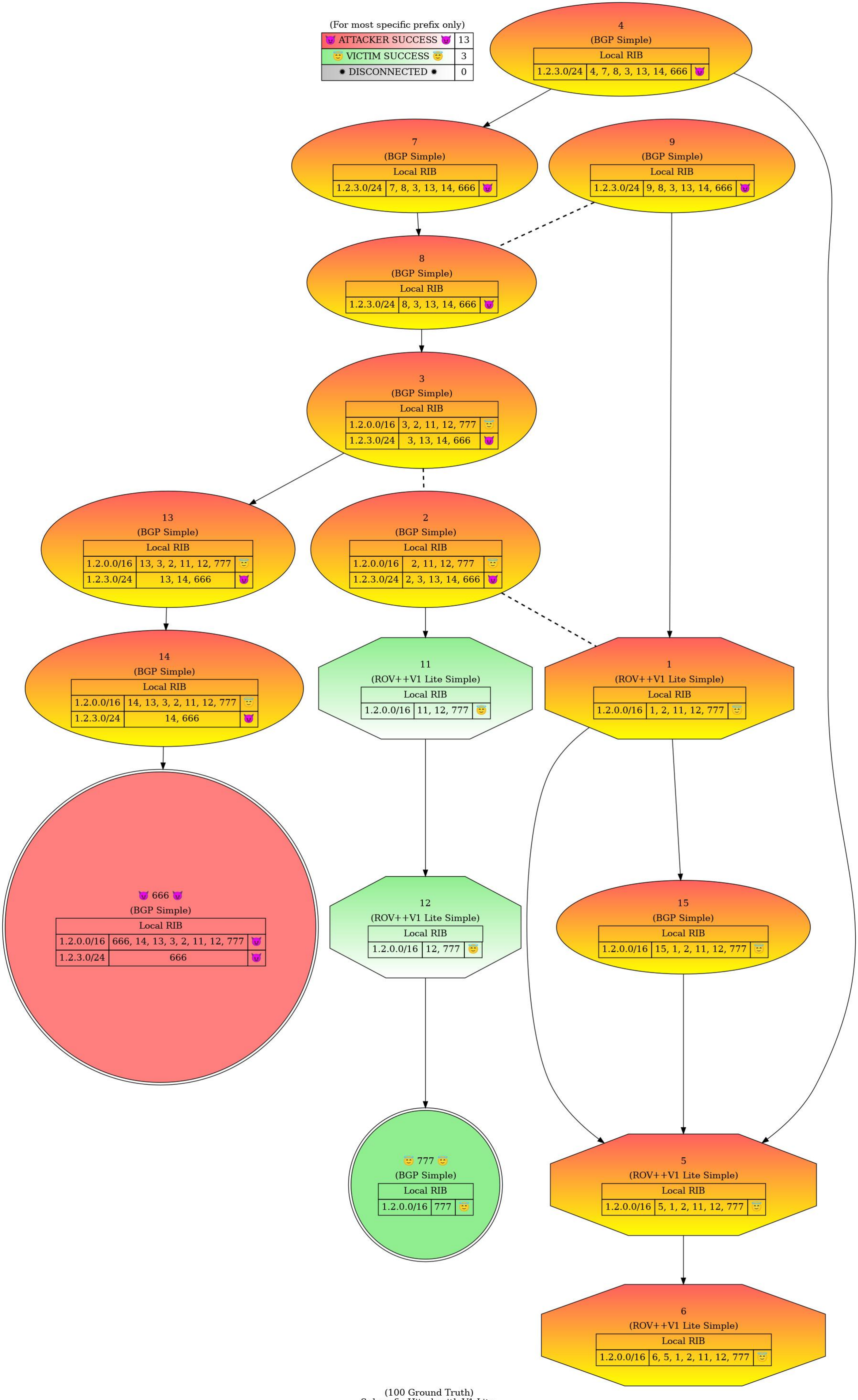
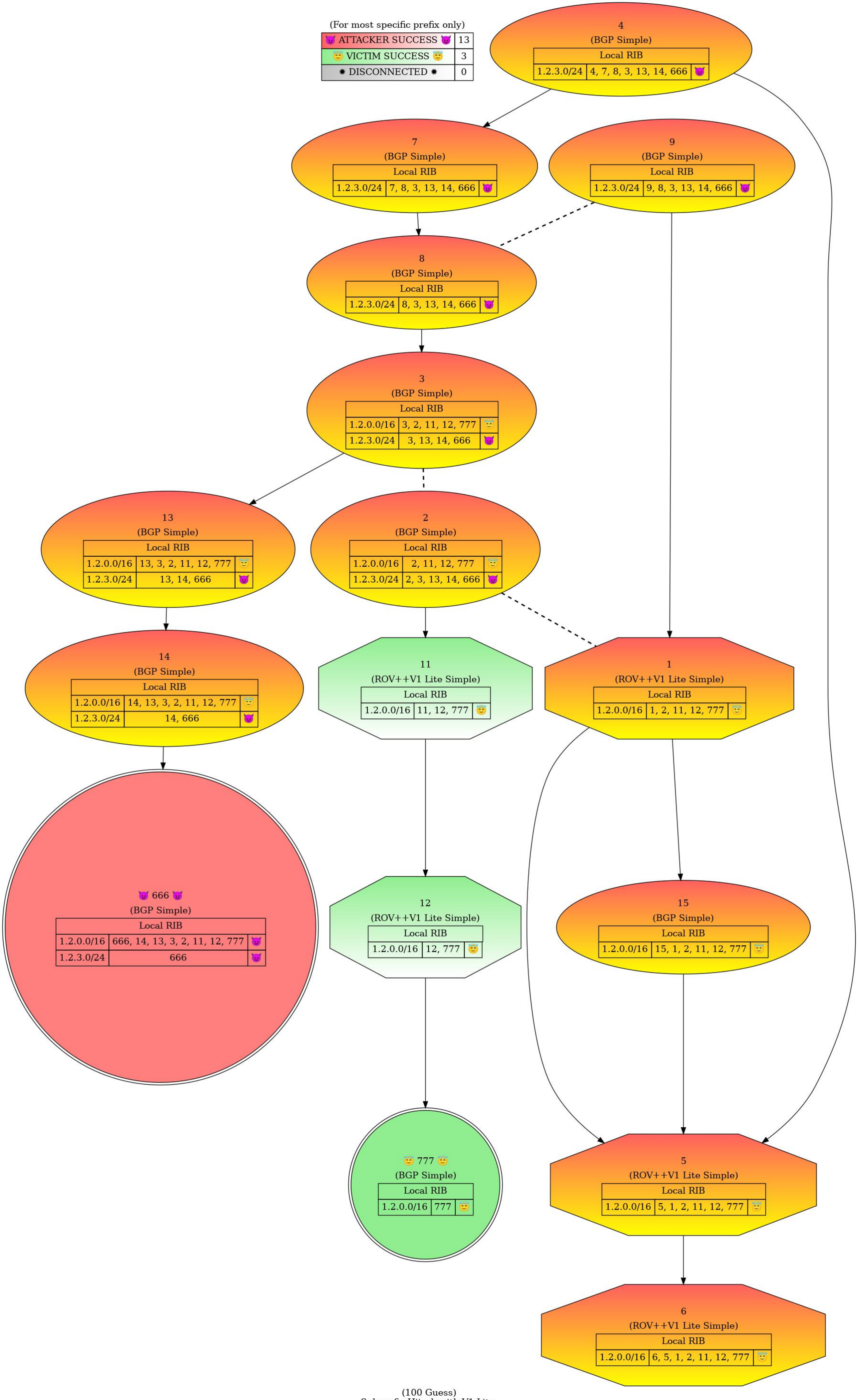
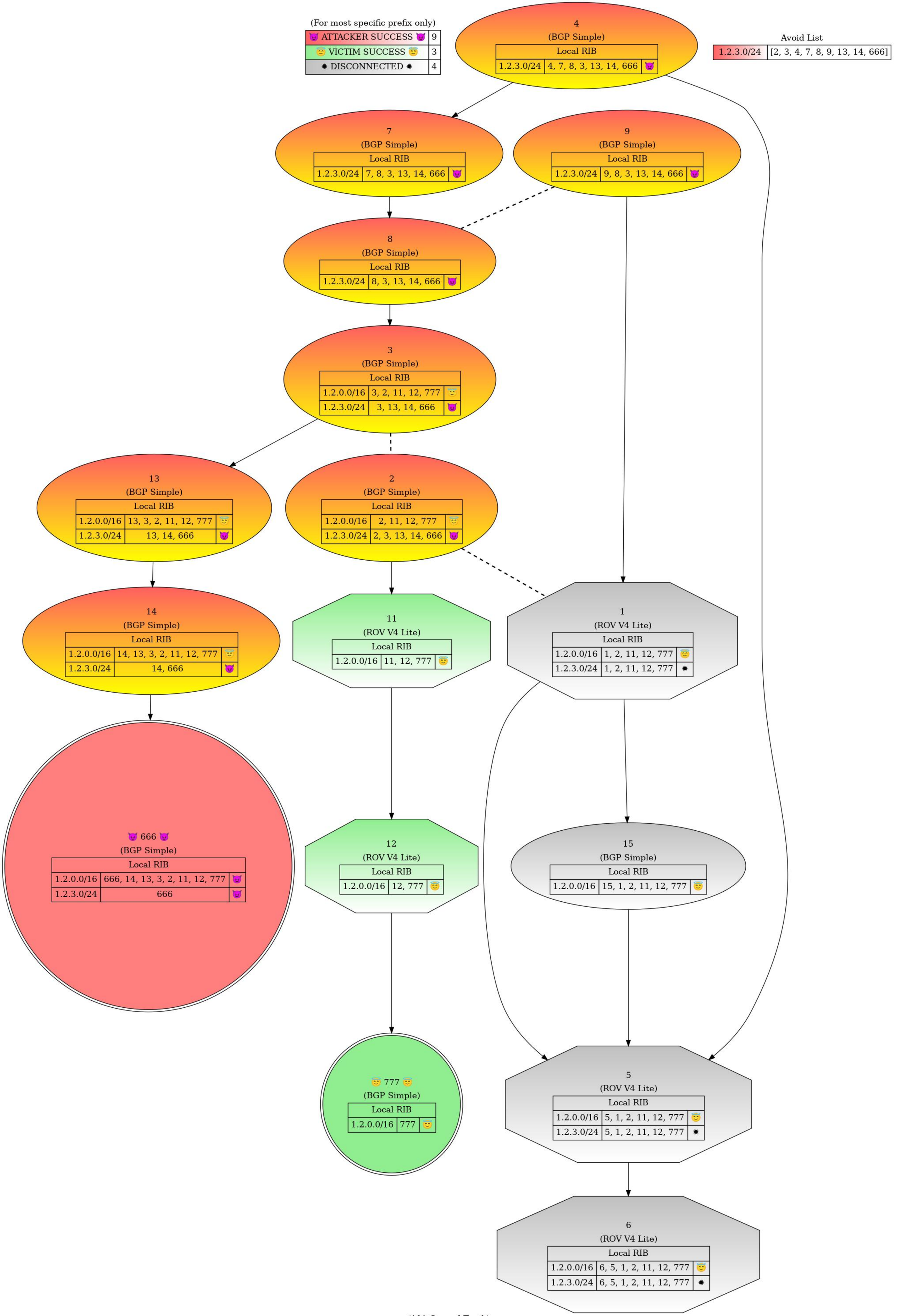


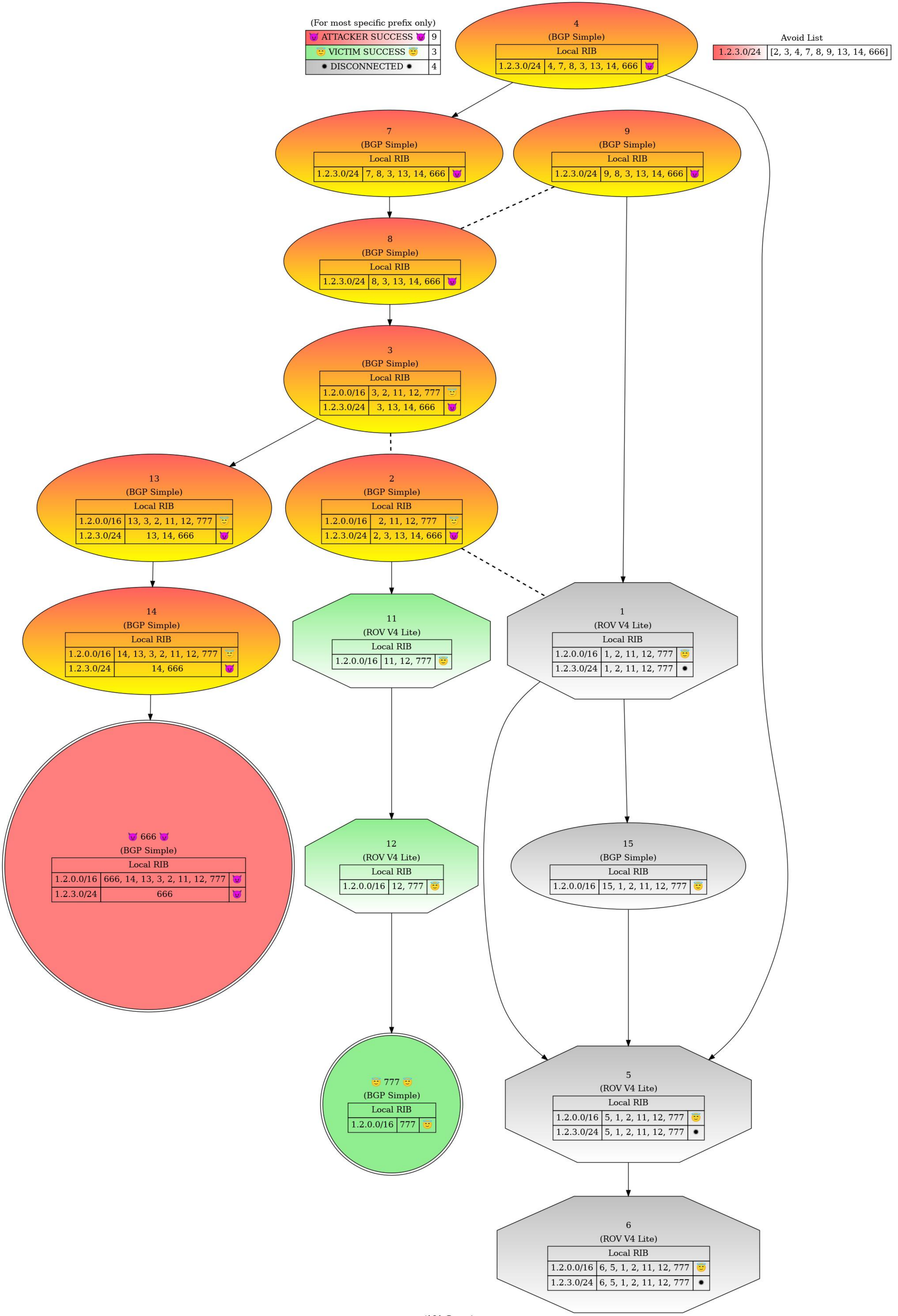
(100 Ground Truth)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



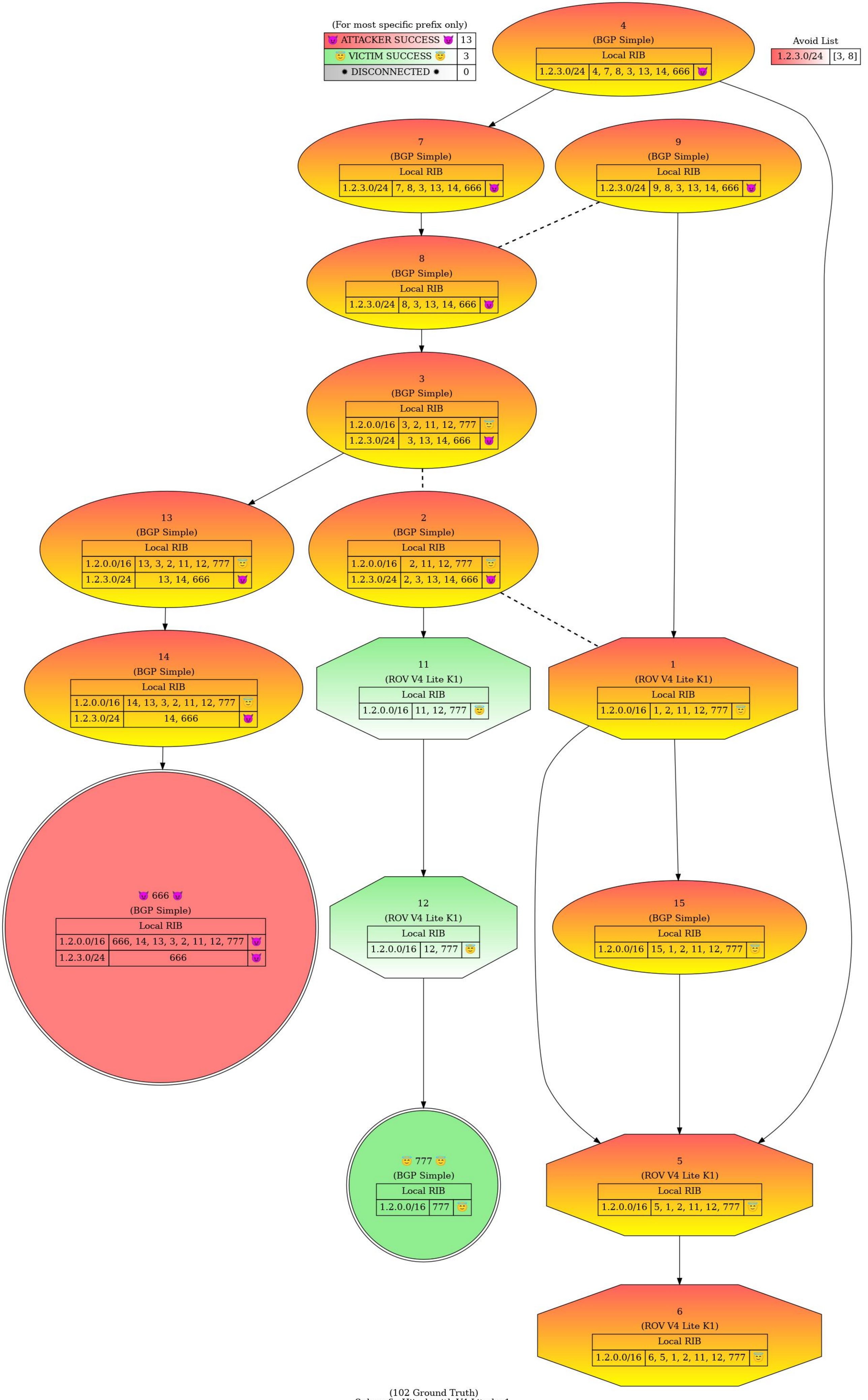
(100 Guess)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



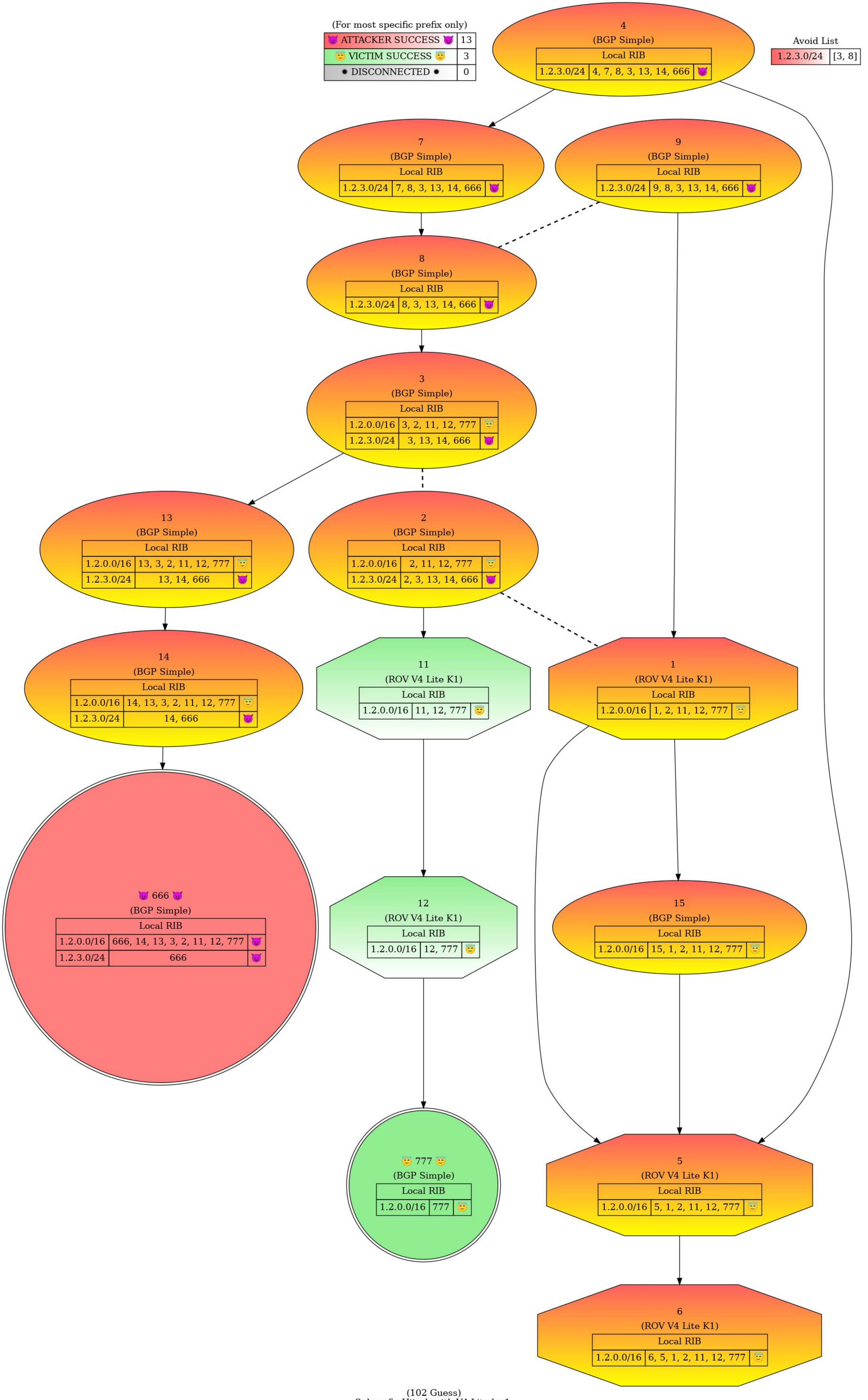
(101 Ground Truth)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



