.0 kB	41 ms
upload-chunk	200	preflight	Preflight	0.0 kB	2 ms
upload-chunk	(failed) ne...	xhr	App.js:130	0.0 kB	39 ms
upload-chunk	200	preflight	Preflight	0.0 kB	1 ms

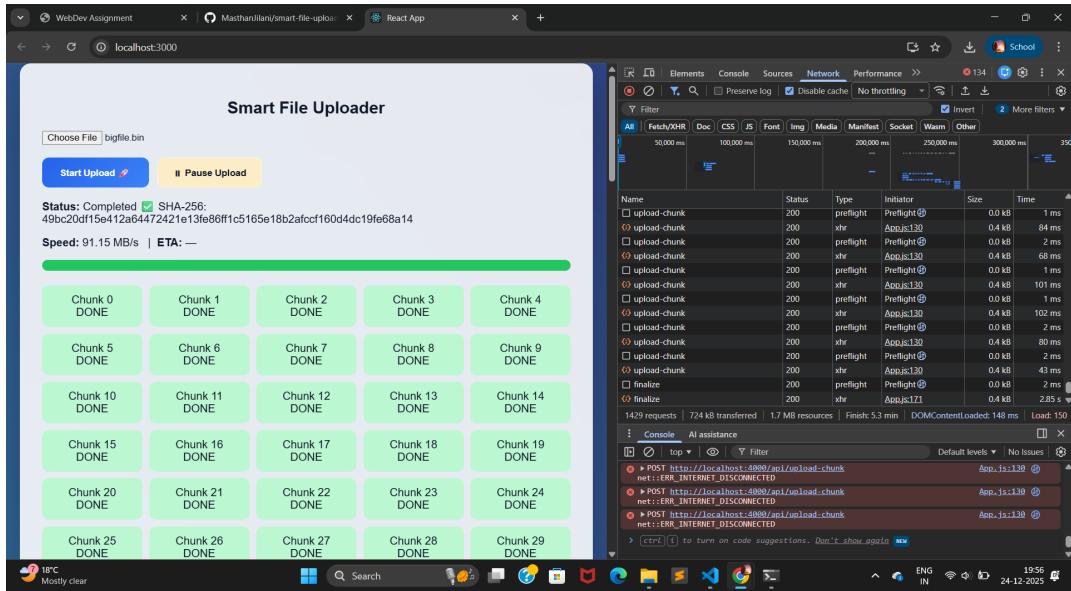
## 4. Network Restored and Upload Resumed

After restoring network connectivity, the upload resumes automatically. Only pending chunks are uploaded, proving resume capability.

The screenshot shows a browser window with a grid of cards representing file upload progress. The first 124 cards are pink and labeled 'FAILED', while the last 135 cards are green and labeled 'DONE'. To the right of the grid is the developer tools Network tab, which displays a list of XMLHttpRequests. The log shows multiple requests for '/api/upload-chunk' with various status codes (200, 400) and initiator details like 'App.js:130'. There are also several 'ERR\_INTERNET\_DISCONNECTED' errors. The browser's status bar at the bottom indicates '18°C Mostly clear' and the date '24-12-2025'.

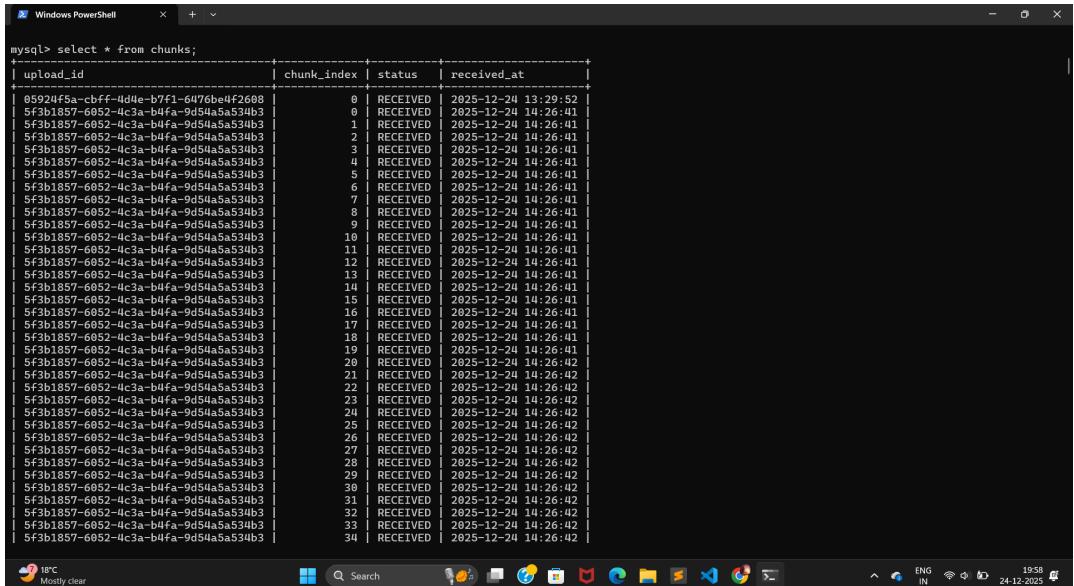
## 5. Upload Completed Successfully

All chunks are uploaded successfully. The finalization step computes the SHA-256 hash to ensure file integrity.



## 6. Database Verification

The database confirms that all chunks are marked RECEIVED, and the upload status is COMPLETED.



```
mysql> select * from chunks;
+-----+-----+-----+-----+
| upload_id | chunk_index | status | received_at |
+-----+-----+-----+-----+
| 85924f5a-cbff-4d4e-b7f1-6476be4f2608 | 0 | RECEIVED | 2025-12-24 13:29:52 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 0 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 1 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 2 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 3 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 4 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 5 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 6 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 7 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 8 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 9 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 10 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 11 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 12 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 13 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 14 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 15 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 16 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 17 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 18 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 19 | RECEIVED | 2025-12-24 14:26:41 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 20 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 21 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 22 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 23 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 24 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 25 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 26 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 27 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 28 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 29 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 30 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 31 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 32 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 33 | RECEIVED | 2025-12-24 14:26:42 |
| 5f3b1857-6052-4c3a-b4fa-9d54a5a534b3 | 34 | RECEIVED | 2025-12-24 14:26:42 |

```