

PIRAEUS BANK



# Provision of Statistical Information on the Availability & Performance of rAPIdLink

October 2022 (2022Q3)

To achieve optimum levels of provided service quality, the following KPIs are being calculated and monitored on a daily basis, regarding the availability and performance of the dedicated API interface and the online channel (winbank) used as benchmark:

1. Average daily uptime of all interfaces
2. Average daily downtime of all interfaces (both planned and unplanned)
3. Daily average response time per PIS request
4. Daily average response time per AIS request
5. Daily average response time per CoF request (to PIIS API)
6. Daily average error rate for ASPSP errors

Table 1 below summarizes the results of above.

	<b>Dedicated Interface</b>	<b>Online Interface (winbank)</b>
<b>Average daily downtime of all interface (see Table 2)s:</b> * <b>Planned, due to End-of-Day and Beginning-of-Day tasks</b> * <b>Unplanned</b>	* < 1 min * < 1 min	* < 1 min * < 1 min
<b>Average daily uptime of all interfaces (24h – average daily downtime)</b>	23h:59min	23h:59min
<b>Daily average error rate for ASPSP errors (see Table 3)</b>	0.07040%	-
<b>Daily average response time per PIS request (see Table 4)</b>	2219 milliseconds (includes latency due to technical calls)	1887 milliseconds
<b>Daily average response time per AIS request (see Table 5)</b>	1539 milliseconds (includes latency due to technical calls)	1196 milliseconds
<b>Daily average response time per CoF request (see Table 6)</b>	0 milliseconds	-

*Table 1: Availability & Performance KPIs*

During the third quarter, there were no requests performed from registered TPPs to our PSD2 PIIS APIs, for confirmation of funds. On the contrary, there were numerous calls to our PSD2 AIS APIs, for account information retrieval, and to our PSD2 PIS APIs for payment initiation.

Based on the definition of “downtime” as the amount of time during which the interface was unavailable (i.e. there were at least five consecutive AIS, PIS or CoF requests receiving errors with code “500” or “503” within a timeframe of 30 seconds), there were certain cases of unplanned downtime. These cases were mostly linked to unplanned downtime in the backend systems, which are common for both the dedicated (rapidlink) and web interface (winbank), although there were also a few cases where a massive request load from a couple of TPPs caused a momentary unavailability. Proper actions were taken to address the issue, by both contacting the TPPs and improving our APIs to sustain such traffic.

On the other hand, during the execution of planned maintenance and end-of-day (EOD) and beginning-of-day (BOD) tasks, there was little evidence of “downtime” on the dedicated interface within the particular period, due to the way the dedicated interface, the online channel and the backend services are implemented. More specifically, even if certain subsystems are “down”, rendering certain endpoints, like cards, unavailable, all other related resources are constantly available.

Table 2 below summarizes the downtime incidents within the particular period, while explaining their origin.

From	To	Duration (Milliseconds)	Duration (Minutes)	Comments
2022-07-01 10:21:07.4990000	2022-07-01 10:21:11.1800000	3681	0.061	rapidlink downtime
2022-07-04 08:01:16.0280000	2022-07-04 08:01:20.3840000	4356	0.073	rapidlink downtime
2022-07-04 09:53:13.9380000	2022-07-04 09:53:16.5620000	2624	0.044	rapidlink downtime
2022-07-04 12:58:06.1380000	2022-07-04 12:58:10.4820000	4344	0.072	rapidlink downtime
2022-07-10 17:21:53.1150000	2022-07-10 17:22:24.3130000	31198	0.520	rapidlink downtime
2022-07-10 17:22:58.5780000	2022-07-10 17:23:23.5530000	24975	0.416	rapidlink downtime
2022-07-10 17:23:55.5780000	2022-07-10 17:24:16.8420000	21264	0.354	rapidlink downtime
2022-07-10 17:25:58.2990000	2022-07-10 17:26:22.8020000	24503	0.408	winbank downtime (unscheduled)
2022-07-10 17:26:56.5880000	2022-07-10 17:27:26.3290000	29741	0.496	winbank downtime (unscheduled)
2022-07-10 17:27:53.2530000	2022-07-10 17:28:27.1970000	33944	0.566	winbank downtime (unscheduled)
2022-07-10 17:28:53.8820000	2022-07-10 17:29:33.5610000	39679	0.661	winbank downtime (unscheduled)
2022-07-26 20:52:23.5610000	2022-07-26 20:52:41.6050000	18044	0.301	rapidlink downtime
2022-08-04 20:52:15.1080000	2022-08-04 20:52:18.6310000	3523	0.059	rapidlink downtime
2022-08-06 20:51:09.5720000	2022-08-06 20:51:10.5420000	970	0.016	rapidlink downtime
2022-08-06 20:52:12.3010000	2022-08-06 20:52:12.7170000	416	0.007	rapidlink downtime
2022-08-16 10:03:59.4460000	2022-08-16 10:04:33.1510000	33705	0.562	rapidlink downtime
2022-08-16 10:04:37.6840000	2022-08-16 10:05:42.6540000	64970	1.083	rapidlink downtime
2022-08-16 10:05:49.1740000	2022-08-16 10:06:49.7860000	60612	1.010	rapidlink downtime
2022-08-16 10:06:59.8750000	2022-08-16 10:07:49.9170000	50042	0.834	rapidlink downtime
2022-08-16 10:07:55.0750000	2022-08-16 10:09:18.1010000	83026	1.384	rapidlink downtime
2022-08-16 10:09:25.0650000	2022-08-16 10:11:03.5680000	98503	1.642	rapidlink downtime
2022-08-16 10:11:15.3420000	2022-08-16 10:22:37.9670000	682625	11.377	rapidlink downtime
2022-08-16 10:22:43.4210000	2022-08-16 10:24:46.5680000	123147	2.052	rapidlink downtime

