

Analysis of OCSRF on Google IdP

Table 1: Classification of exploitable sites by OCSRF - Absence of `state` parameter

#	0a	0b	0c	Sites
1	●	●	●	14 (28.5%)
2	●	●	○	14 (28.5%)
3	○	○	○	4 (8%)
4	●	○	○	2 (4%)
Total	30	28	14	34

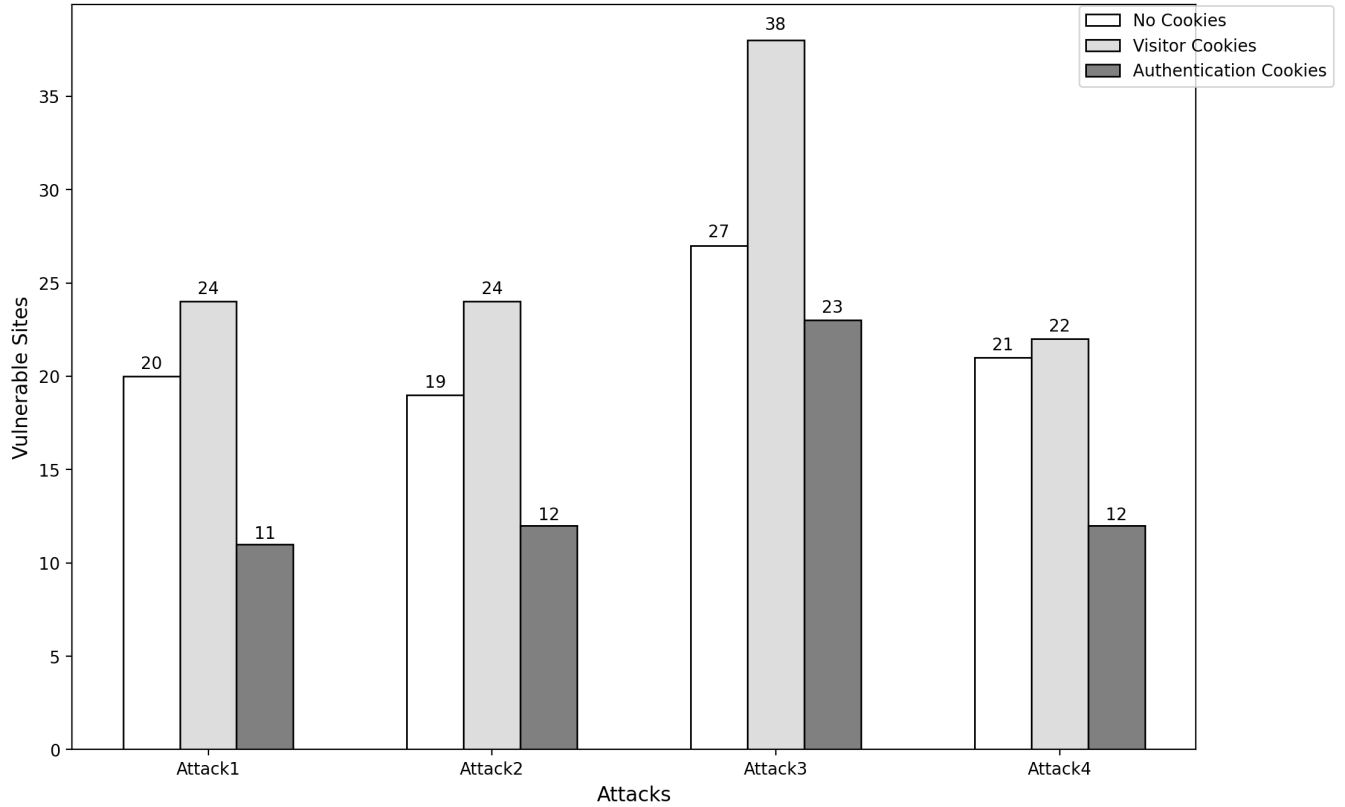


Figure 1: Number of exploitable sites per test case for each attack strategies - Presence of `state` parameter