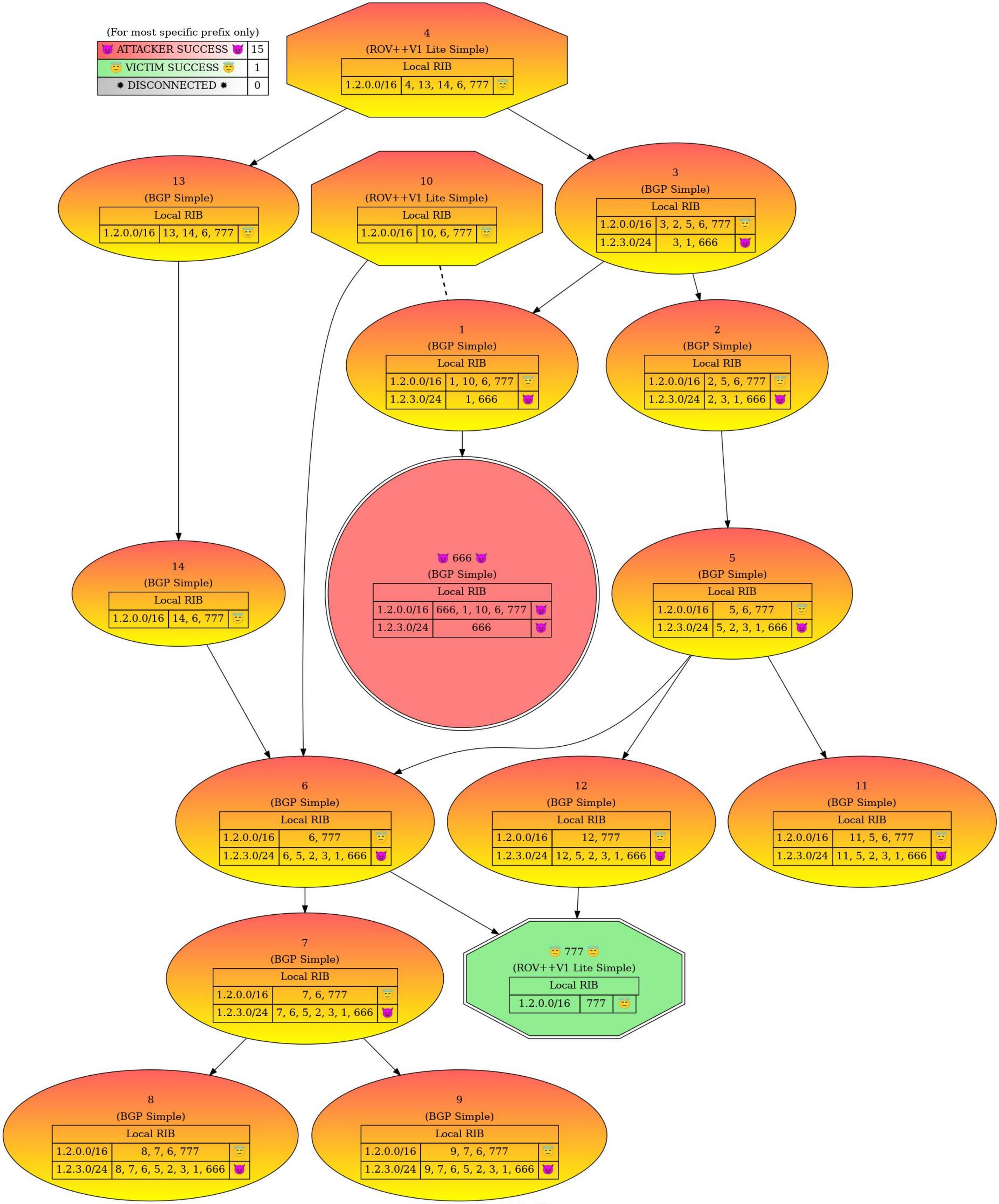
(101 Guess)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



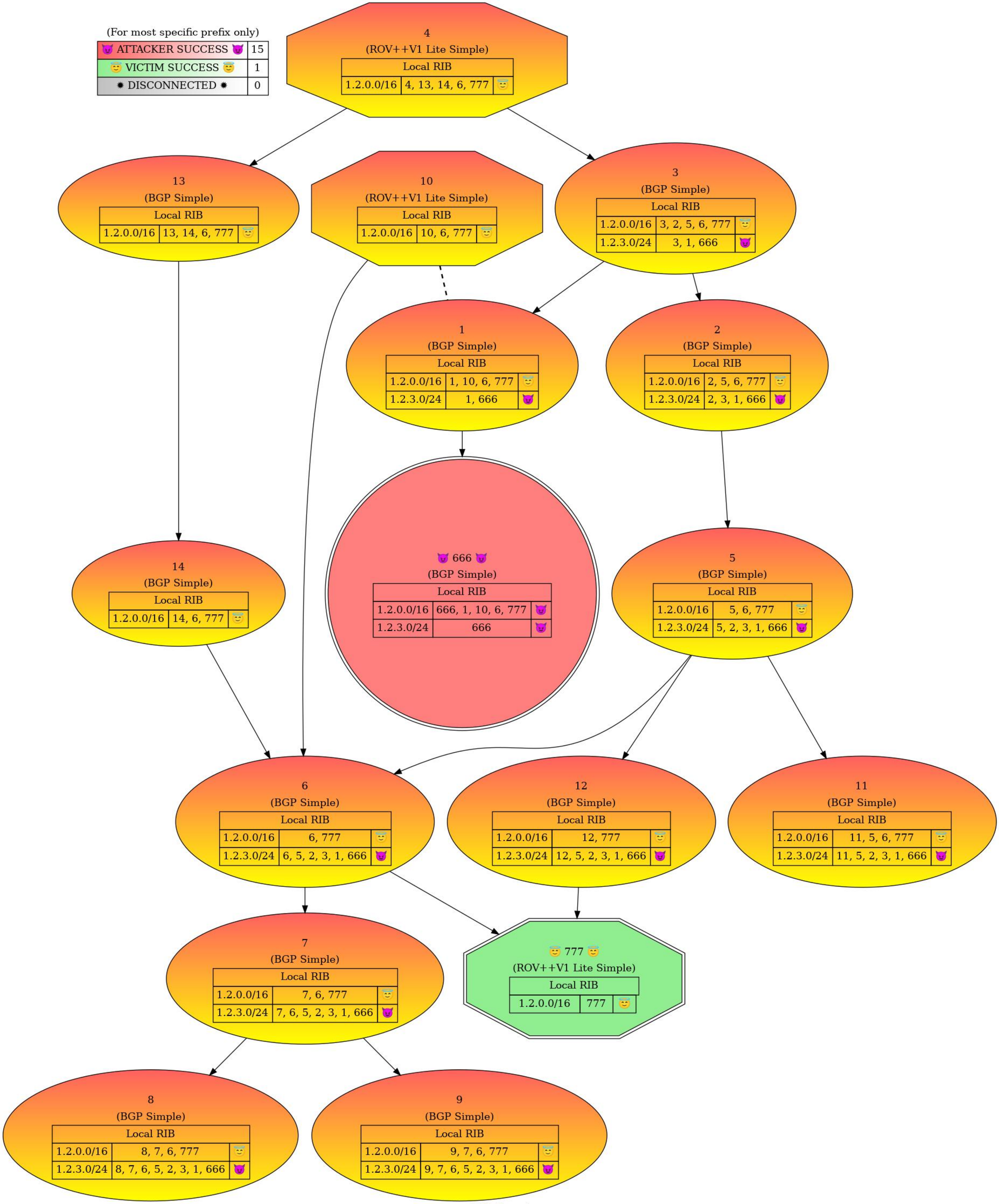
(102 Ground Truth)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



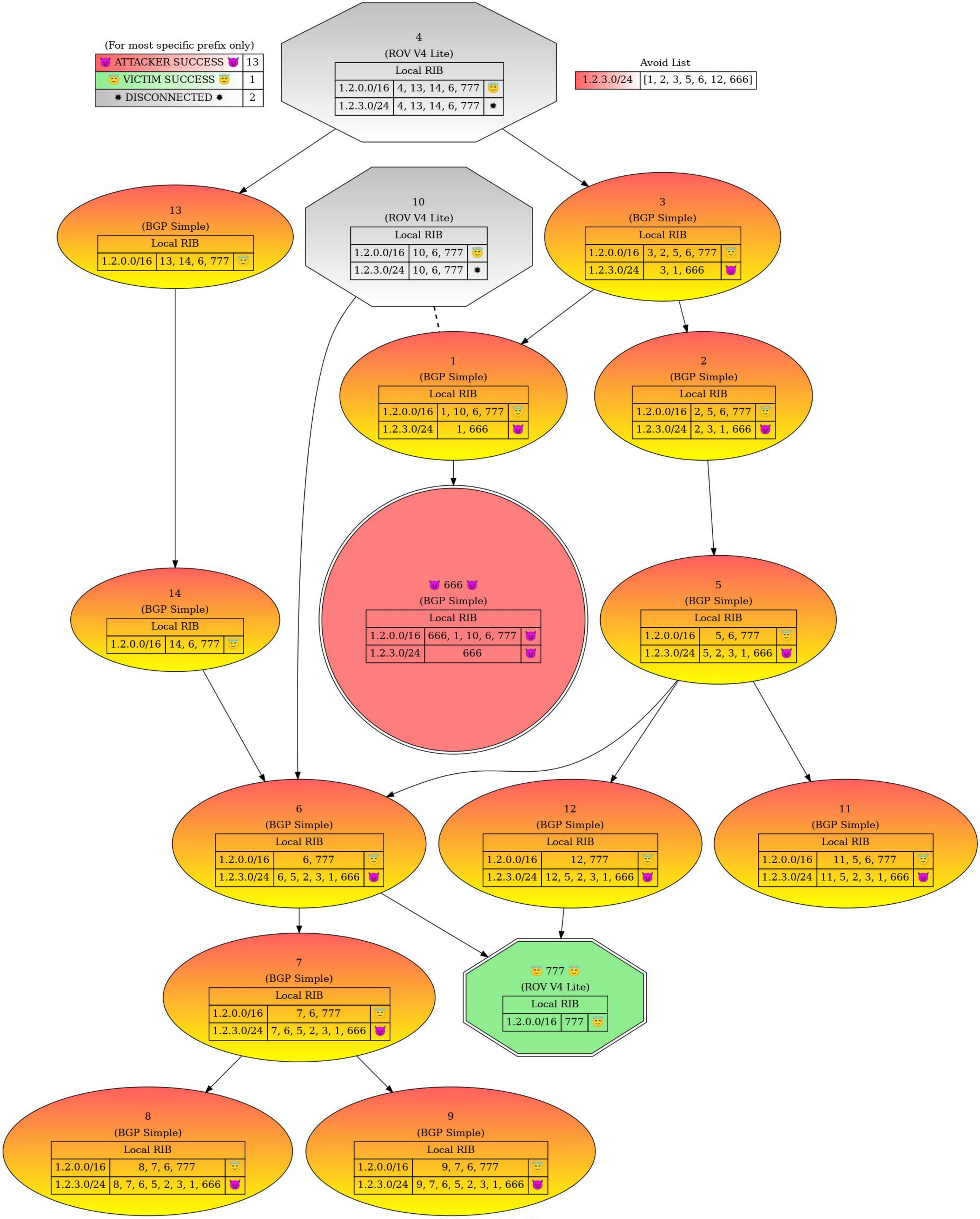
(102 Guess)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



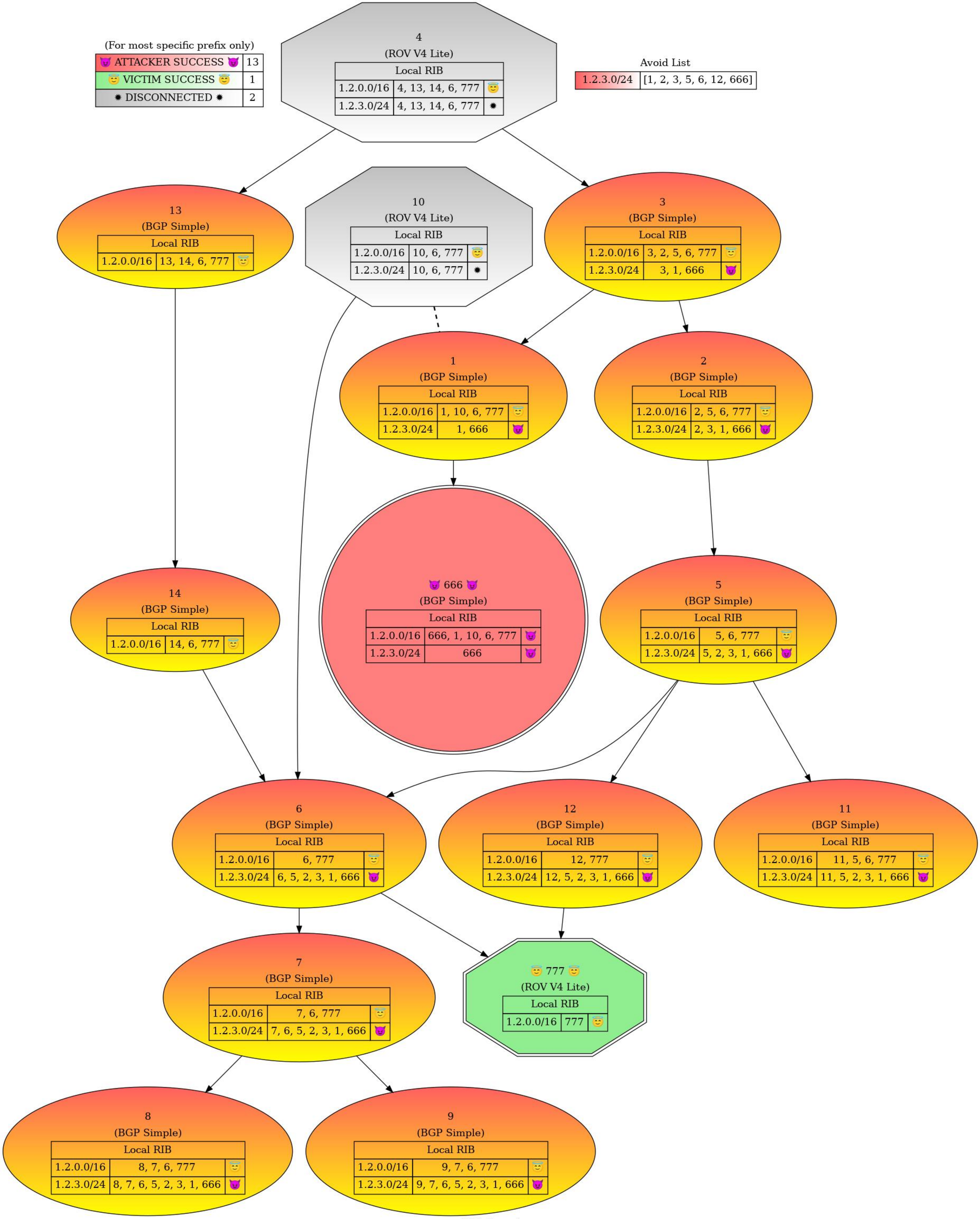
(103 Ground Truth)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



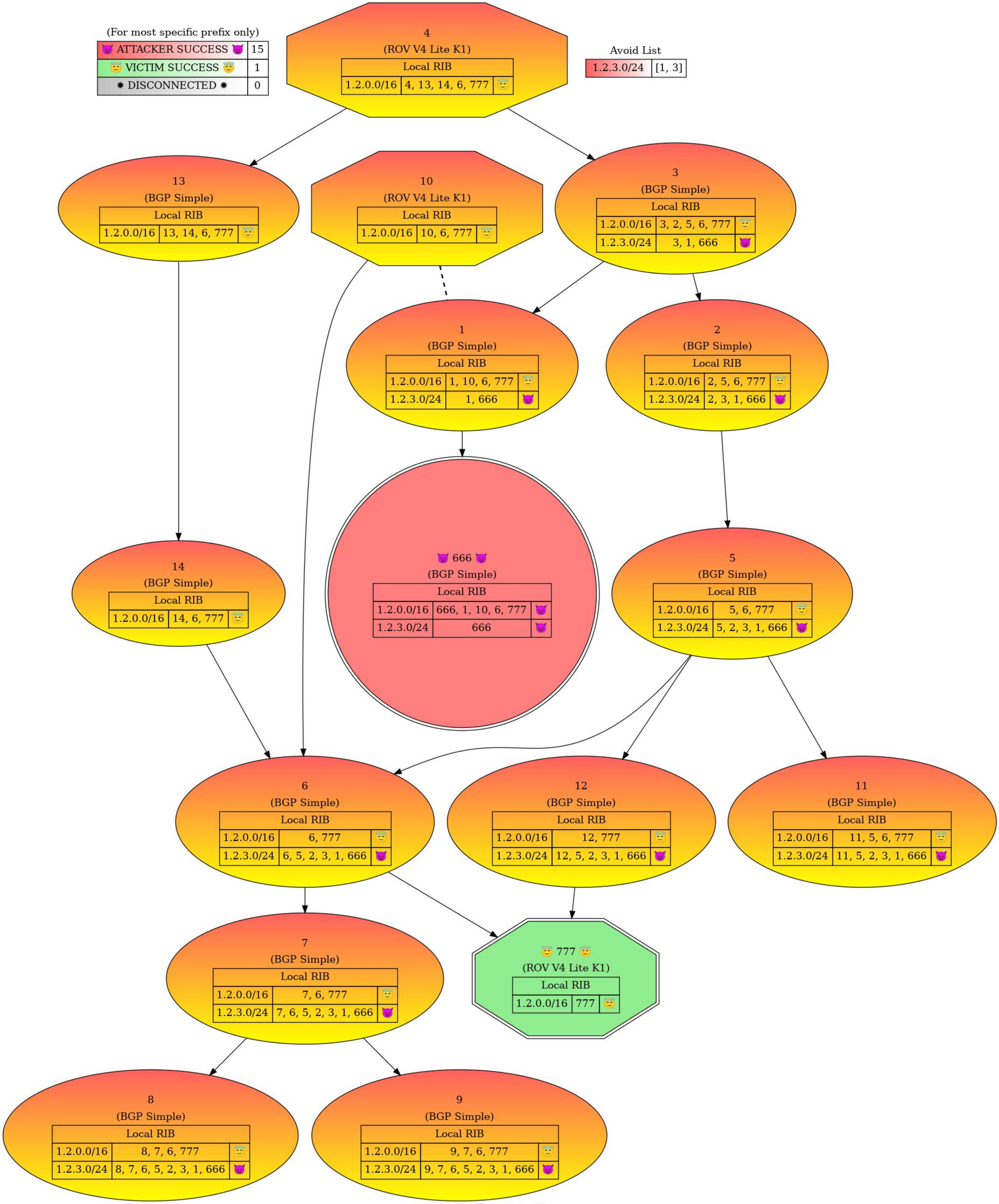
(103 Guess)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



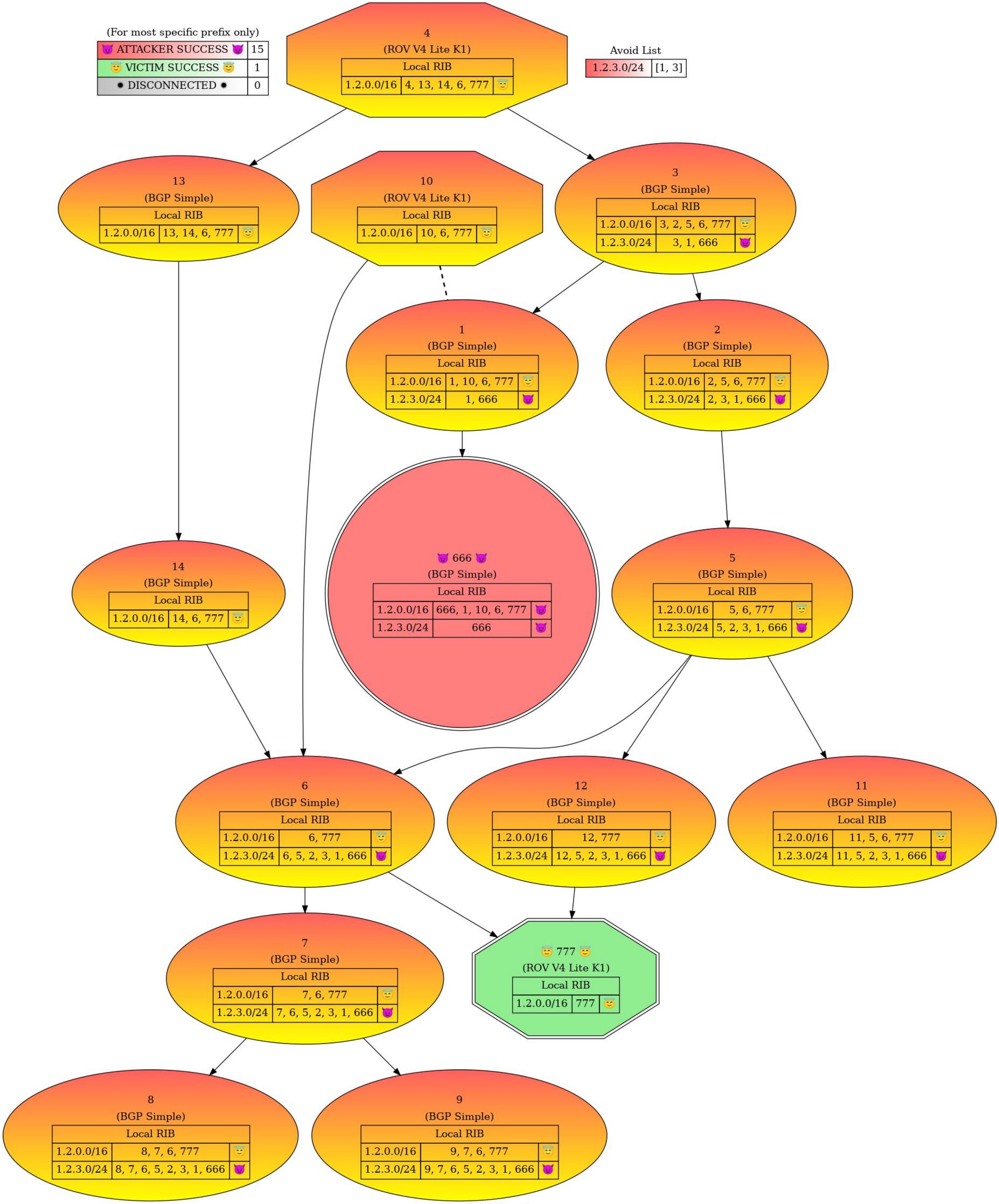
(104 Ground Truth)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