2022-08-16 10:24:56.4240000	2022-08-16 10:24:58.1010000	1677	0.028	rapidlink downtime
2022-08-16 10:25:15.0190000	2022-08-16 10:25:20.4400000	5421	0.090	rapidlink downtime
2022-08-29 10:34:56.2730000	2022-08-29 10:35:28.3710000	32098	0.535	rapidlink downtime
2022-08-29 10:35:31.3540000	2022-08-29 10:35:46.4700000	15116	0.252	rapidlink downtime
2022-08-29 10:35:55.7000000	2022-08-29 10:35:57.0610000	1361	0.023	rapidlink downtime
2022-08-29 10:36:10.0220000	2022-08-29 10:36:48.4610000	38439	0.641	rapidlink downtime
2022-08-29 10:36:53.9240000	2022-08-29 10:37:21.1210000	27197	0.453	rapidlink downtime
2022-08-29 10:37:23.9830000	2022-08-29 10:37:43.8290000	19846	0.331	rapidlink downtime
2022-09-04 08:02:03.4140000	2022-09-04 08:02:09.3920000	5978	0.100	rapidlink downtime
2022-09-05 20:45:57.5620000	2022-09-05 20:46:01.6340000	4072	0.068	rapidlink downtime
2022-09-16 00:08:53.9890000	2022-09-16 00:08:54.9300000	941	0.016	rapidlink downtime
2022-09-20 20:01:25.2860000	2022-09-20 20:03:14.2000000	108914	1.815	winbank downtime (scheduled)
2022-09-21 20:39:08.8310000	2022-09-21 20:39:10.0390000	1208	0.020	rapidlink downtime
2022-09-26 20:37:43.1550000	2022-09-26 20:38:00.9200000	17765	0.296	rapidlink downtime
2022-09-30 23:05:05.3580000	2022-09-30 23:05:10.8770000	5519	0.092	rapidlink downtime
2022-09-30 23:05:18.6510000	2022-09-30 23:05:19.1110000	460	0.008	rapidlink downtime
2022-09-30 23:13:39.1340000	2022-09-30 23:13:44.4110000	5277	0.088	rapidlink downtime
2022-09-30 23:15:08.7990000	2022-09-30 23:15:20.9360000	12137	0.202	rapidlink downtime

*Table 2: Downtime incidents*

Moving on to the next KPI, the dedicated interface’s daily average error rate is calculated as the ratio of total daily number of requests returning an http error status code “500” (Internal Server Error) or “503” (Service Unavailable) to the total daily number of successful requests.

The following table summarizes the daily results for the particular period:

<b>date</b>	<b># unsuccessful_requests</b>	<b># successful_requests</b>	<b>error_rate</b>
1/7/2022	1060	84760	1.25059%
2/7/2022	19	68812	0.02761%
3/7/2022	22	66727	0.03297%
4/7/2022	943	84807	1.11194%
5/7/2022	688	90919	0.75672%
6/7/2022	196	84647	0.23155%
7/7/2022	41	87154	0.04704%
8/7/2022	17	83823	0.02028%
9/7/2022	17	70211	0.02421%
10/7/2022	107	62491	0.17122%
11/7/2022	27	88778	0.03041%
12/7/2022	19	84532	0.02248%
13/7/2022	12	80820	0.01485%
14/7/2022	23	87826	0.02619%
15/7/2022	21	101770	0.02063%
16/7/2022	10	71339	0.01402%
17/7/2022	14	81839	0.01711%
18/7/2022	21	101040	0.02078%
19/7/2022	29	100290	0.02892%
20/7/2022	26	97840	0.02657%
21/7/2022	14	69127	0.02025%
22/7/2022	15	66598	0.02252%
23/7/2022	22	76538	0.02874%
24/7/2022	20	75069	0.02664%
25/7/2022	17	65476	0.02596%
26/7/2022	18	64734	0.02781%
27/7/2022	10	63869	0.01566%
28/7/2022	4	61448	0.00651%
29/7/2022	7	65196	0.01074%
30/7/2022	0	62119	0.00000%
31/7/2022	1	59408	0.00168%
1/8/2022	4	82230	0.00486%
2/8/2022	7	83315	0.00840%
3/8/2022	1	80230	0.00125%
4/8/2022	18	78446	0.02295%
5/8/2022	6	79338	0.00756%

