Experimental Data

TABLE A
Experimental results of Maude-NPA and Par-Maude-NPA-2.

Protocol	Attack ID	Result at depth	Maude-NPA (seconds)	Par-Maude-NPA-2 (seconds)	P(%)	States/ Layer/ Worker
1. Symmetric Key Protocols						
Amended Needham Schroeder	0	✗ / 7	4589	**1968**	57	11.11
Carlsen Secret Key Initiator	0	✗ / 5	224	**116**	48	3.73
Denning Sacco	0	✓ / 11	35	**30**	14	0.43
Diffie Hellman Key Exchange	0	✗ / 11	284	**114**	60	1.56
	1	✗ / 12	287	**104**	64	1.45
	2	✓ / 13	35	**23**	35	0.32
ISO-5 Pass Authentication	0	✗ / 5	102	**55**	46	2.1
Kao-Chow RA	0	✗ / 4	52	**29**	45	2
Kao-Chow RAHK	0	✗ / 4	**4**	14	-72	0.19
Kao-Chow RAT	0	✗ / 4	114	**67**	41	1.94
Otway-Rees	0	✗ / 4	73	**43**	41	2.16
Secret 06	0	✗ / 2	**1.7**	6.9	-75	0.38
Secret 07	0	✗ / 4	**2.6**	9.2	-72	0.28
Wide Mouthed Frog	0	✗ / 3	16	**15**	7	1.92
Woo and Lam Authentication	0	✗ / 4	**1.4**	8.3	-83	0.28
Yahalom	0	✗ / 4	45	**28**	39	1.91
2. Homomorphism Protocols						
Needham Schroeder Lowe ECB	0	✗ / 7	74	**45**	39	1.11
3. Exclusive OR Protocols						
Needham Schroeder Lowe XOR	0	✗ / 8	**10.2**	13.9	-26	0.31
SK3	0	✓ / 3	**4.2**	12	-65	0.17
TMN ltv-F-tmn-asy	0	✗ / 5	157	**38**	76	0.88
WIRED ltv-C-wep-asy	0	✓ / 5	**14.4**	20.6	-30	0.15
WIRED ltv-C-wep-variant	0	✓ / 5	**15.6**	23	-32	0.15
4. API Protocols						
YubiKey	0	✗ / 9	**3.5**	12.7	-72	0.17
	1	✓ / 7	93825	**28989**	69	5.13
	21	✓ / 8	342	**135**	61	0.8
	3	✓ / 7	13093	**4226**	68	3
YubiHSM attack(d)	0	✗ / 9	843	**405**	52	2.38

TABLE B
Experimental results of Maude-NPA and Par-Maude-NPA-2.

Protocol	**Attack ID**	**Result at depth**	**Maude-NPA (seconds)**	**Par-Maude-NPA-2 (seconds)**	**P(%)**	**States/ Layer/ Worker**
5. PKCS Protocols						
PKCS11 a1-noComp	0	✗ / 4	24.8	**23.6**	5	0.81
PKCS11 a2-noComp	0	✗ / 6	70	**45**	36	0.75
PKCS11 a3-noComp	0	✗ / 6	296	**165**	44	1.6
PKCS11 a4-noComp	0	✗ / 7	63	**39**	38	0.88
PKCS11 a5-noComp	0	✗ / 9	382	**225**	41	1.82
6. Choice Protocols						
encryption mode	0	✗ / 4	**3.2**	10.7	-70	0.28
	1	✗ / 4	**8.6**	11.8	-27	0.78
	2	✓ / 10	68	**40**	41	1.1
	3	✓ / 11	137	**56**	59	1.61
rock paper scissors	0	✓ / 9	126	**53**	58	1.81
	1	✓ / 1	**0.4**	5.3	-93	0.13
	2	✓ / 2	**1**	6.6	-85	0.38
TLS regular	0	✗ / 3	**6.7**	13.8	-51	0.17
TLS attack	0	? / 11	8695	**3151**	64	3.15
7. Distance-Bounding Protocols						
brands chaum	1	✓ / 4	**6.2**	11.8	-47	0.25
	2	✗ / 6	**16.2**	17.1	-5	0.29
CRCS	1	✓ / 9	767	**292**	62	0.75
	2	✗ / 8	122	**83**	32	0.42
H&K	1	✓ / 5	16.8	**15.4**	8	0.35
	2	✓ / 2	**1.2**	7.1	-84	0.13
MAD	1	✓ / 9	175	**97**	45	0.67
	2	✗ / 6	967	**396**	59	2.42
Meadows v1-DH	1	✓ / 4	**1.6**	9.1	-82	0.13
	2	✓ / 8	**32.2**	32.8	-2	0.28
Meadows v2-DH	1	✓ / 4	**1.7**	9.1	-81	0.13
	2	✗ / 3	**2.5**	8.9	-72	0.17
Munilla	1	✓ / 7	186	**67**	64	1.45
	2	✓ / 4	**6.3**	12.9	-51	0.19
Swiss Knife	1	✓ / 4	**6.7**	12.2	-45	0.25
	2	✓ / 4	26.9	**25.5**	5	0.38
TREAD	1	✓ / 4	**6.4**	12.2	-47	0.25
	2	✗ / 4	**5.2**	11.8	-56	0.25