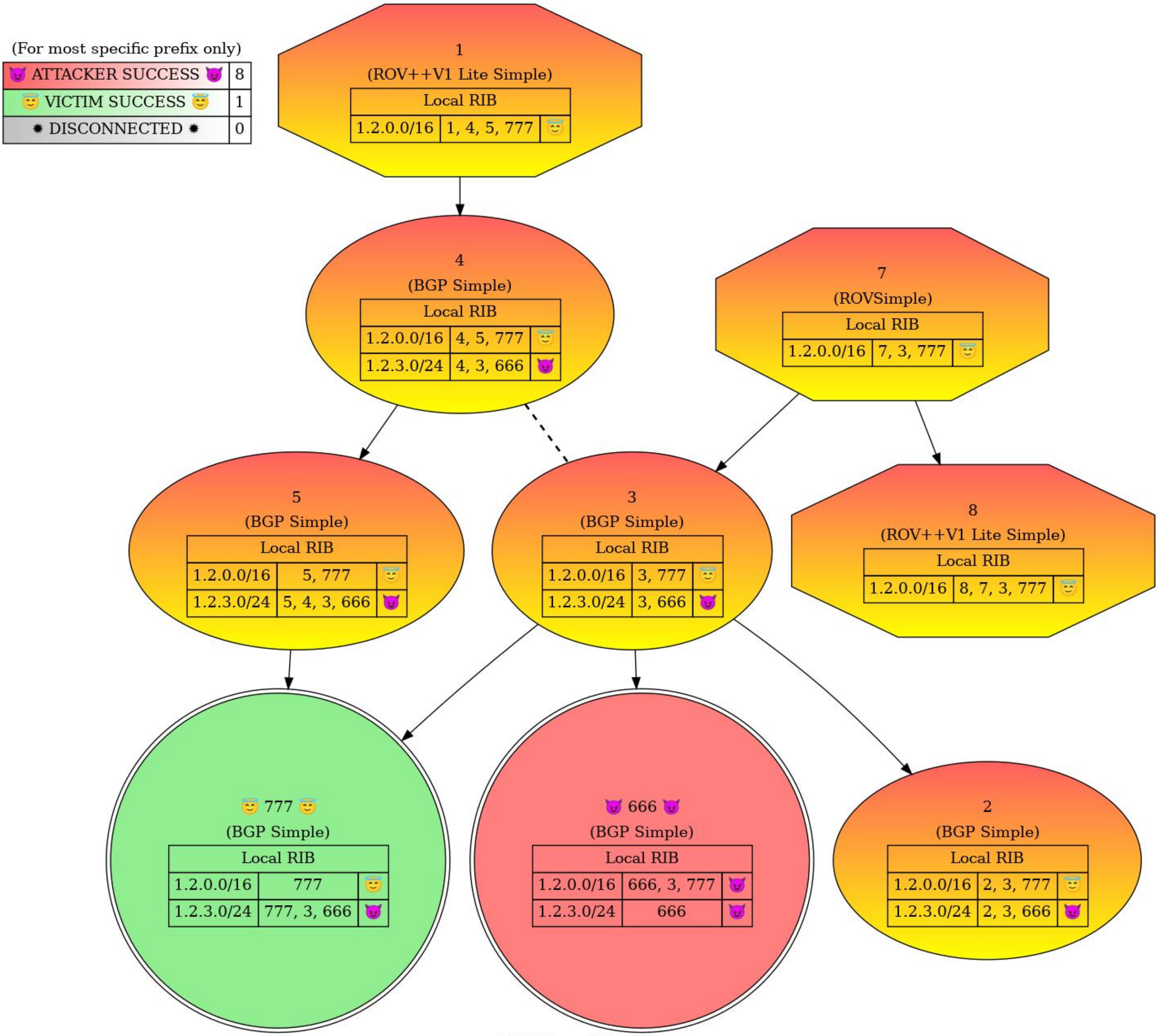
(104 Guess)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



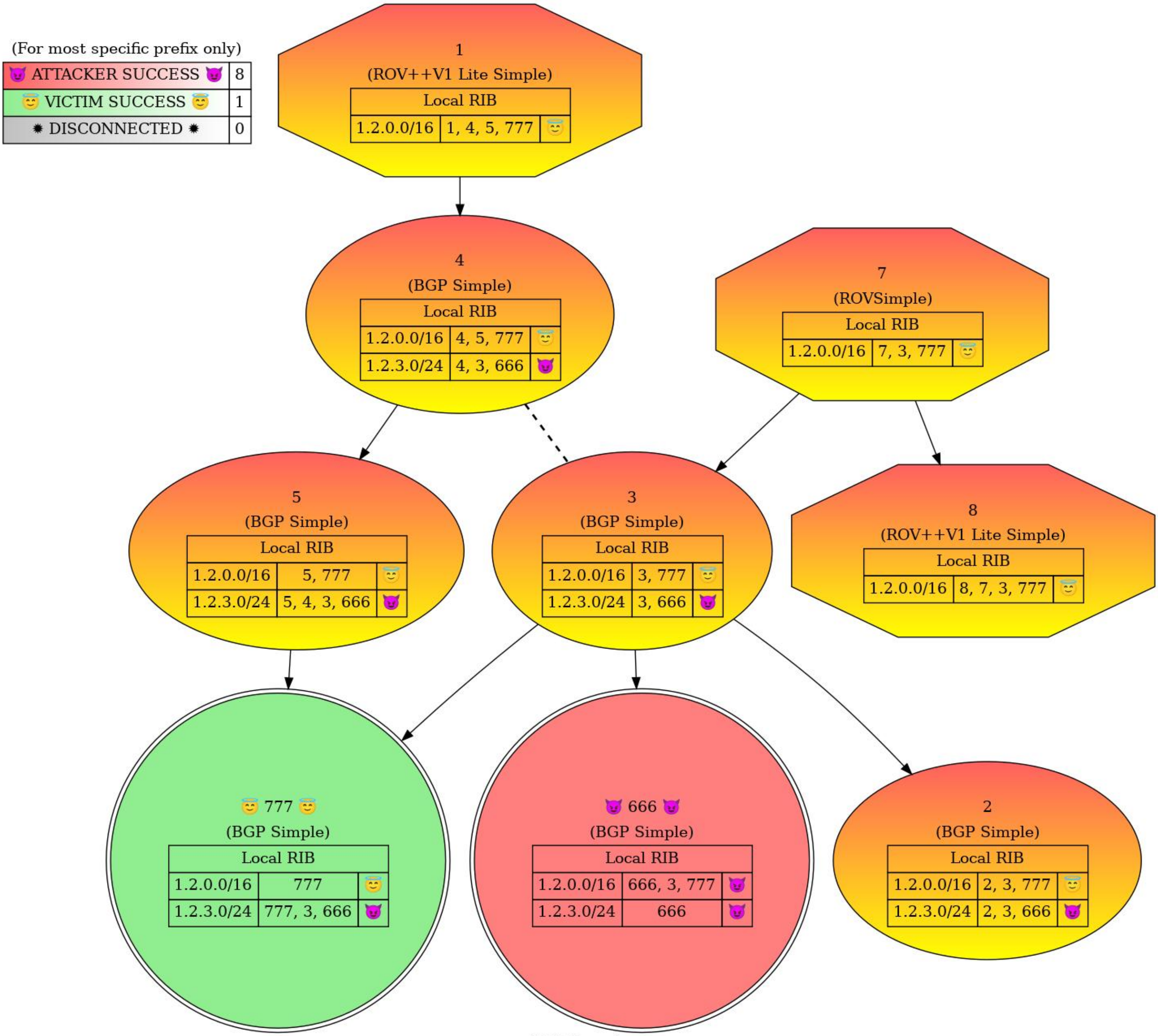
(105 Ground Truth)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



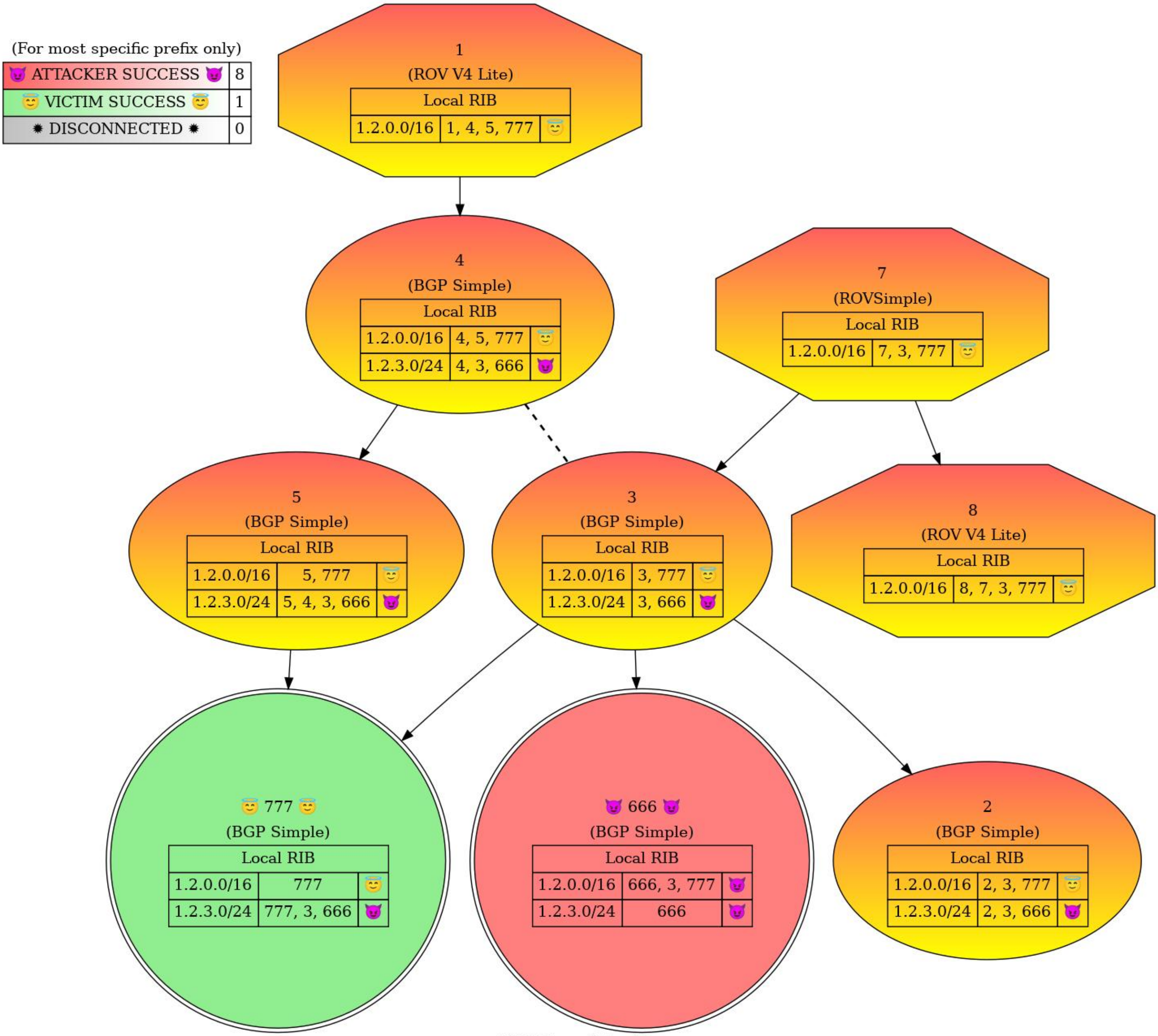
(105 Guess)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



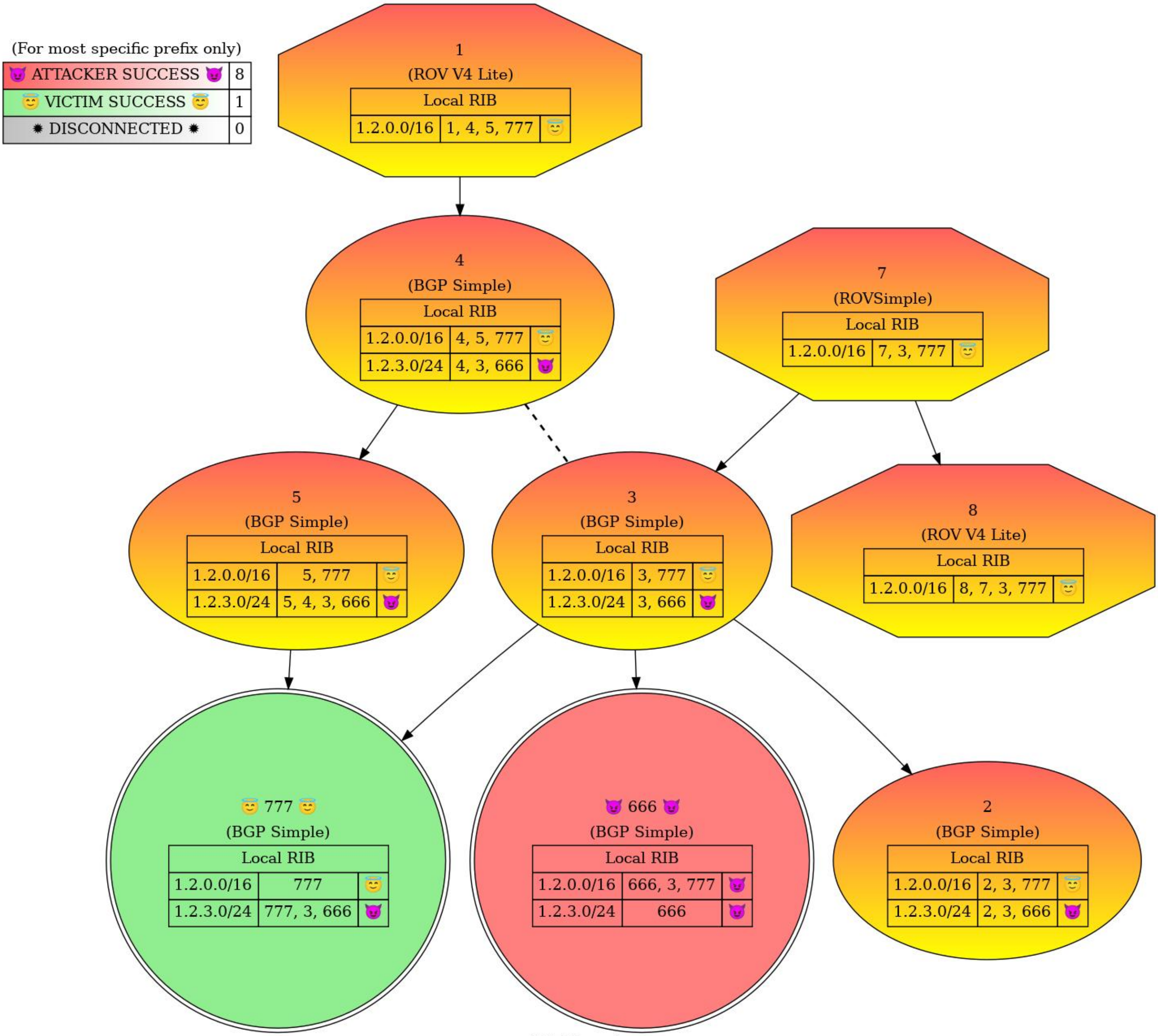
(106 Ground Truth)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



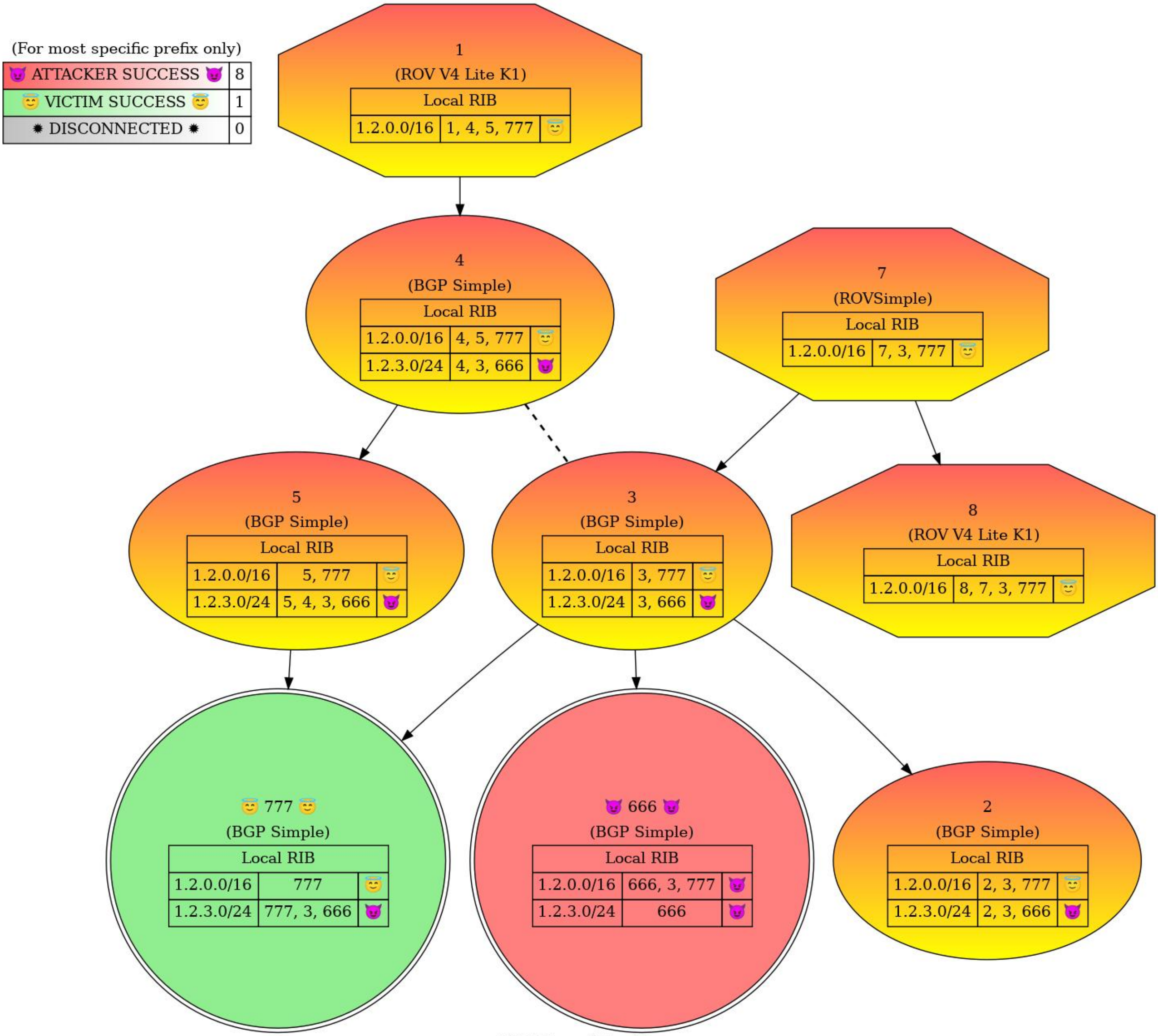
(106 Guess)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



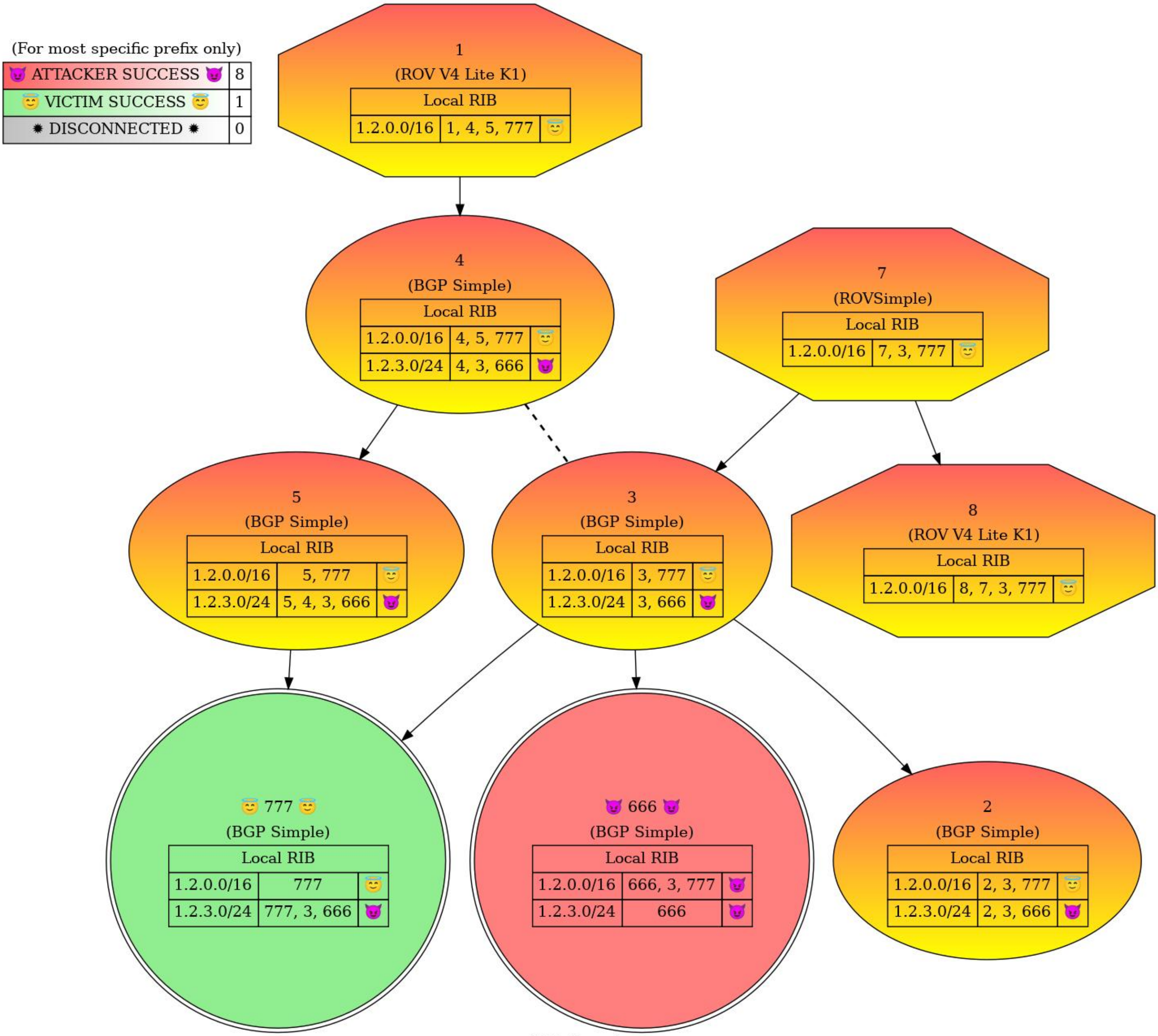
(107 Ground Truth)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



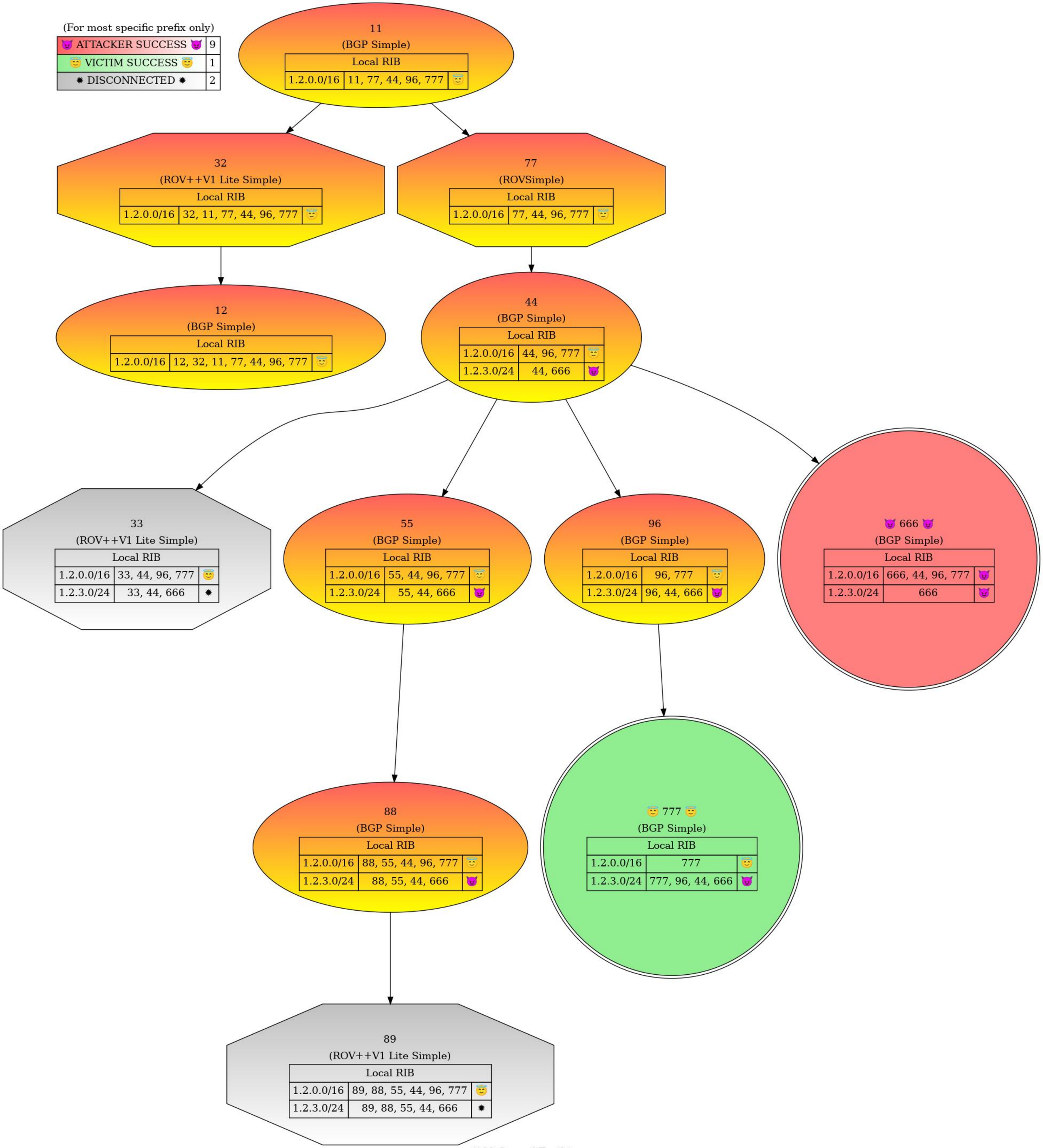
(107 Guess)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