6/8/2022	16	59806	0.02675%
7/8/2022	0	57020	0.00000%
8/8/2022	11	77825	0.01413%
9/8/2022	10	75715	0.01321%
10/8/2022	2	74067	0.00270%
11/8/2022	0	72387	0.00000%
12/8/2022	12	73121	0.01641%
13/8/2022	0	59008	0.00000%
14/8/2022	1	56429	0.00177%
15/8/2022	1	56018	0.00179%
16/8/2022	621	69714	0.89078%
17/8/2022	12	72044	0.01666%
18/8/2022	3	69134	0.00434%
19/8/2022	0	70768	0.00000%
20/8/2022	3	57819	0.00519%
21/8/2022	8	54850	0.01459%
22/8/2022	8	70541	0.01134%
23/8/2022	11	73937	0.01488%
24/8/2022	15	91270	0.01643%
25/8/2022	18	89539	0.02010%
26/8/2022	8	89849	0.00890%
27/8/2022	13	75076	0.01732%
28/8/2022	13	78040	0.01666%
29/8/2022	184	95210	0.19326%
30/8/2022	18	93451	0.01926%
31/8/2022	33	99816	0.03306%
1/9/2022	20	94540	0.02116%
2/9/2022	11	94645	0.01162%
3/9/2022	10	80211	0.01247%
4/9/2022	25	77446	0.03228%
5/9/2022	33	96588	0.03417%
6/9/2022	12	89080	0.01347%
7/9/2022	12	58636	0.02047%
8/9/2022	9	55935	0.01609%
9/9/2022	23	72629	0.03167%
10/9/2022	17	80278	0.02118%
11/9/2022	17	80464	0.02113%
12/9/2022	16	101024	0.01584%
13/9/2022	13	93783	0.01386%
14/9/2022	16	96488	0.01658%
15/9/2022	13	96638	0.01345%
16/9/2022	32	95162	0.03363%
17/9/2022	18	77539	0.02321%

18/9/2022	13	74735	0.01739%
19/9/2022	19	94326	0.02014%
20/9/2022	80	94566	0.08460%
21/9/2022	22	92874	0.02369%
22/9/2022	15	96366	0.01557%
23/9/2022	13	94423	0.01377%
24/9/2022	14	62496	0.02240%
25/9/2022	17	81314	0.02091%
26/9/2022	17	90115	0.01886%
27/9/2022	17	96498	0.01762%
28/9/2022	18	96932	0.01857%
29/9/2022	25	101196	0.02470%
30/9/2022	318	93711	0.33934%
<b>Average Daily Error Rate</b>			<b>0.07040%</b>

*Table 3: Daily Error Rates of PSD2 APIs*

Finally, regarding the average daily response times per service (AIS, PIS, CoF), as mentioned previously, traffic data showed that only AIS and PIS endpoints were called during the selected period. Therefore, Table 6 is empty, while Tables 4 and 5 summarize the results for PSD2 PIS and AIS APIs respectively. It must be stressed that average response times from the dedicated interface also include latency caused by technical calls.

<b>Date</b>	<b>Number of requests</b>	<b>Average response time for PSD2_PIS APIs (milliseconds)</b>
1/7/2022	4	2465
3/7/2022	6	2770
4/7/2022	4	2404
5/7/2022	55	2659
6/7/2022	46	1953
7/7/2022	12	2432
8/7/2022	26	2244
9/7/2022	24	1525
10/7/2022	4	2217
11/7/2022	13	3207
12/7/2022	24	2683
13/7/2022	14	3558
14/7/2022	201	403
15/7/2022	16	1512