Table 2: Number of exploitable sites by OCSRF for each attack strategies

Attack	No cookies (a)	Visitor cookies (b)	Auth. cookies (c)	All
0	30 (14.8%)	28 (13.8%)	14 (6.9%)	30 (14.8%)
1	20 (9.8%)	24 (11.8%)	11 (5.4%)	29 (14.3%)
2	19 (9.4%)	24 (11.8%)	12 (5.9%)	29(14.3%)
3	27 (13.3%)	38 (18.7%)	23 (11.3%)	45(22.2%)
4	21 (10.3%)	22 (10.8%)	12 (5.9%)	32(15.8%)
Total	64 (31.5%)	73 (36%)	39 (19.2%)	77(37.9%)

Table 3: Classification of exploitable sites by OCSRF - Presence of `state` parameter

#	1a	1b	1c	2a	2b	2c	3a	3b	3c	4a	4b	4c	Sites
1	○	○	○	○	○	○	○	○	○	○	○	○	122 (72.2%)
2	●	●	●	●	●	●	●	●	●	●	●	●	7 (4.1%)
3	○	○	○	○	○	○	●	●	●	○	○	○	6 (3.5%)
4	●	●	○	●	●	○	●	●	○	●	●	○	4 (2.4%)
5	●	●	○	●	●	○	●	●	○	●	○	○	4 (2.4%)
6	○	○	○	○	○	○	○	●	○	○	○	○	2 (1.2%)
7	○	○	○	○	○	○	○	●	●	○	○	○	3 (1.8%)
8	○	○	○	○	○	○	○	○	●	○	○	○	1 (0.6%)
9	○	○	○	○	●	○	○	●	○	○	○	○	1 (0.6%)
10	○	○	○	●	●	○	●	●	●	●	●	●	1(0.6%)
11	○	○	○	●	●	○	●	●	○	●	●	○	1 (0.6%)
12	○	○	○	○	○	○	○	○	○	○	●	○	1 (0.6%)
13	○	●	○	○	●	○	○	●	○	○	●	○	4 (2.4%)
14	○	●	○	○	○	○	○	○	○	○	●	○	1 (0.6%)
15	●	○	○	○	○	○	○	○	○	●	○	○	1 (0.6%)
16	●	●	○	○	○	○	○	○	○	●	●	○	1 (0.6%)
17	●	●	●	○	○	●	○	○	●	○	○	●	1 (0.6%)
18	○	○	●	○	○	●	○	○	●	○	○	●	1 (0.6%)
19	○	○	○	●	●	●	●	●	●	○	○	○	1 (0.6%)
20	○	●	●	○	●	●	○	●	●	○	●	●	1 (0.6%)
21	●	○	●	○	○	○	○	○	○	●	○	●	1 (0.6%)
22	○	○	○	○	○	○	●	●	○	○	○	○	1 (0.6%)
23	●	○	○	●	○	○	●	○	○	●	○	○	1 (0.6%)
24	○	○	○	○	○	●	●	●	●	○	○	○	1 (0.6%)
25	○	●	○	○	○	○	○	●	○	○	●	○	1 (0.6%)
Total	20	24	11	19	24	12	27	38	23	21	22	12	169

Table 4: Classification of exploitable sites by OCSRF - Constant state parameter

#	1a	1b	1c	2a	2b	2c	3a	3b	3c	4a	4b	4c	Domains
1	○	○	○	○	○	○	●	●	●	○	○	○	1 (9%)
2	●	●	●	●	●	●	●	●	●	●	●	●	2 (18.1%)
3	○	○	○	○	○	○	○	●	○	○	○	○	2 (18.1%)
4	○	○	○	○	○	○	○	●	●	○	○	○	1 (9%)
5	○	●	○	○	●	○	○	●	○	○	●	○	1 (9%)
6	○	○	○	○	○	○	○	○	●	○	○	○	1 (9%)
7	○	○	○	○	○	●	●	●	●	○	○	○	1 (9%)
8	●	●	●	○	○	●	○	○	●	○	○	●	1 (9%)
9	●	●	○	●	●	○	●	●	○	●	○	○	1 (9%)
Total	4	5	3	3	4	4	5	9	7	3	3	3	11