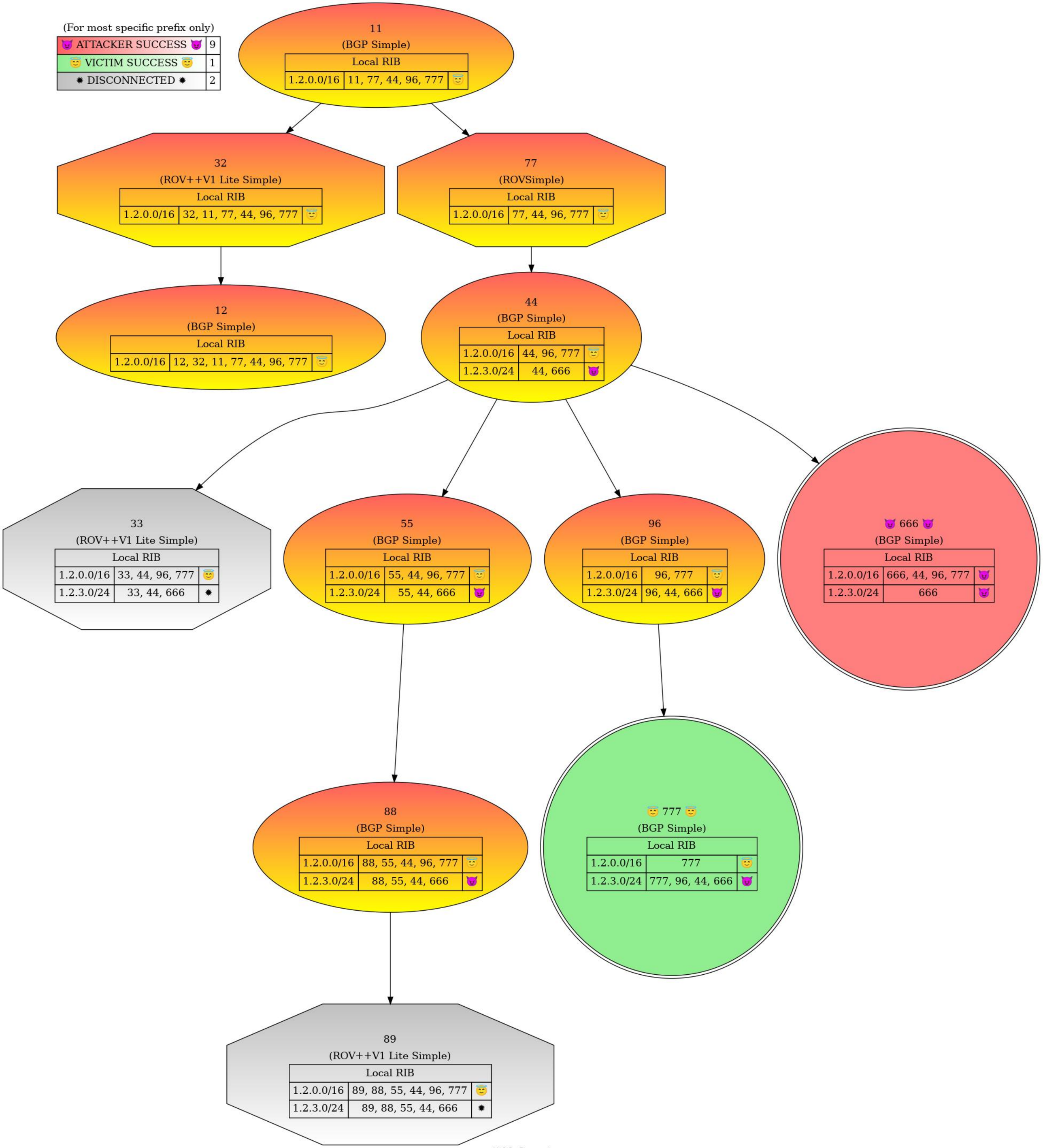
(108 Ground Truth)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



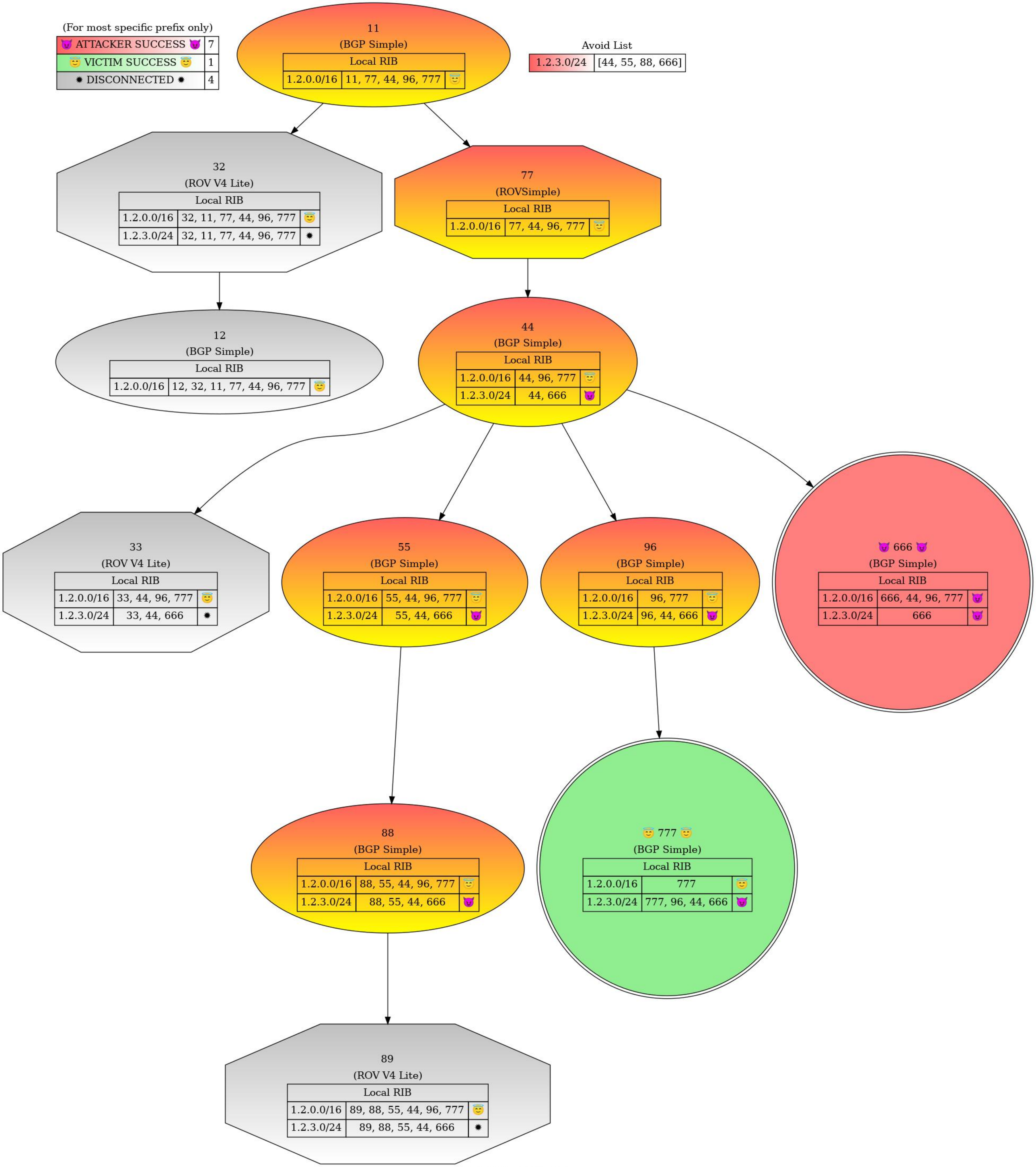
(108 Guess)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



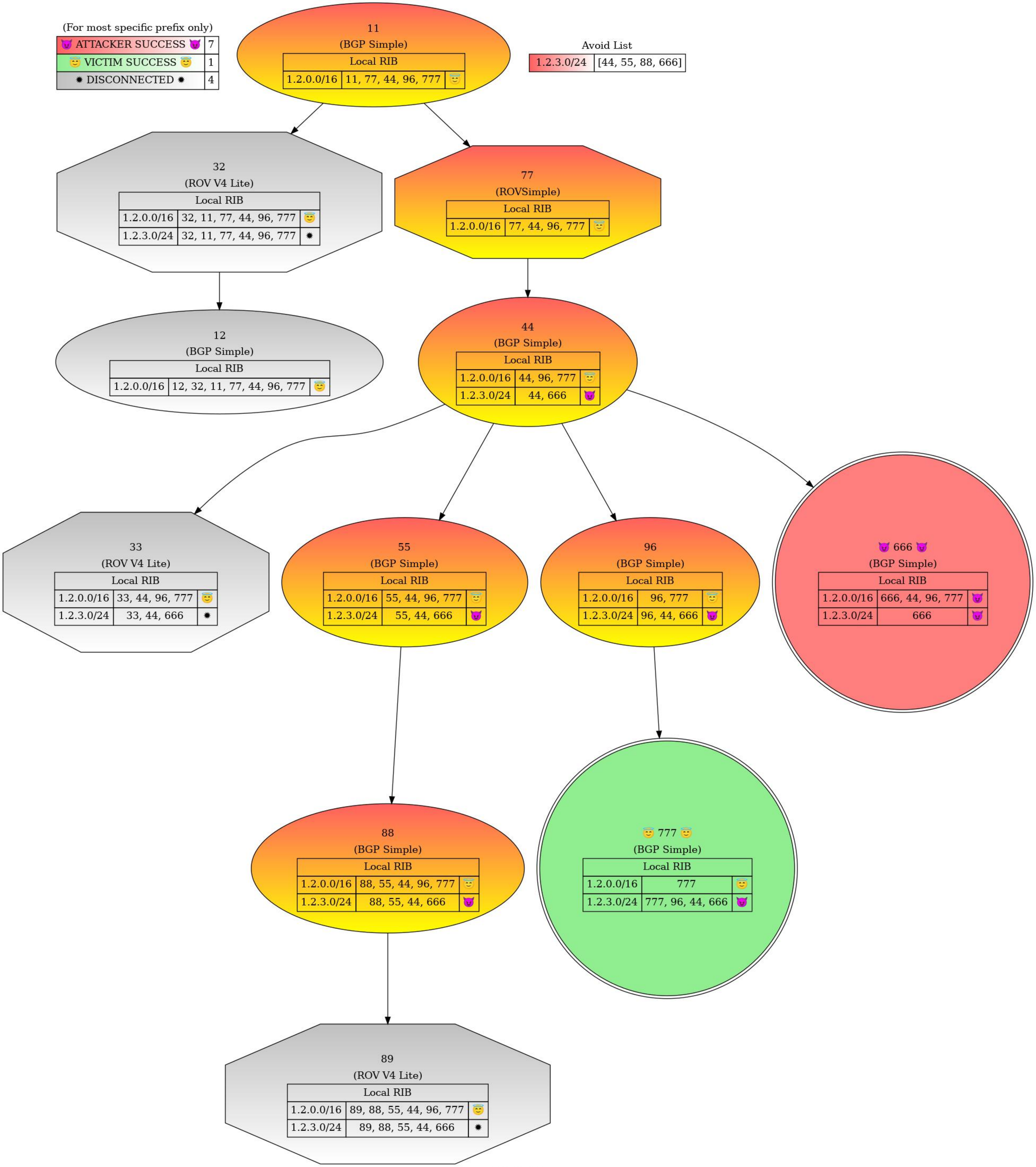
(109 Ground Truth)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



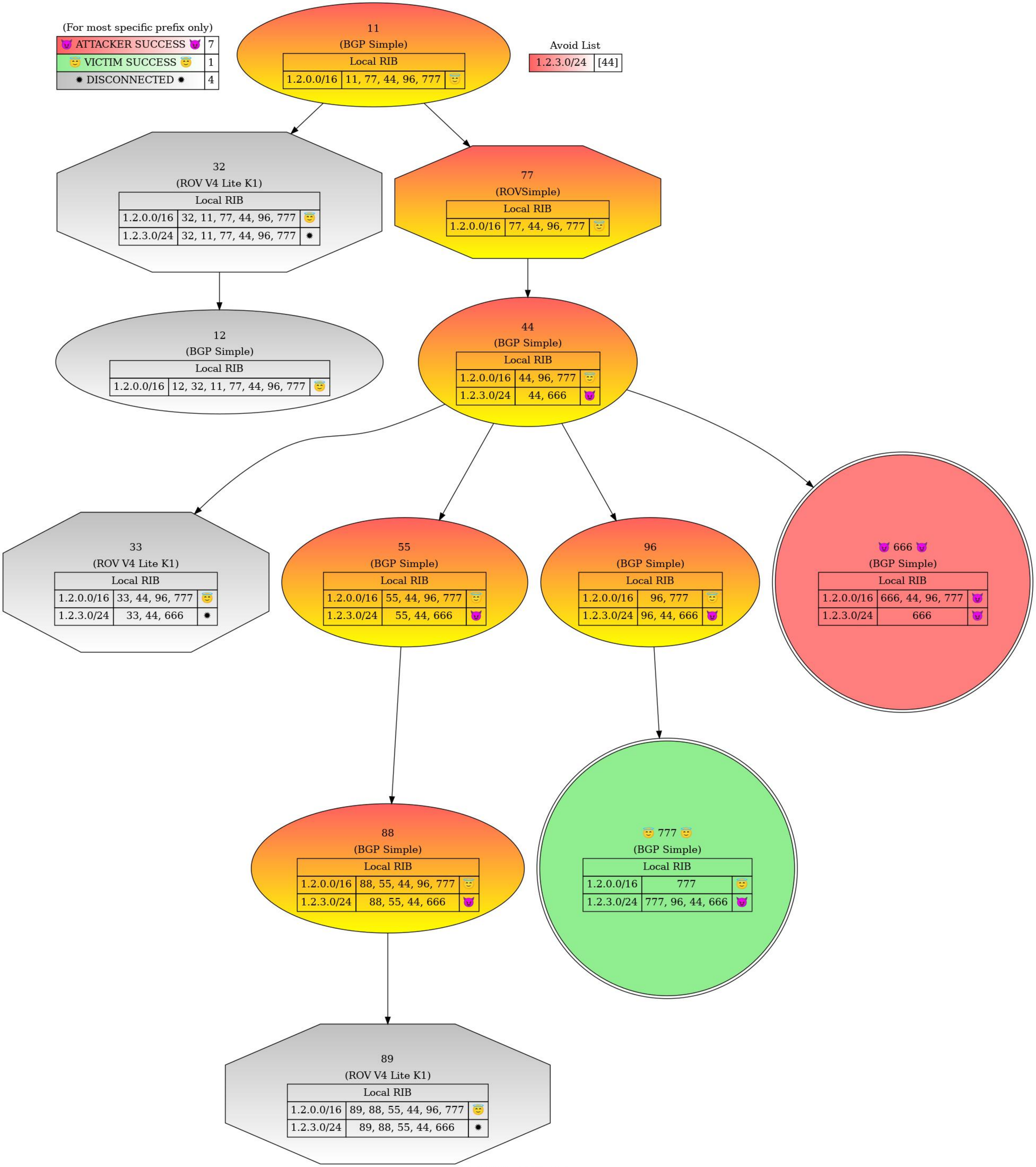
(109 Guess)
Subprefix Hijack with V1 Lite.
Traceback for 1.2.3.0/24



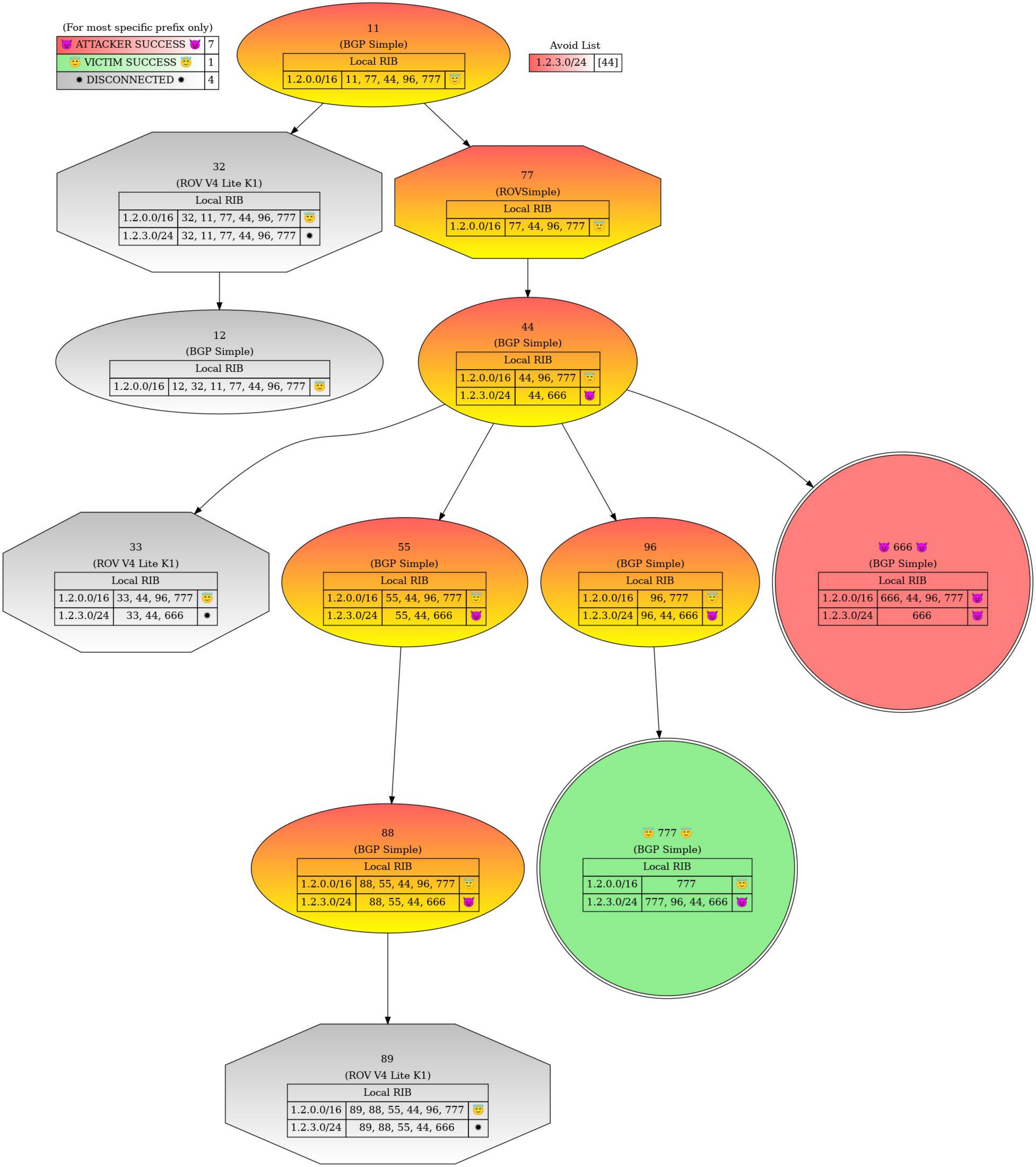
(110 Ground Truth)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



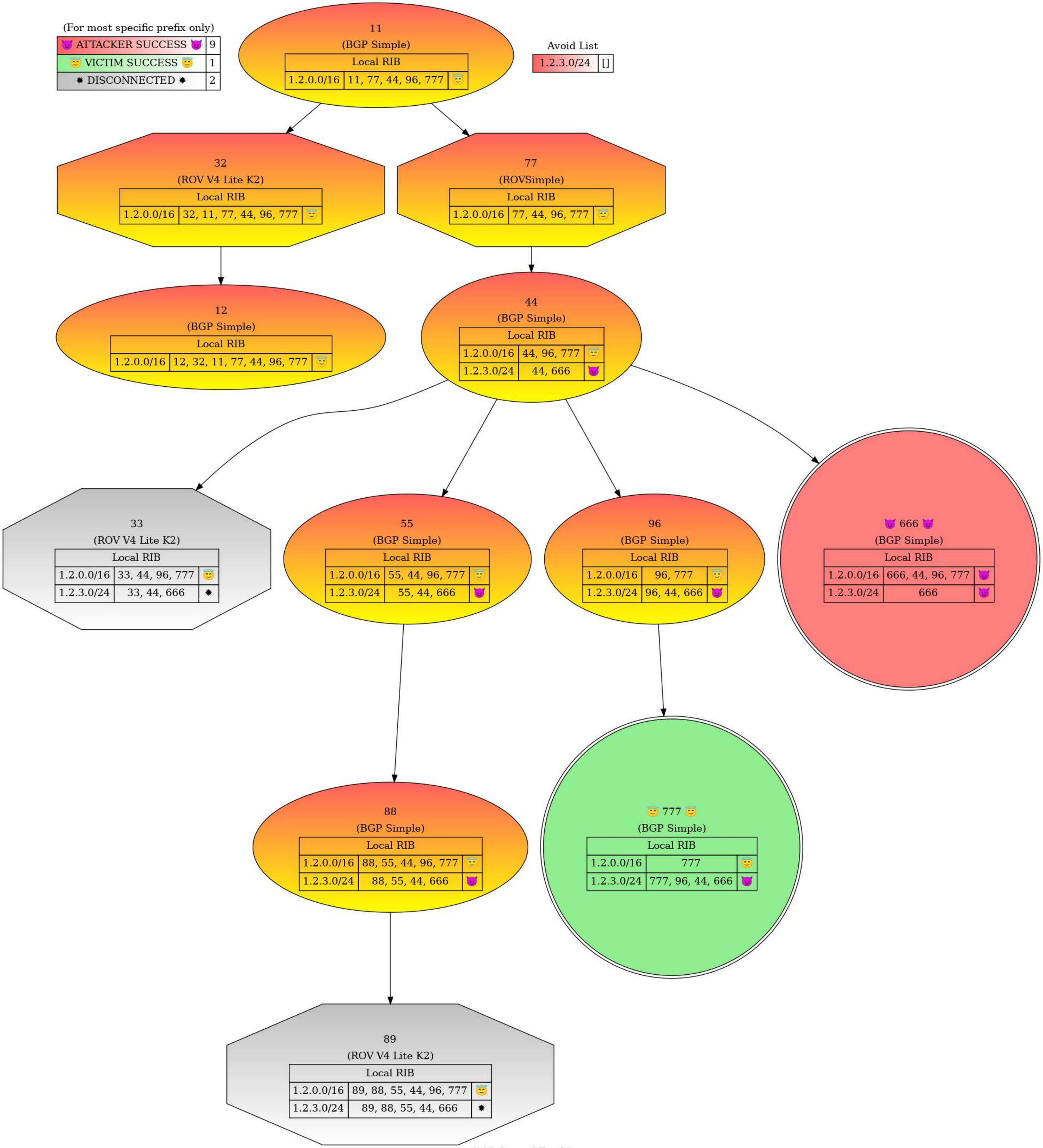
(110 Guess)
Subprefix Hijack with V4 Lite.
Traceback for 1.2.3.0/24