18/7/2022	6	3185
19/7/2022	32	2141
20/7/2022	15	2465
21/7/2022	54	2305
22/7/2022	27	2716
23/7/2022	10	1734
26/7/2022	2	436
28/7/2022	4	3250
29/7/2022	13	2922
30/7/2022	9	2266
1/8/2022	5	2146
3/8/2022	4	1931
4/8/2022	5	2396
6/8/2022	2	265
8/8/2022	10	765
9/8/2022	22	1009
10/8/2022	4	2469
11/8/2022	2	4681
15/8/2022	10	1318
16/8/2022	4	2412
17/8/2022	2	243
18/8/2022	13	2227
19/8/2022	12	2506
20/8/2022	15	2231
22/8/2022	42	2470
23/8/2022	23	2048
24/8/2022	18	2493
25/8/2022	54	2377
26/8/2022	7	2923
28/8/2022	4	2736
29/8/2022	44	2102
30/8/2022	6	2900
31/8/2022	357	446
1/9/2022	407	456
2/9/2022	215	479
3/9/2022	56	660
5/9/2022	4	2914
6/9/2022	2	3538
7/9/2022	37	2576
8/9/2022	1	456
9/9/2022	8	2479
10/9/2022	2	2310
11/9/2022	2	3043

12/9/2022	7	2911
13/9/2022	5	3222
14/9/2022	16	2724
15/9/2022	4	2405
16/9/2022	2	3717
19/9/2022	4	2619
20/9/2022	4	3221
21/9/2022	11	2696
22/9/2022	4	2860
23/9/2022	30	2214
24/9/2022	7	2128
25/9/2022	11	1562
26/9/2022	9	2472
27/9/2022	25	2830
28/9/2022	63	2386
29/9/2022	2	249
30/9/2022	14	2508
<b>Average</b>		<b>2218.66 milliseconds</b>

*Table 4: Daily average response times per PIS request*

<b>Date</b>	<b>Number of requests</b>	<b>Average response time for PSD2_AIS APIs (milliseconds)</b>
1/7/2022	85816	1815
2/7/2022	68831	1431
3/7/2022	66743	1365
4/7/2022	85746	1637
5/7/2022	91552	1681
6/7/2022	84797	1690
7/7/2022	87183	1660
8/7/2022	83814	1657
9/7/2022	70204	1350
10/7/2022	62594	1376
11/7/2022	88792	1594
12/7/2022	84527	1735
13/7/2022	80818	1710
14/7/2022	87648	1641
15/7/2022	101775	1715
16/7/2022	71349	1336
17/7/2022	81853	1314
18/7/2022	101055	1531
19/7/2022	100287	1562

20/7/2022	97851	1533
21/7/2022	69087	1632
22/7/2022	66586	1755
23/7/2022	76550	1375
24/7/2022	75089	1346
25/7/2022	65493	1731
26/7/2022	64750	1835
27/7/2022	63879	1910
28/7/2022	61448	1674
29/7/2022	65190	1782
30/7/2022	62110	1158
31/7/2022	59409	1067
1/8/2022	82229	1555
2/8/2022	83322	1559
3/8/2022	80227	1566
4/8/2022	78459	1595
5/8/2022	79344	1660
6/8/2022	59820	1185
7/8/2022	57020	1132
8/8/2022	77826	1486
9/8/2022	75703	1416
10/8/2022	74065	1413
11/8/2022	72385	1415
12/8/2022	73133	1377
13/8/2022	59008	1121
14/8/2022	56430	1037
15/8/2022	56009	1053
16/8/2022	70331	1842
17/8/2022	72054	1373
18/8/2022	69124	1326
19/8/2022	70756	1346
20/8/2022	57807	1163
21/8/2022	54858	1098
22/8/2022	70507	1443
23/8/2022	73925	1666
24/8/2022	91267	1692
25/8/2022	89503	1757
26/8/2022	89850	1521
27/8/2022	75089	1434
28/8/2022	78049	1393
29/8/2022	95350	1729
30/8/2022	93463	1775
31/8/2022	99492	1820

1/9/2022	94153	1721
2/9/2022	94441	1691
3/9/2022	80165	1461
4/9/2022	77471	1398
5/9/2022	96617	1632
6/9/2022	89090	1682
7/9/2022	58611	1885
8/9/2022	55943	1913
9/9/2022	72644	1756
10/9/2022	80293	1411
11/9/2022	80479	1353
12/9/2022	101033	1611
13/9/2022	93791	1624
14/9/2022	96488	1699
15/9/2022	96647	1646
16/9/2022	95192	1648
17/9/2022	77557	1422
18/9/2022	74748	1358
19/9/2022	94341	1583
20/9/2022	94642	1624
21/9/2022	92885	1556
22/9/2022	96377	1560
23/9/2022	94406	1602
24/9/2022	62503	1439
25/9/2022	81320	1337
26/9/2022	90123	1684
27/9/2022	96490	1804
28/9/2022	96887	1741
29/9/2022	101219	1703
30/9/2022	94015	2318
<b>Average</b>		<b>1539.45 milliseconds</b>

*Table 5: Daily average response times per AIS request*

<b>Date</b>	<b>Number of requests</b>	<b>Average response time for PSD2_PPIS APIs (milliseconds)</b>
-	-	-
<b>Average</b>		<b>0 milliseconds</b>

*Table 6: Daily average response times per CoF request*