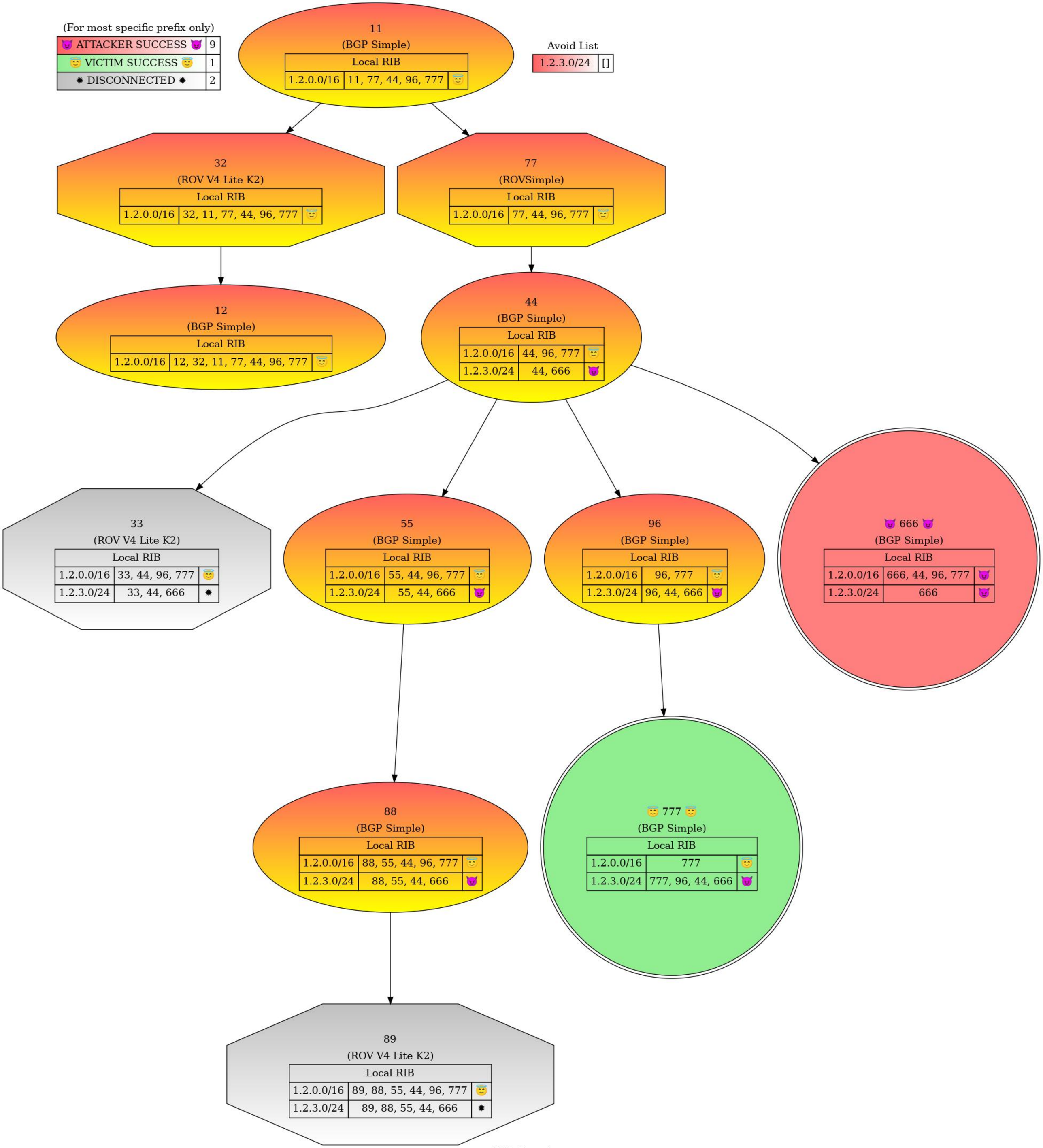
(111 Ground Truth)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



(111 Guess)
Subprefix Hijack with V4 Lite k=1.
Traceback for 1.2.3.0/24



(112 Ground Truth)
Subprefix Hijack with V4 Lite k=2.
Traceback for 1.2.3.0/24



(112 Guess)
Subprefix Hijack with V4 Lite k=2.
Traceback for 1.2.3.0/24

(For most specific prefix only)

😈 ATTACKER SUCCESS 😈	5
😇 VICTIM SUCCESS 😇	1
✹ DISCONNECTED ✹	1

11
(BGP Simple)

Local RIB		
1.2.0.0/16	11, 77, 44, 777	😇

32
(ROV++V1 Simple)

Local RIB		
1.2.0.0/16	32, 11, 77, 44, 777	😇

77
(ROVSimple)

Local RIB		
1.2.0.0/16	77, 44, 777	😇

44
(BGP Simple)

Local RIB		
1.2.0.0/16	44, 777	😇
1.2.3.0/24	44, 666	😈

33
(ROV++V1 Simple)

Local RIB		
1.2.0.0/16	33, 44, 777	😇
1.2.3.0/24	33, 44, 666	✹

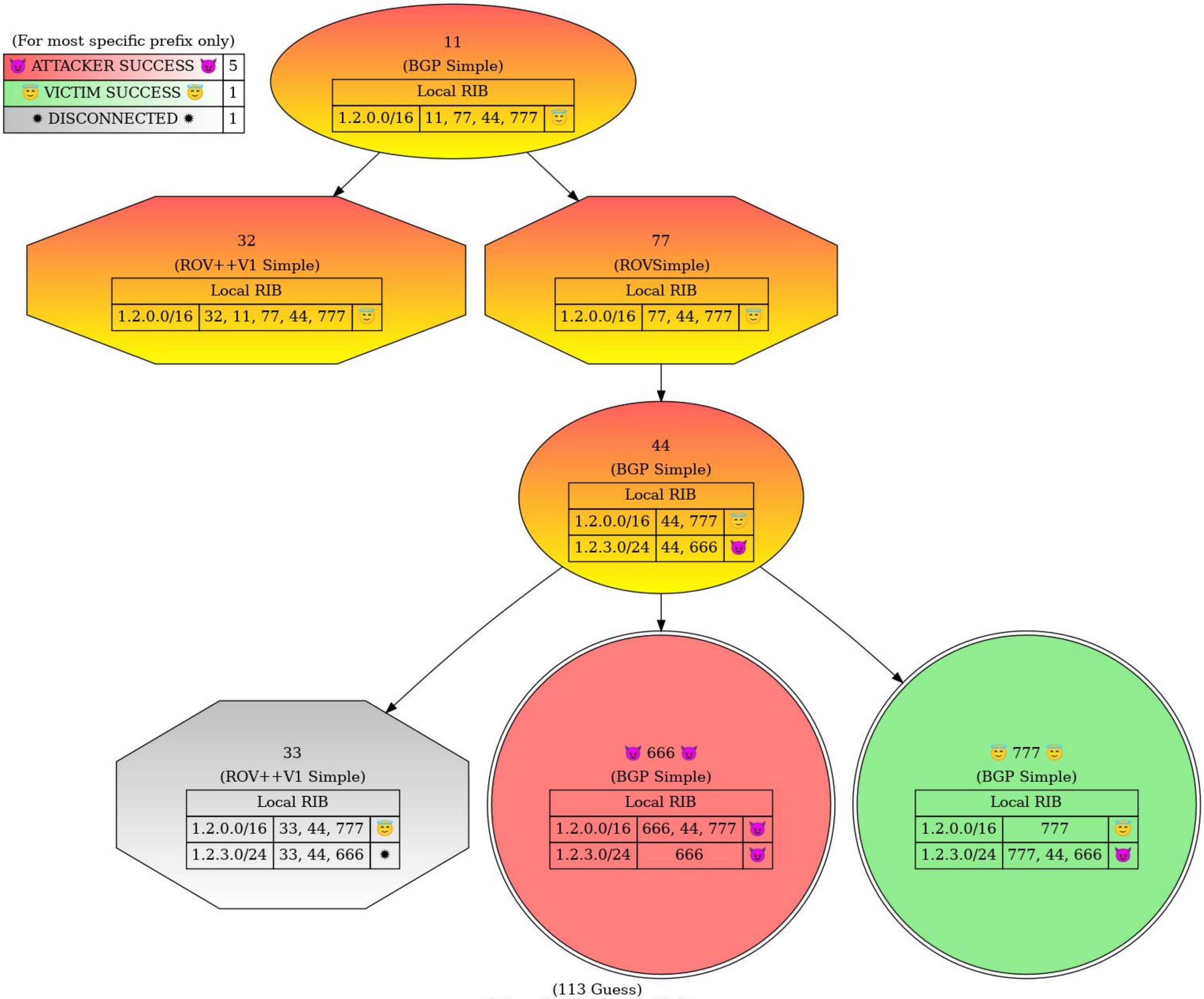
😈 666 😈
(BGP Simple)

Local RIB		
1.2.0.0/16	666, 44, 777	😈
1.2.3.0/24	666	😈

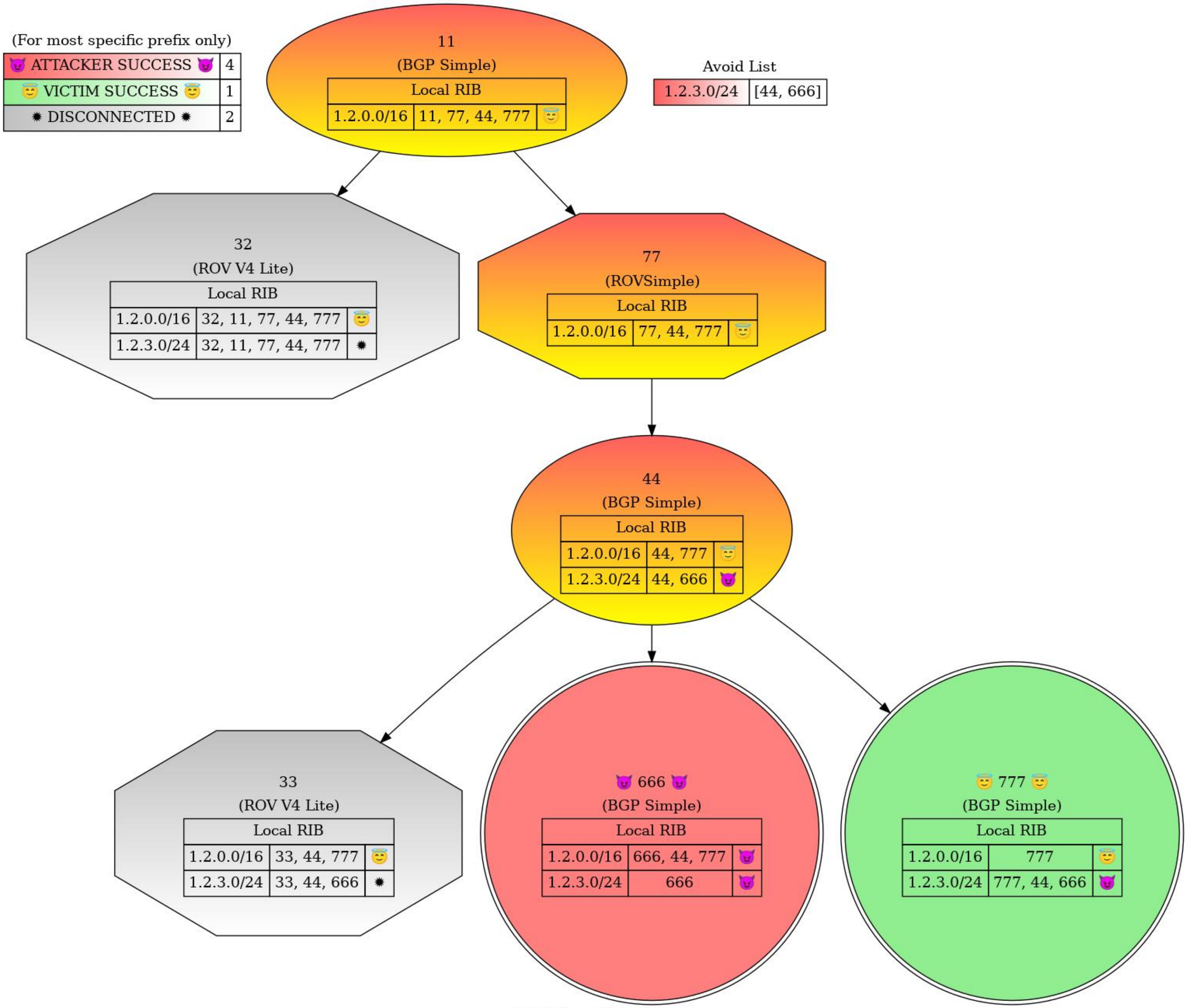
😇 777 😇
(BGP Simple)

Local RIB		
1.2.0.0/16	777	😇
1.2.3.0/24	777, 44, 666	😈

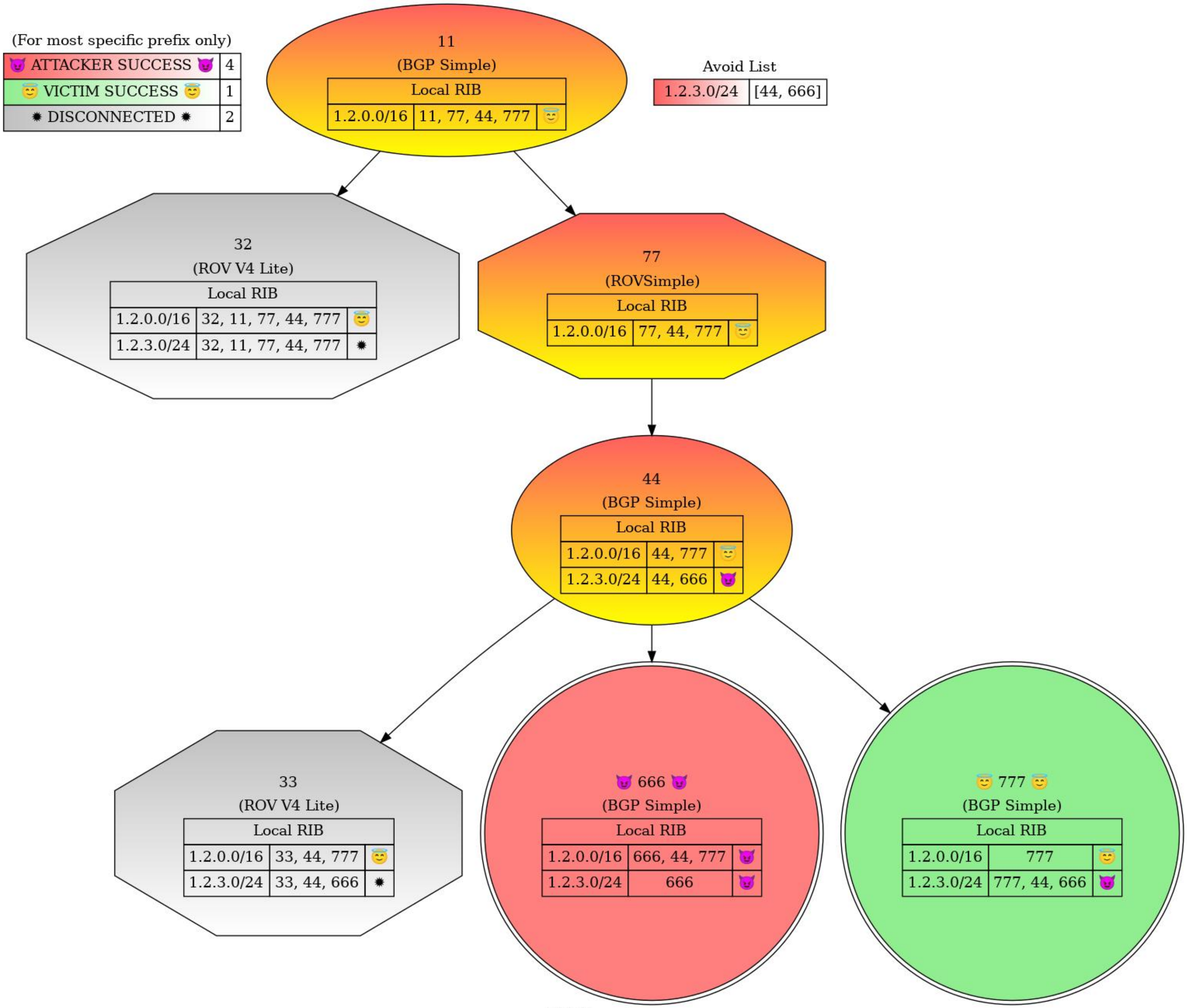
(113 Ground Truth)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



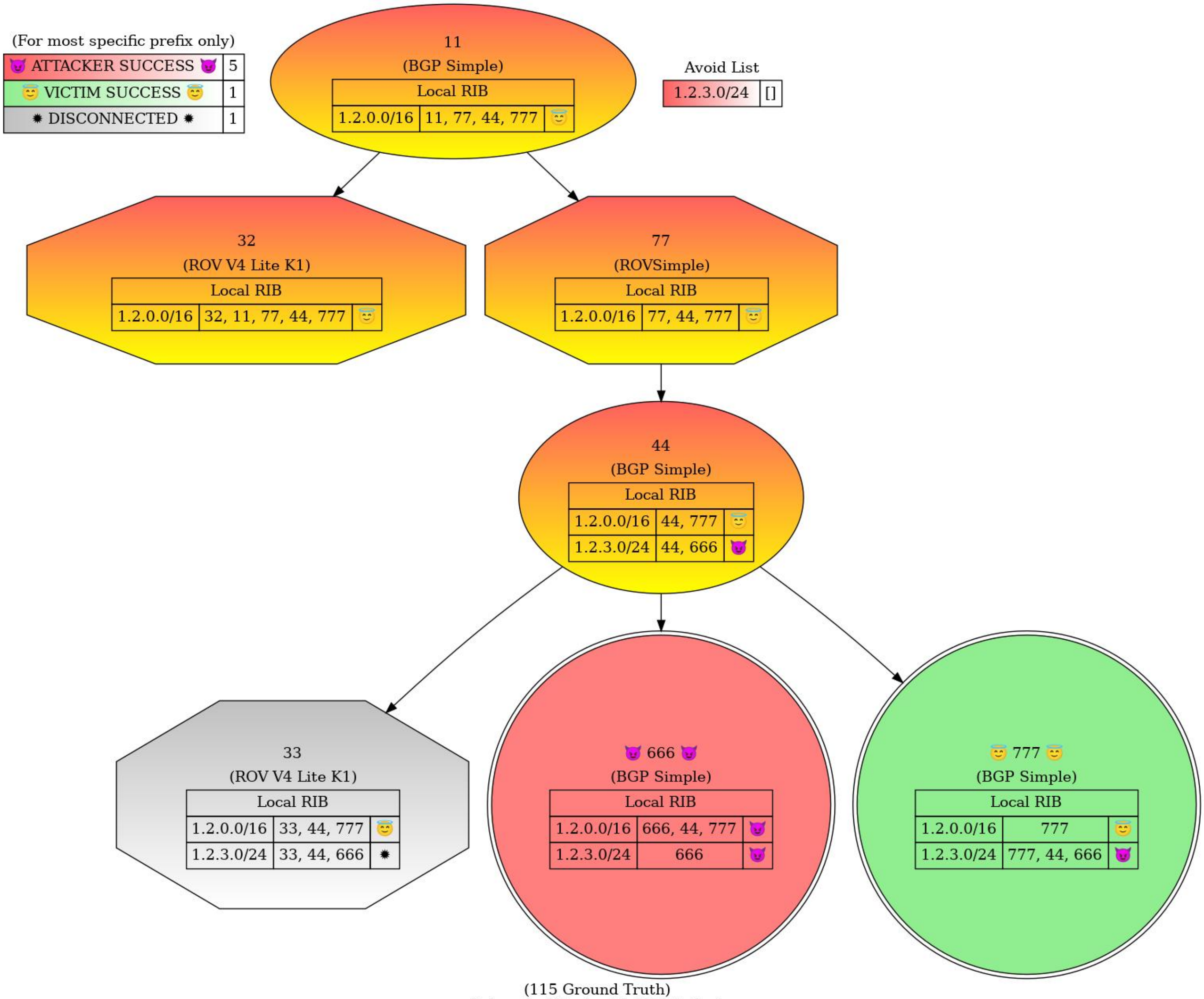
(113 Guess)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



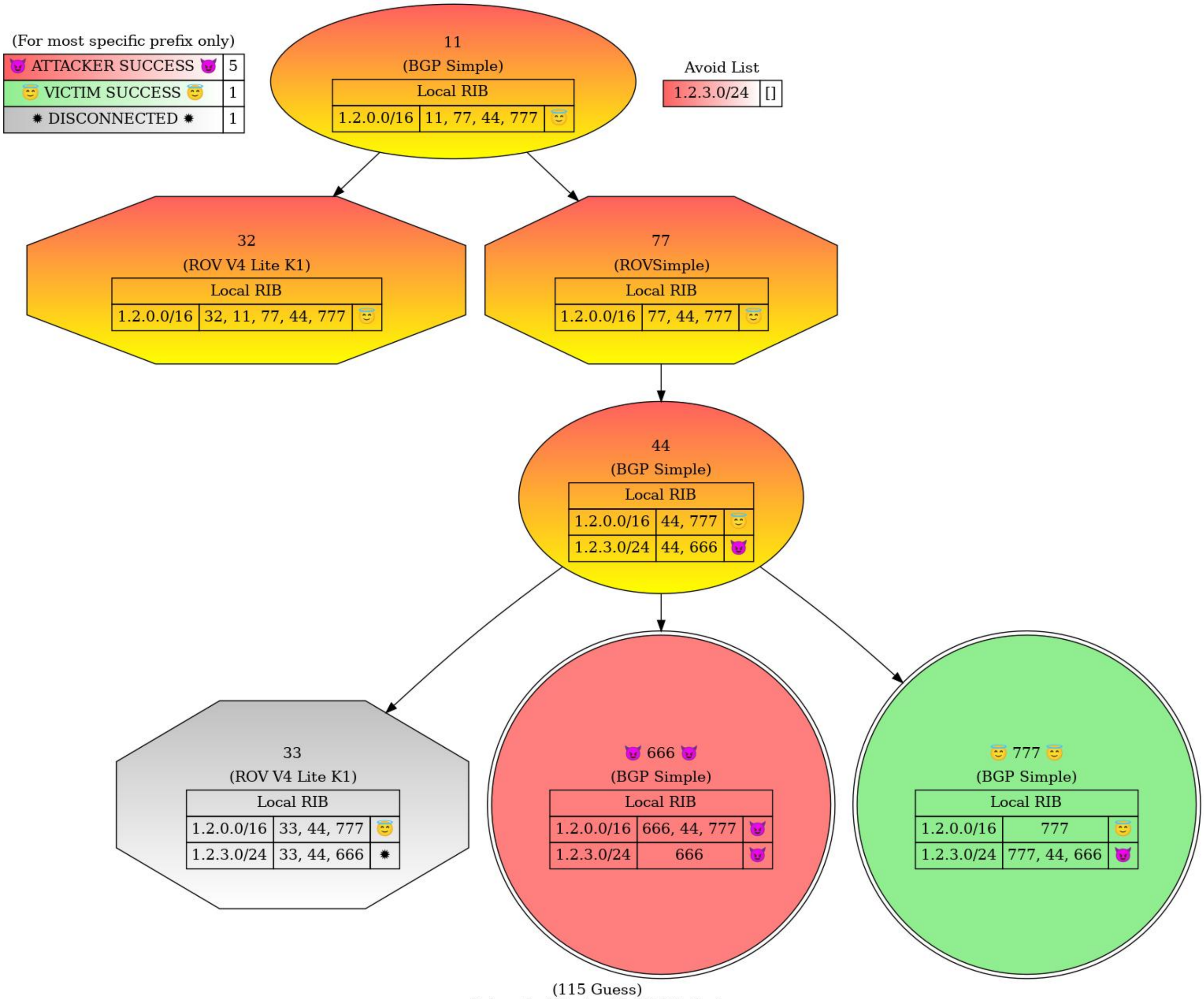
(114 Ground Truth)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



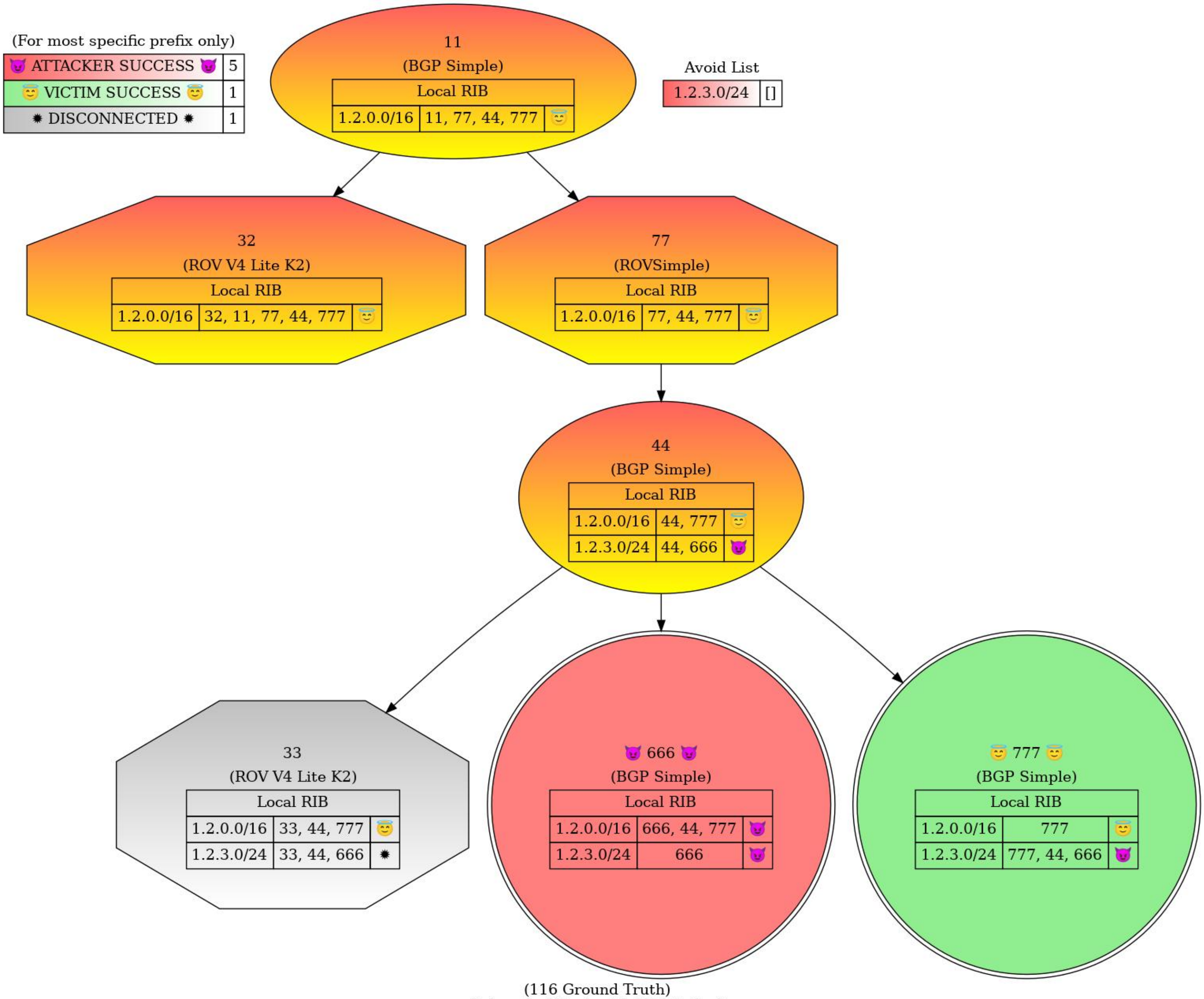
(114 Guess)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



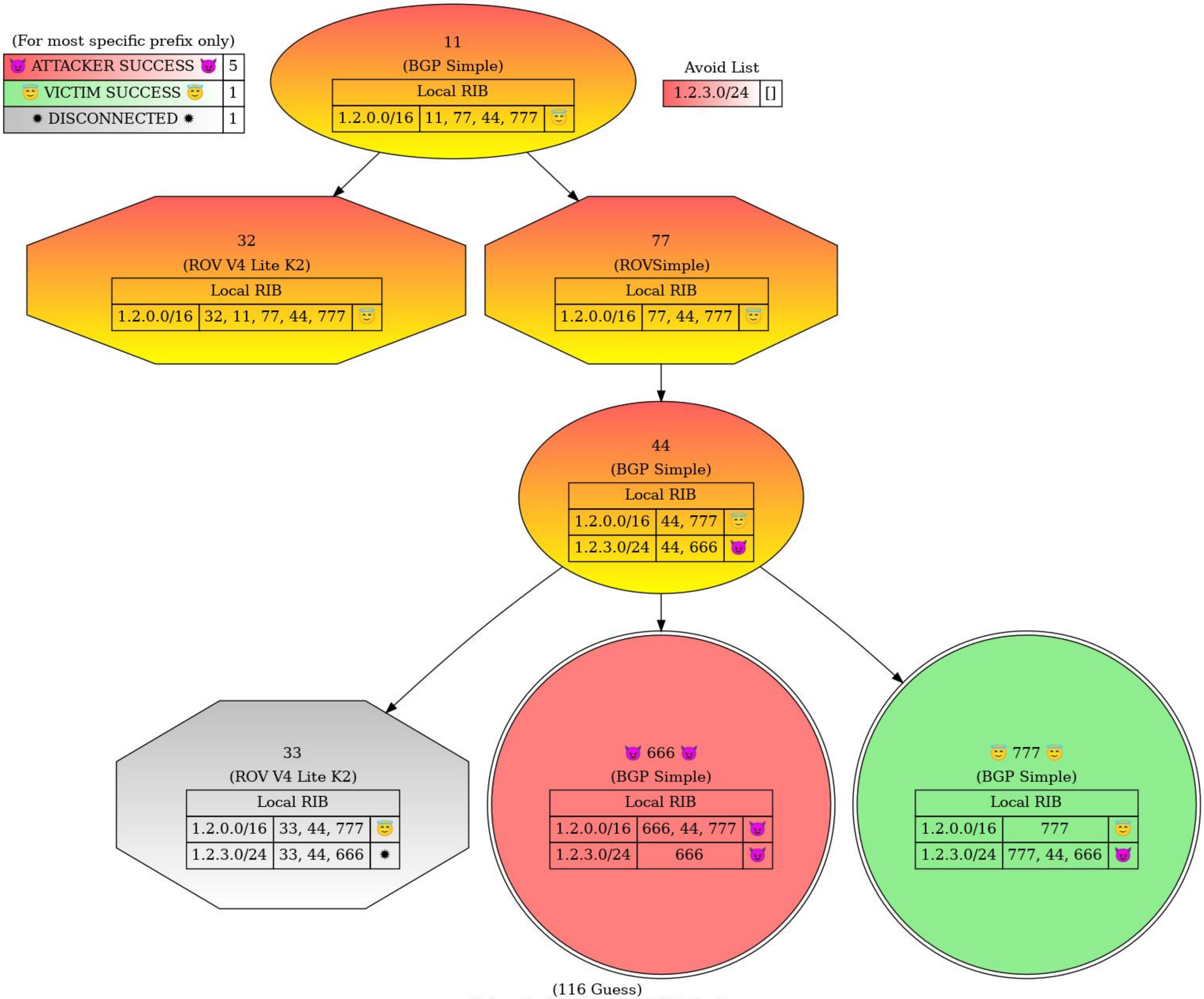
(115 Ground Truth)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



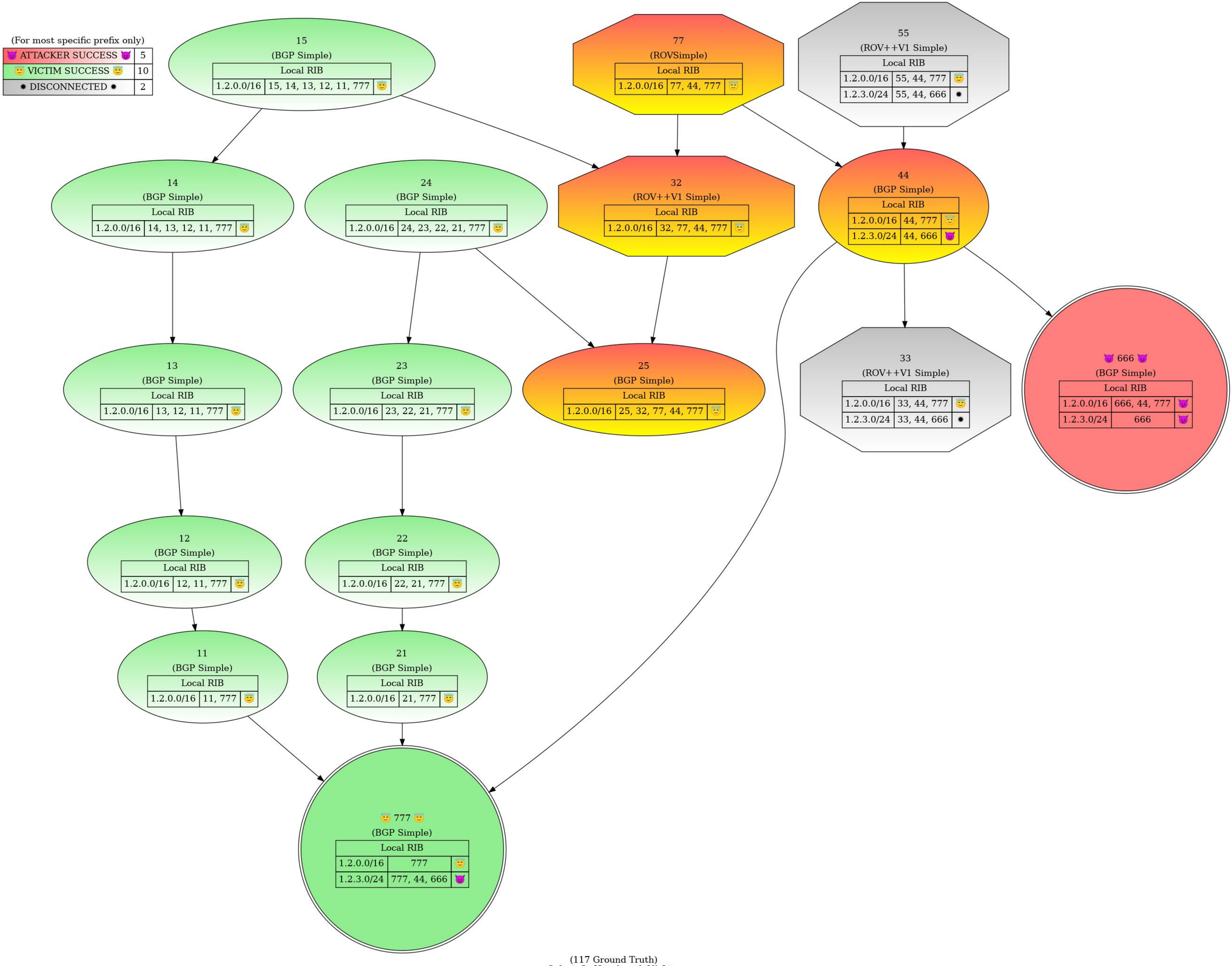
(115 Guess)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



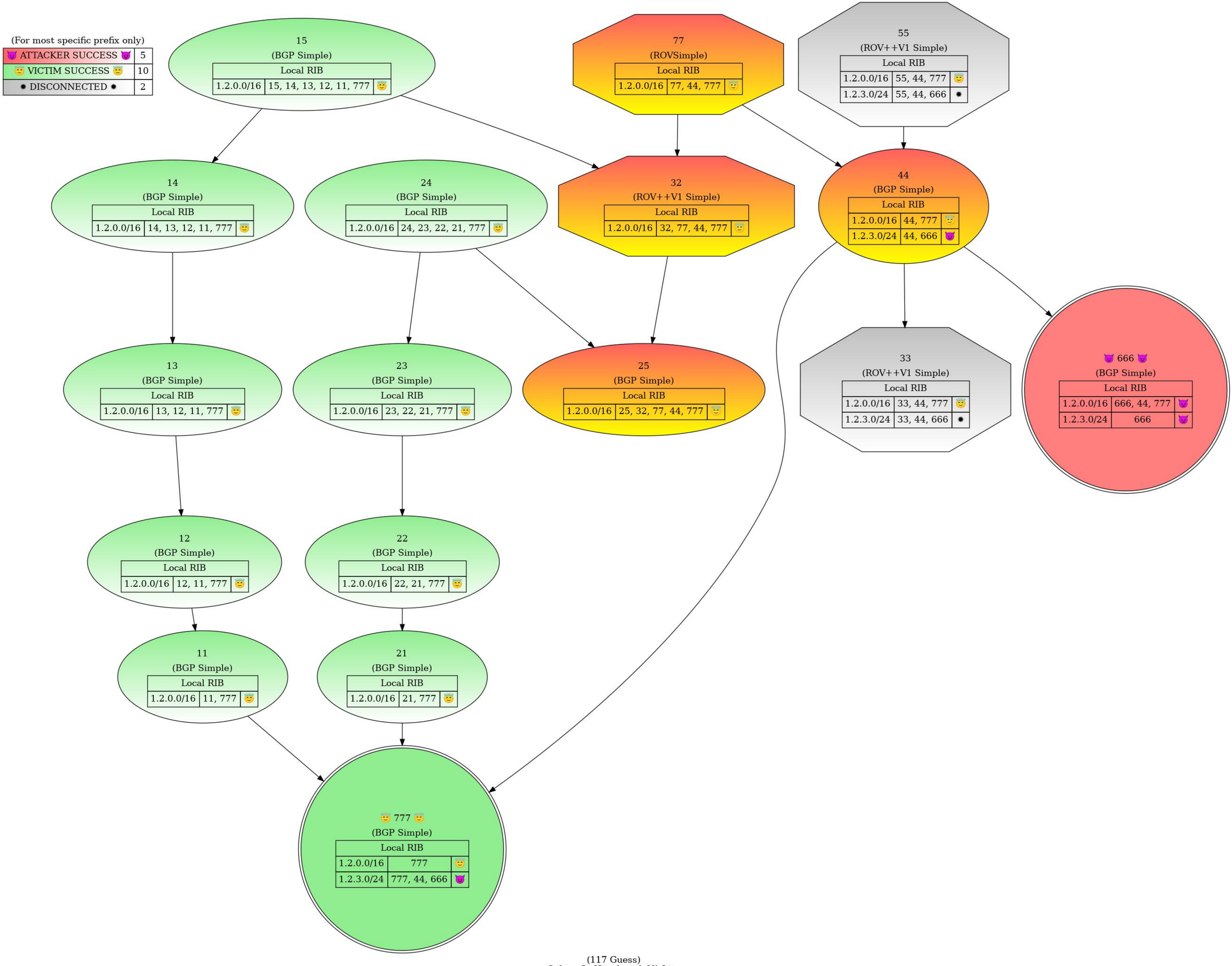
(116 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



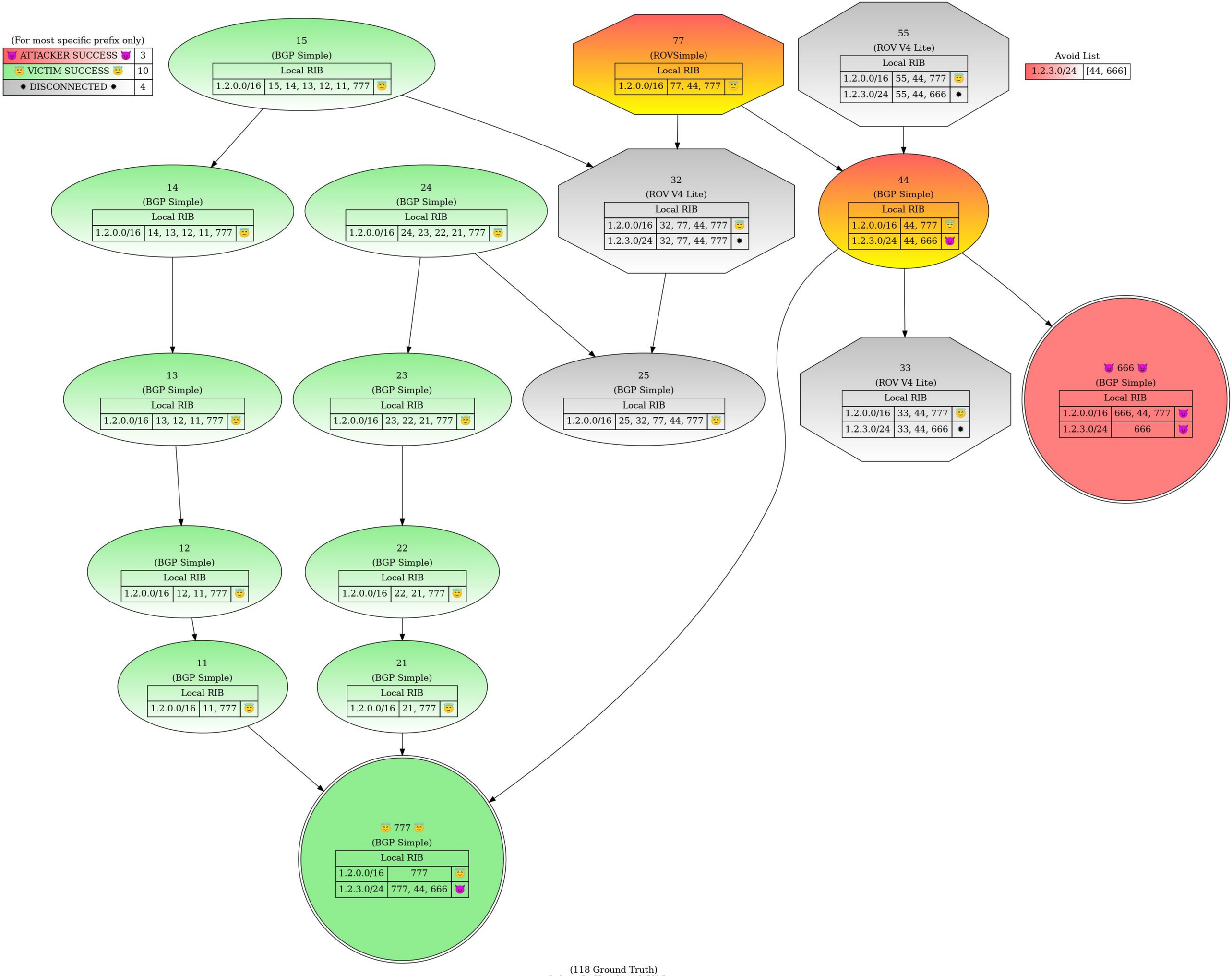
(116 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



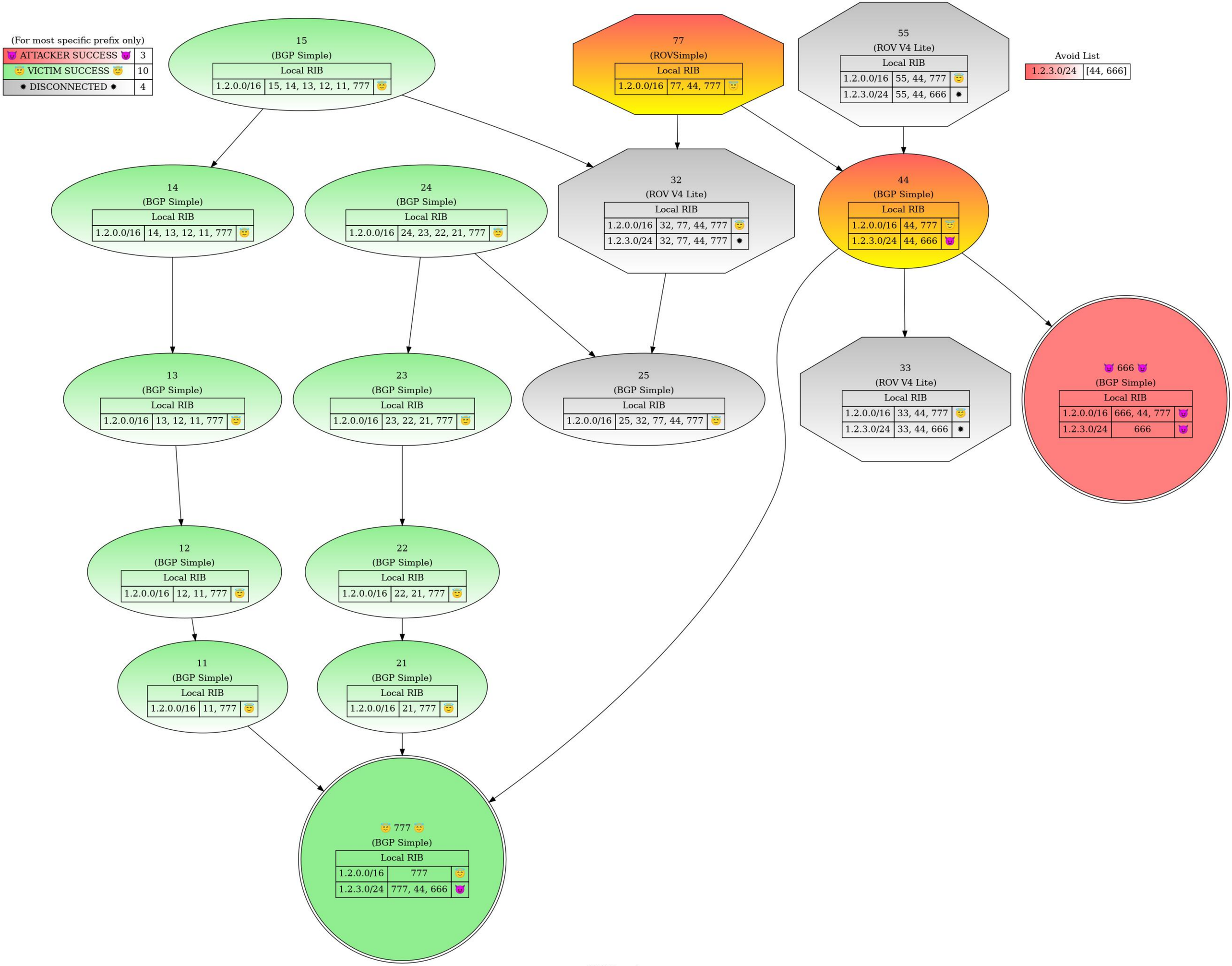
(117 Ground Truth)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



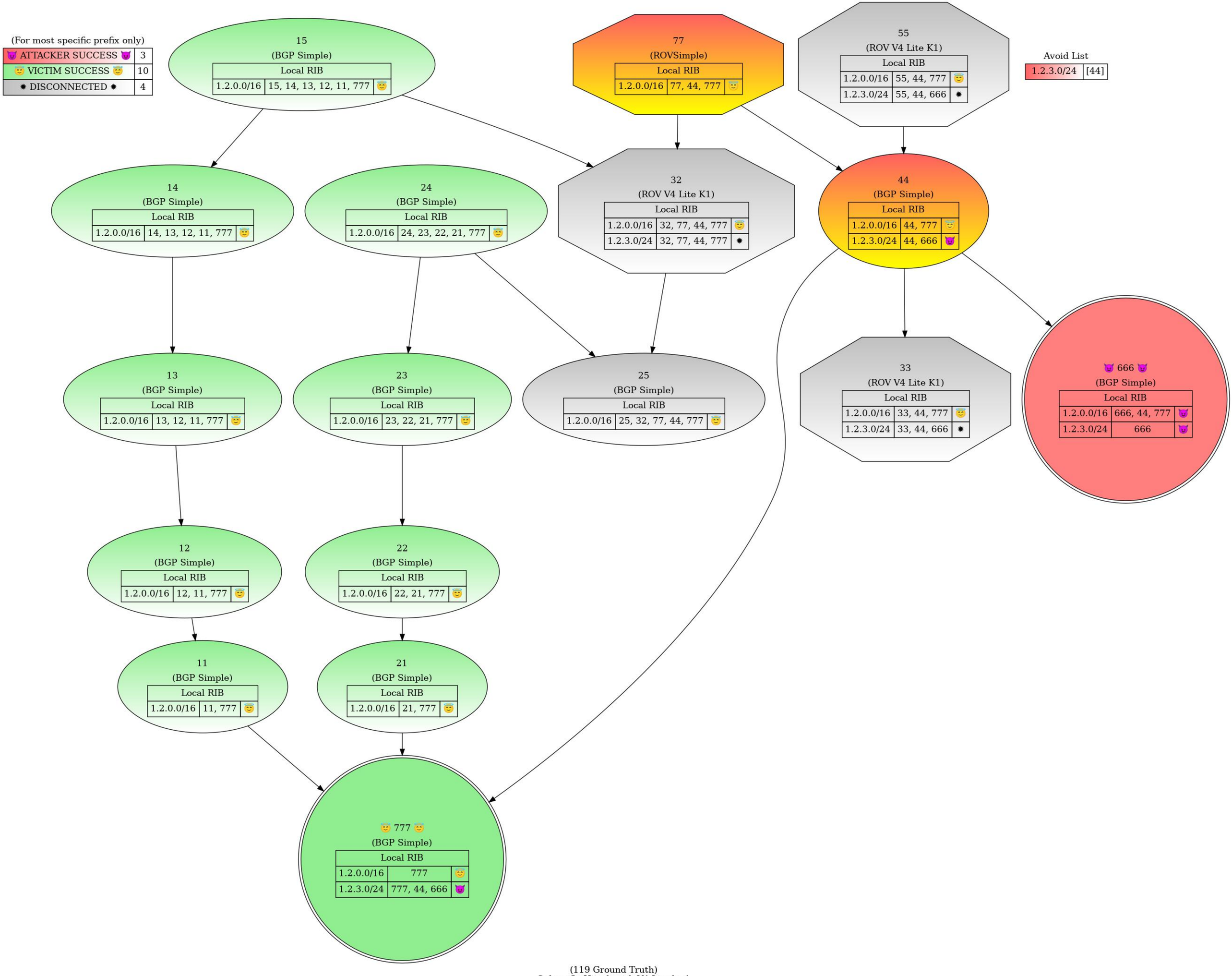
(117 Guess)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



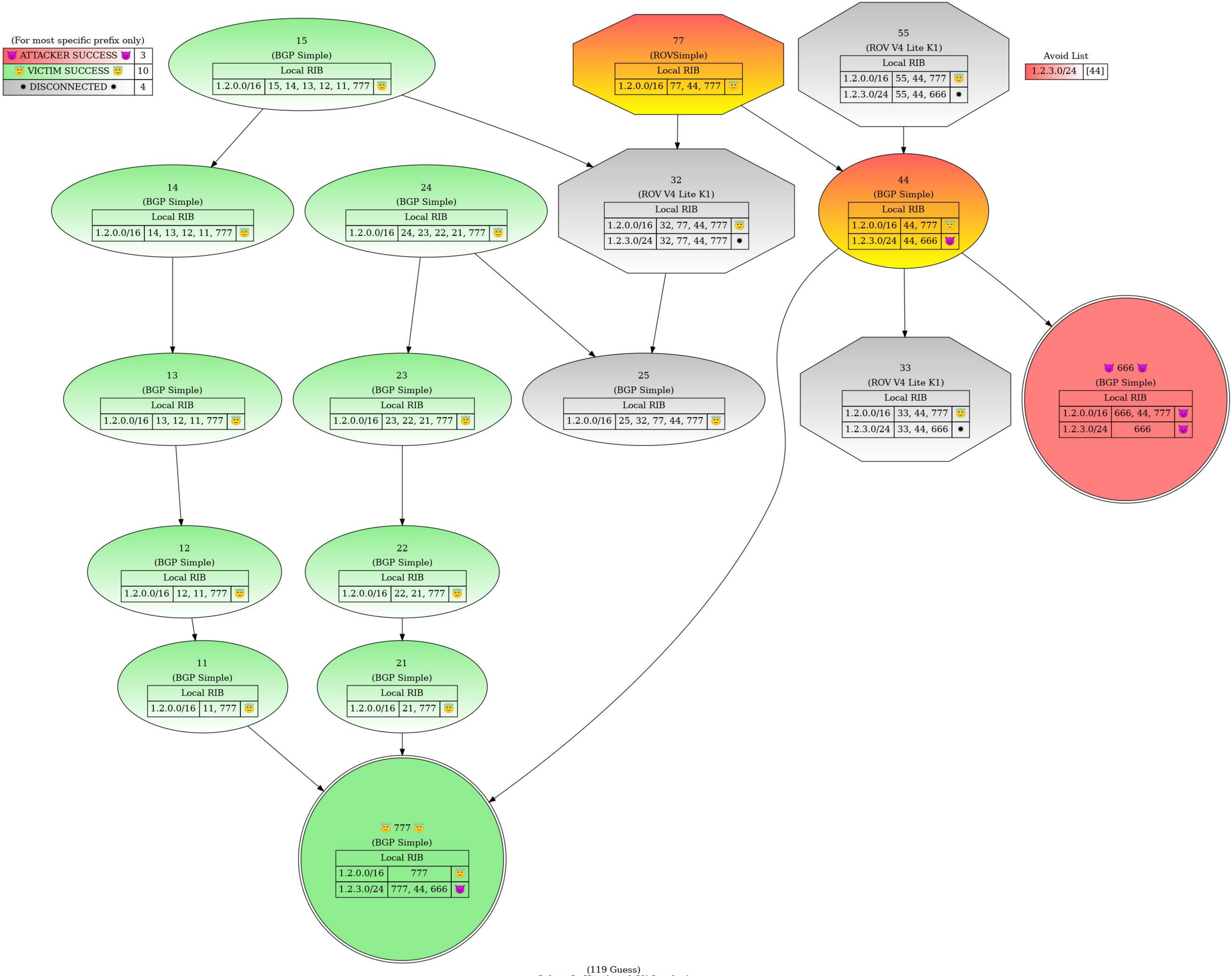
(118 Ground Truth)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



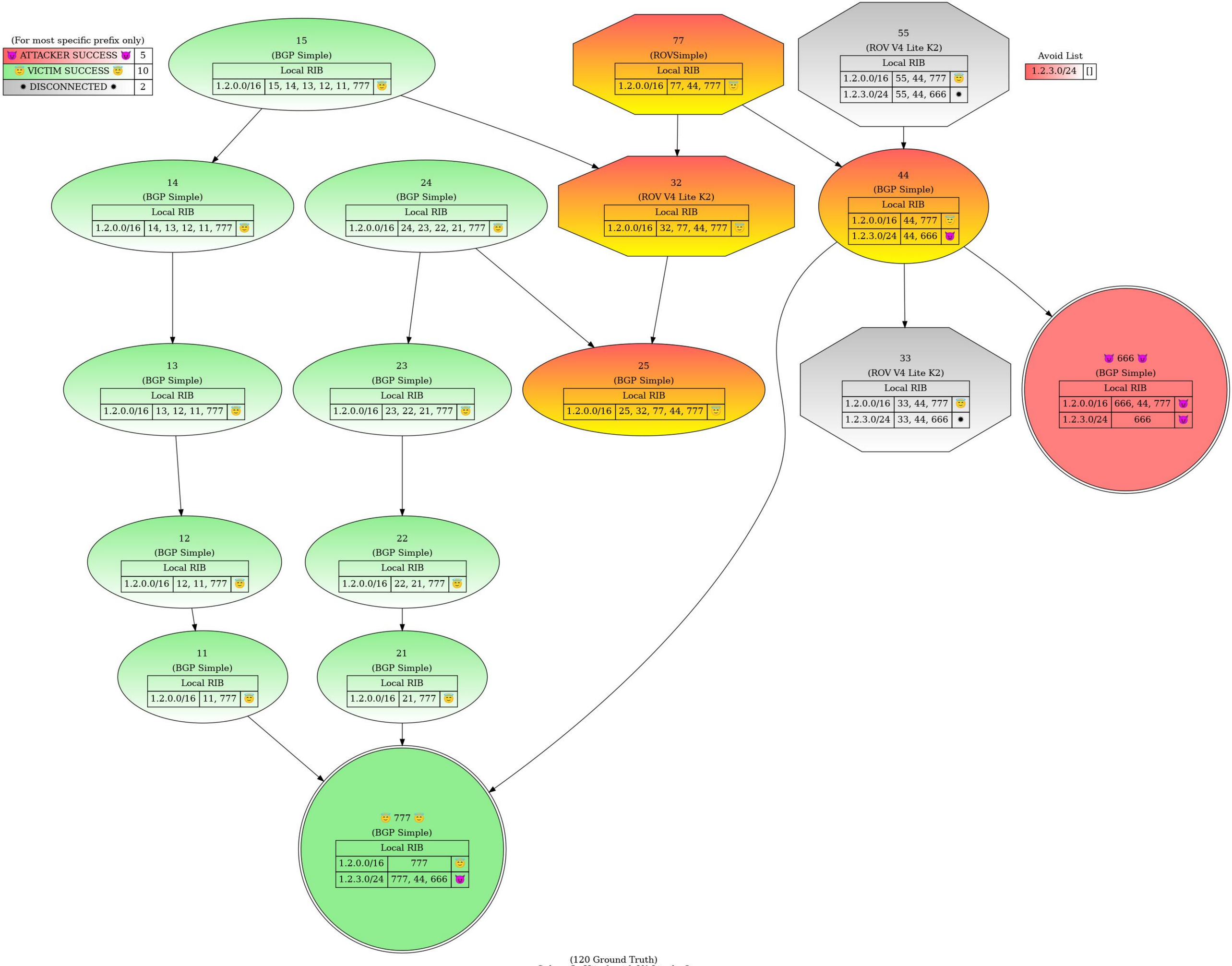
(118 Guess)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



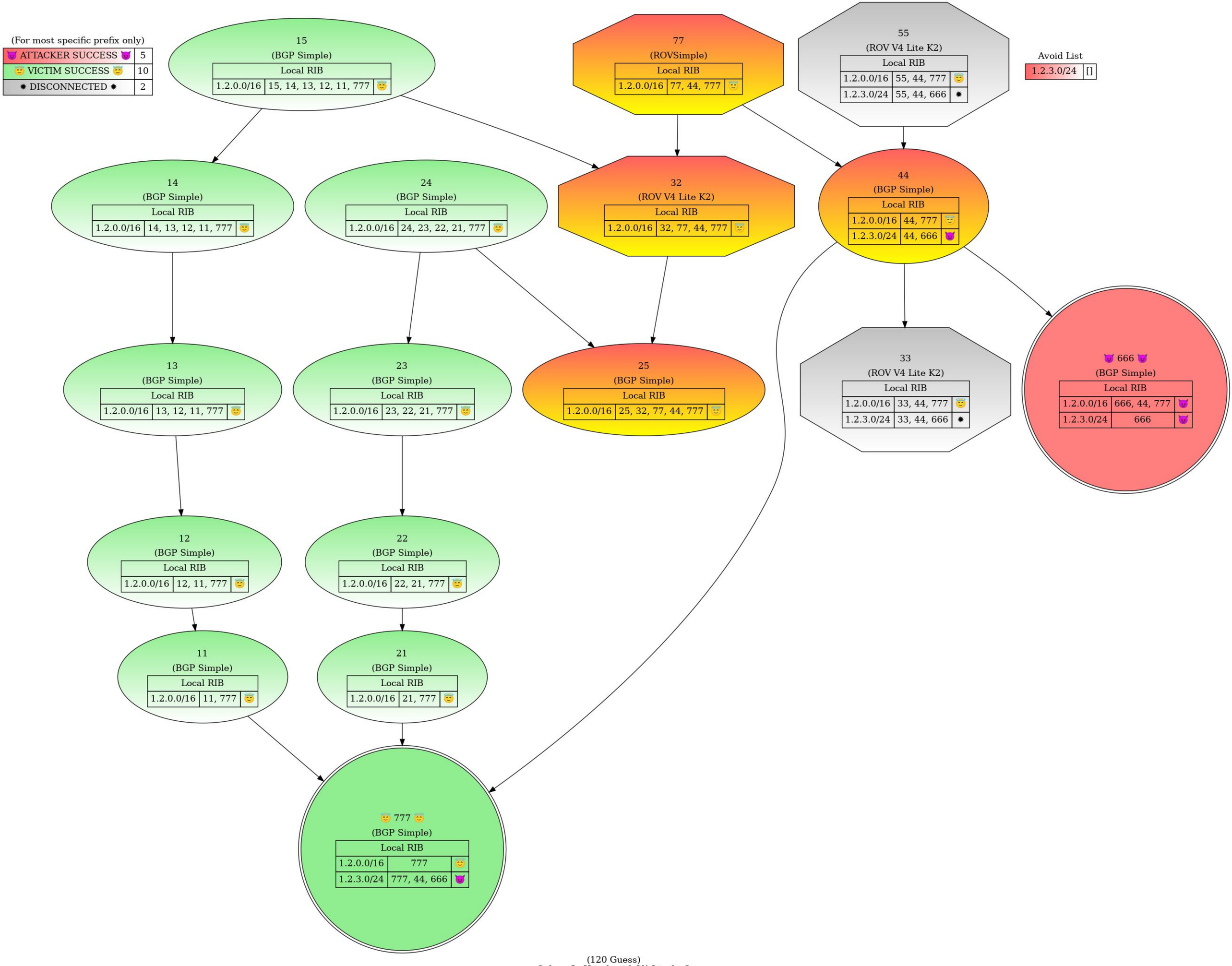
(119 Ground Truth)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



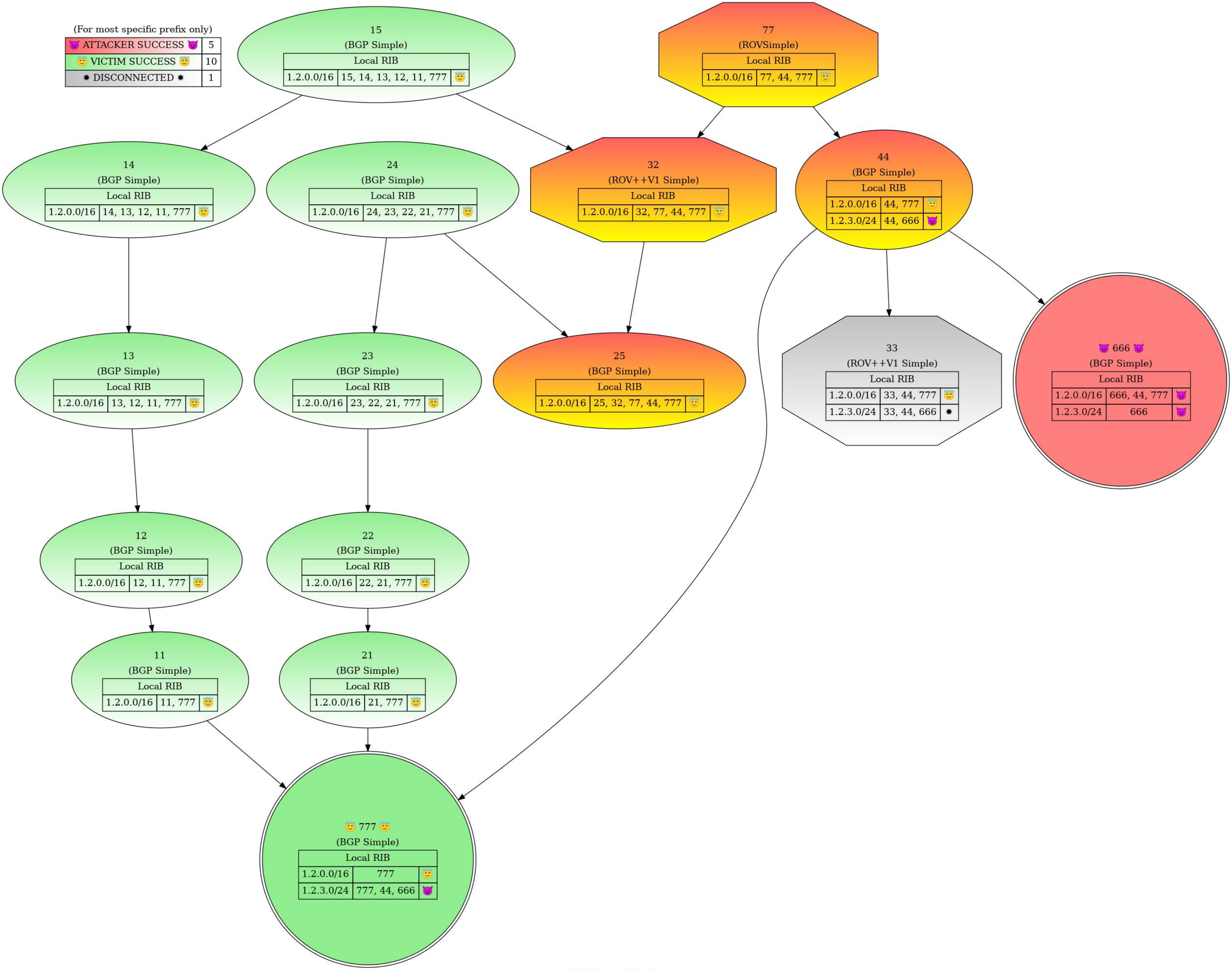
(119 Guess)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



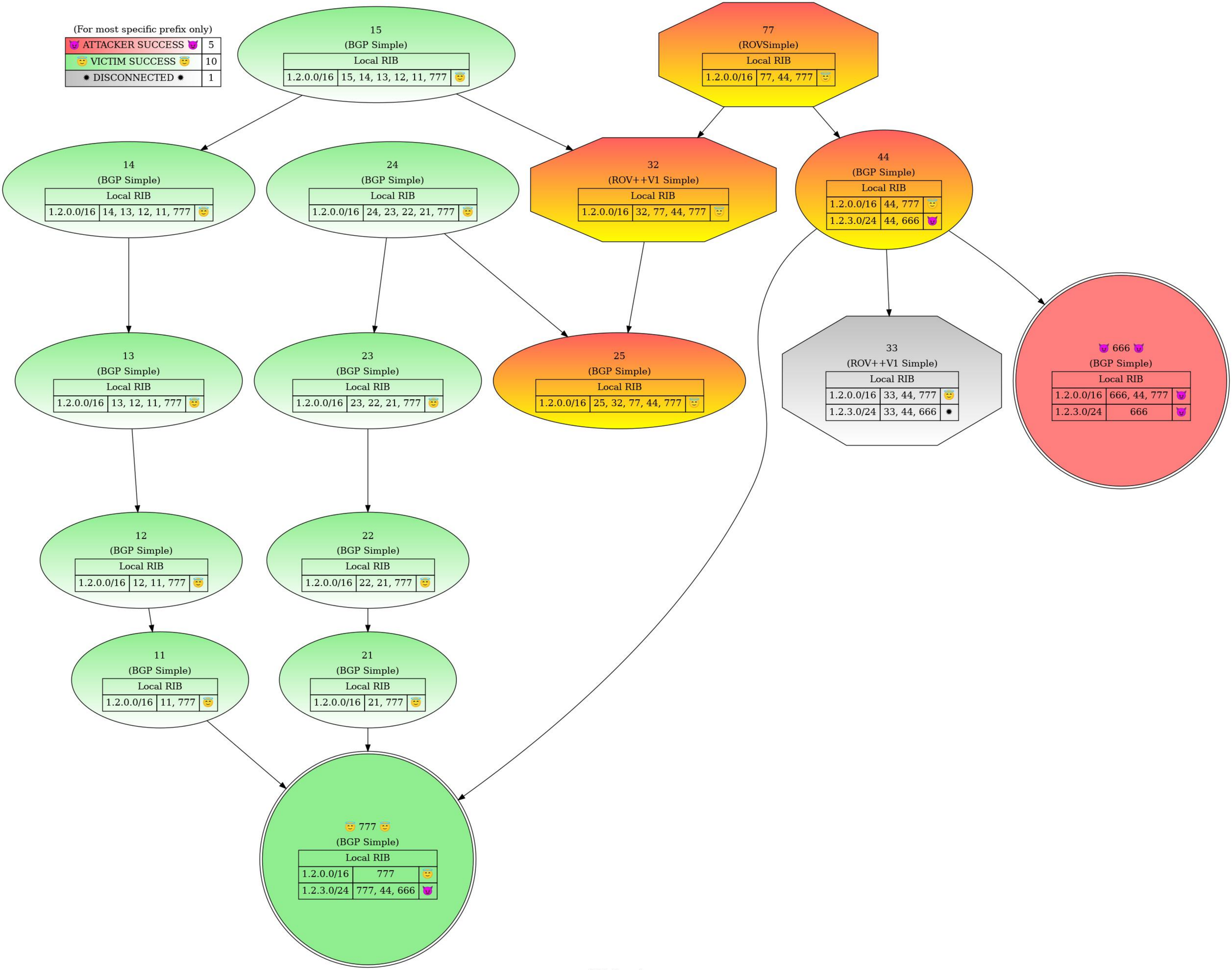
(120 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



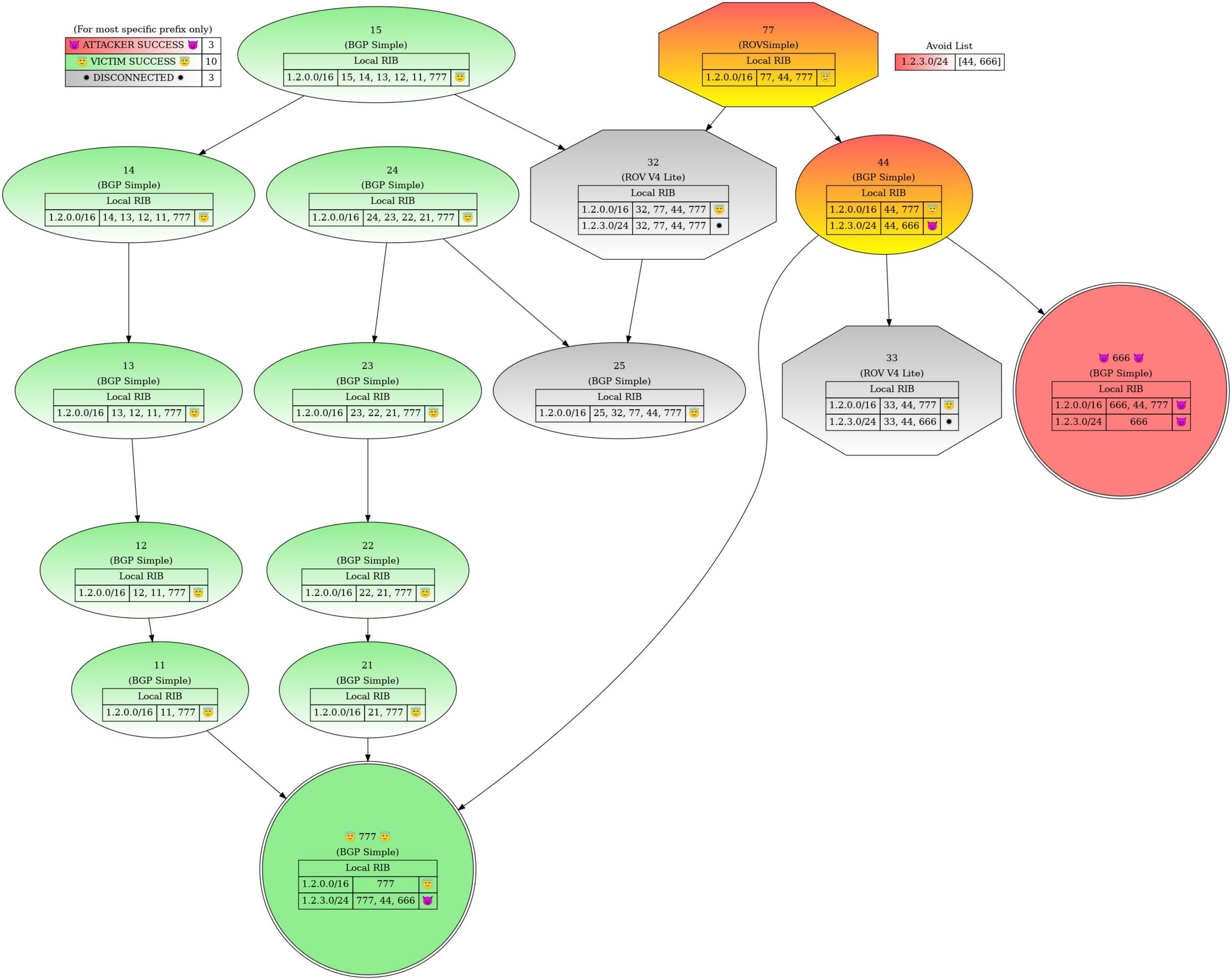
(120 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



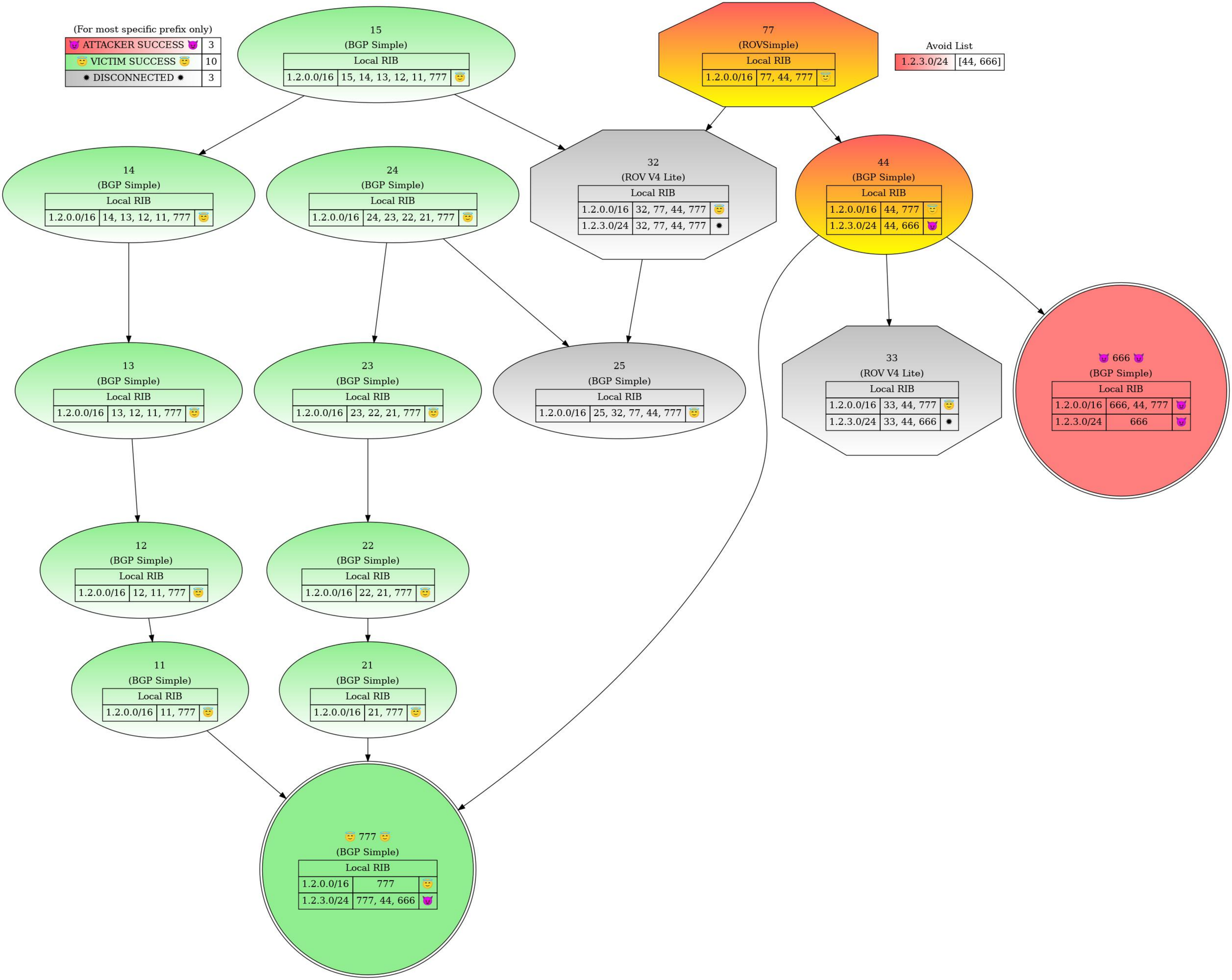
(121 Ground Truth)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



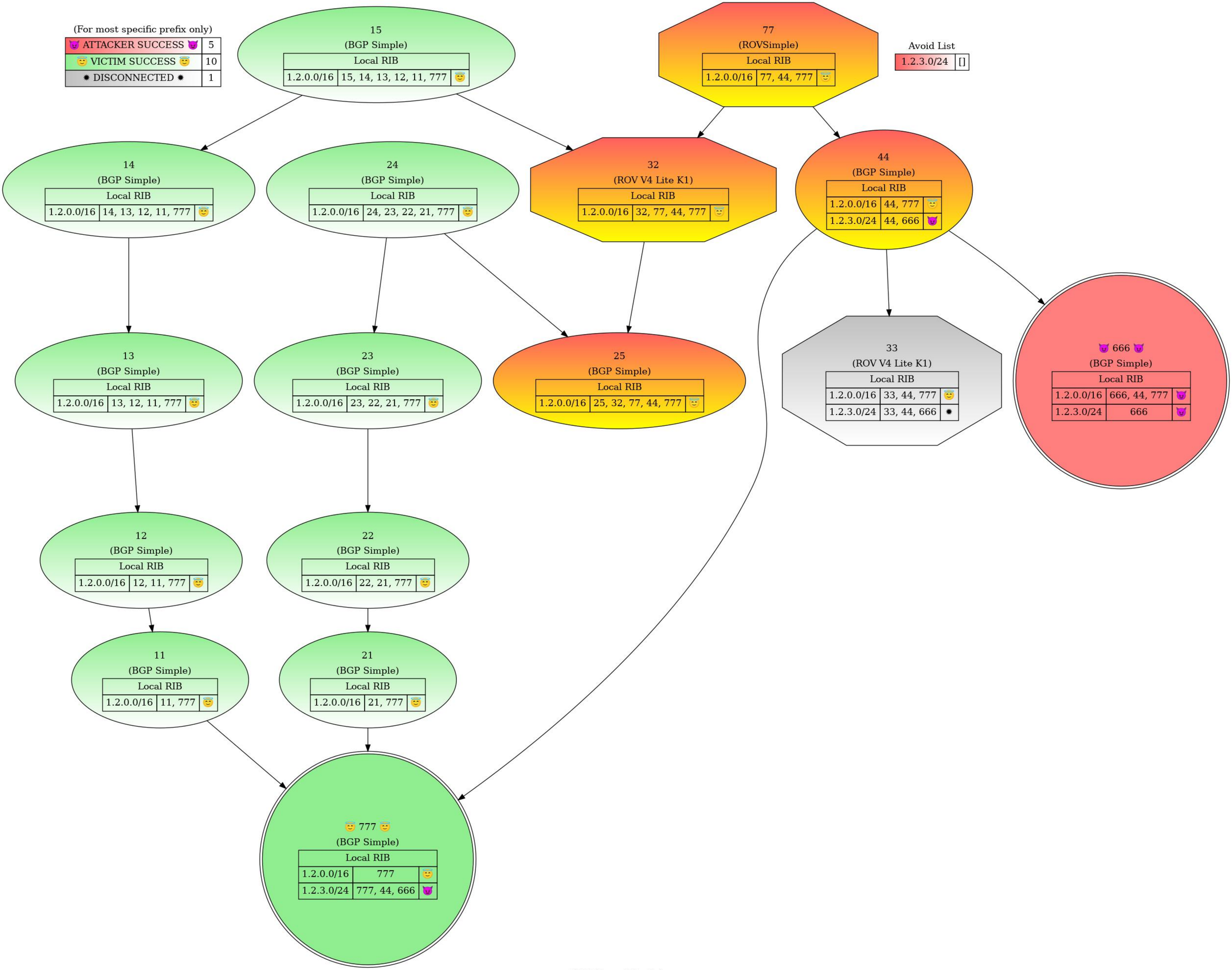
(121 Guess)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



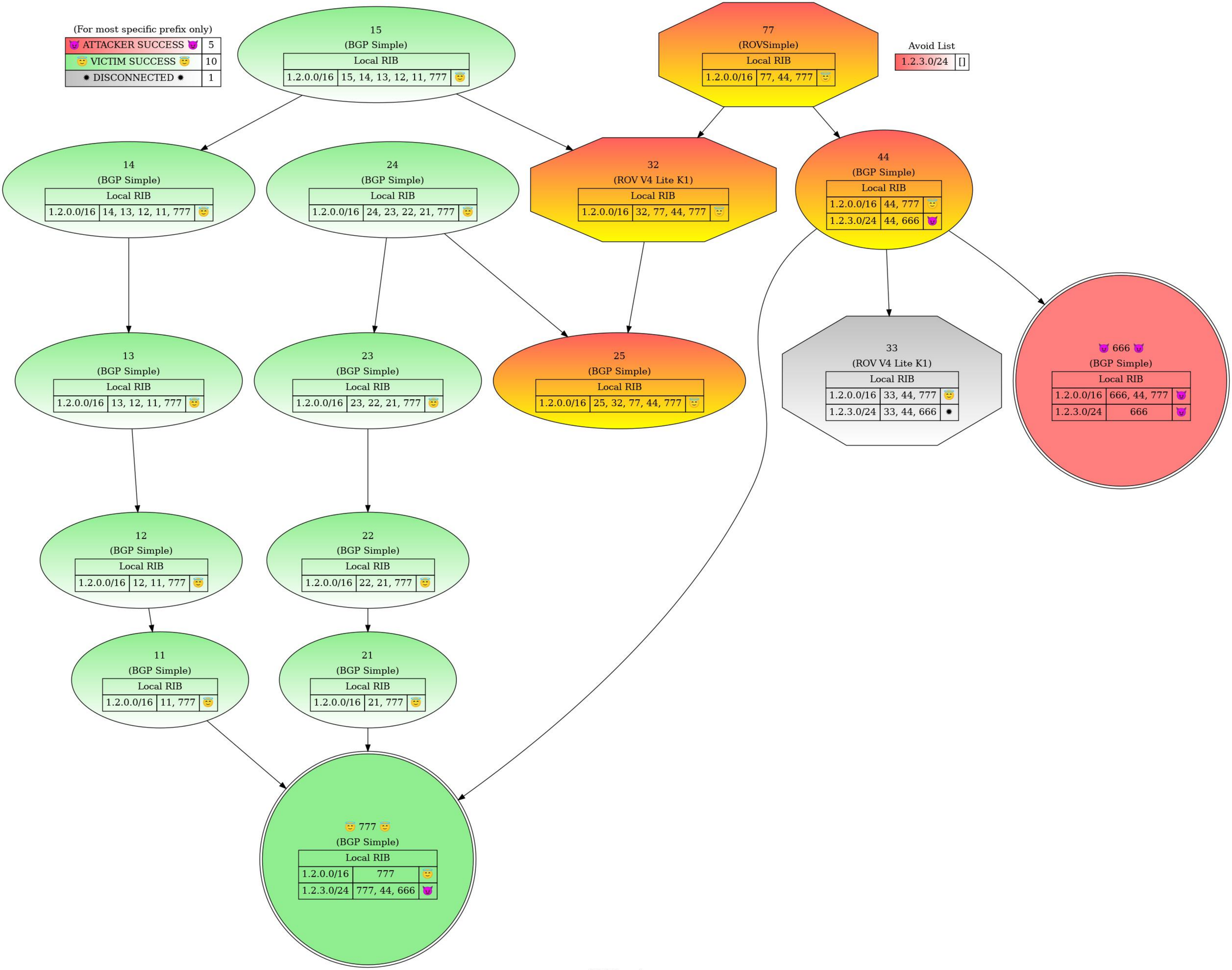
(122 Ground Truth)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



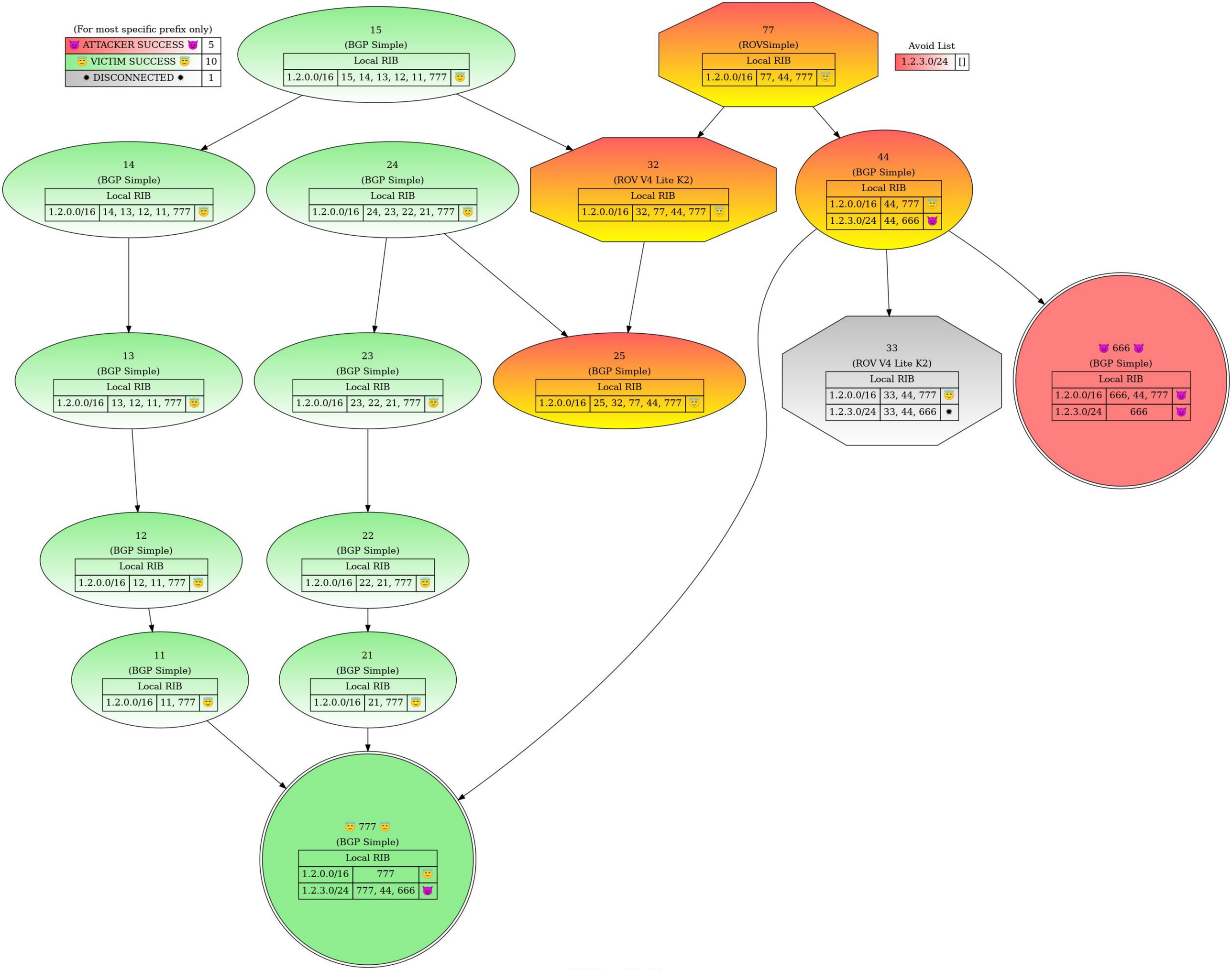
(122 Guess)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



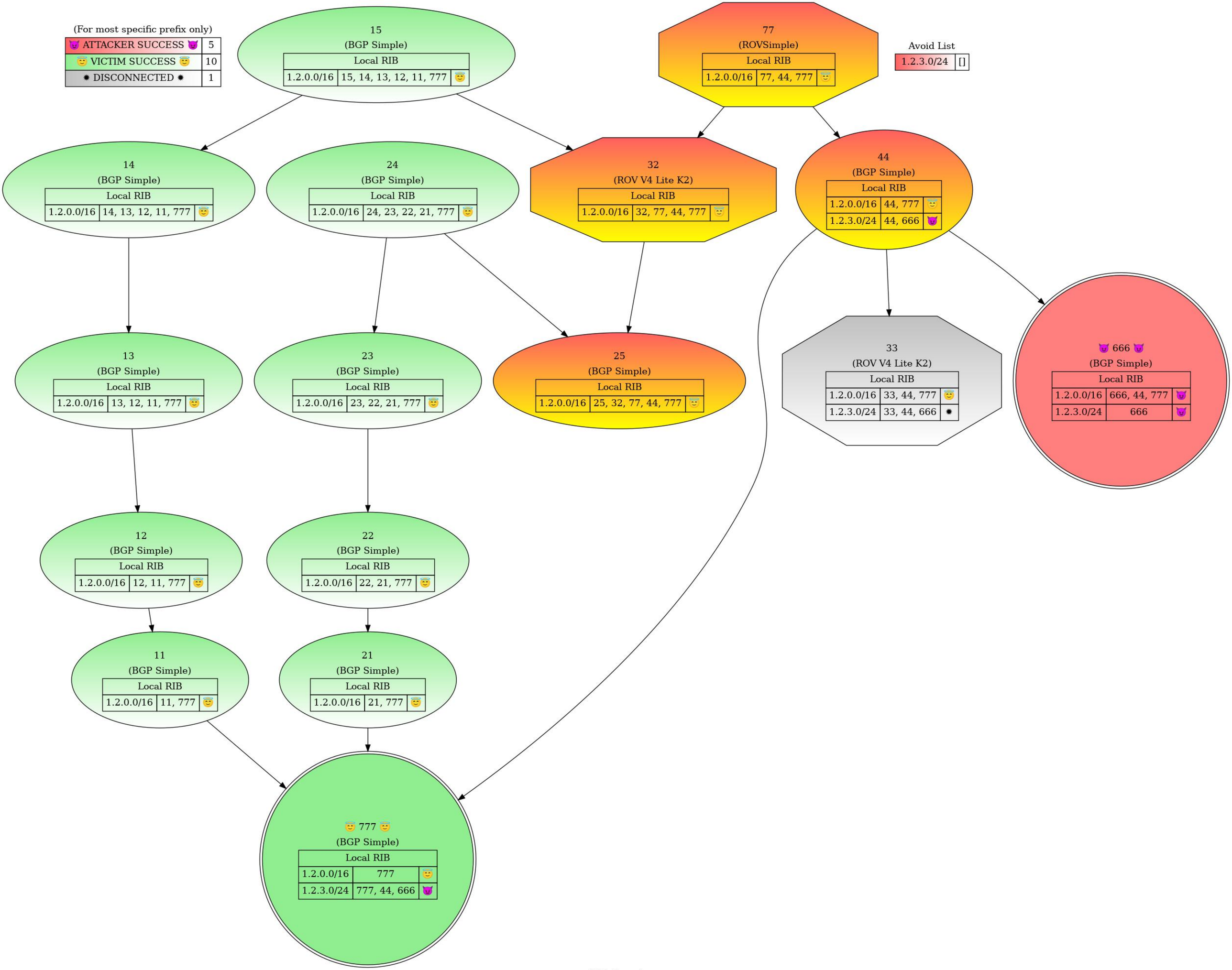
(123 Ground Truth)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



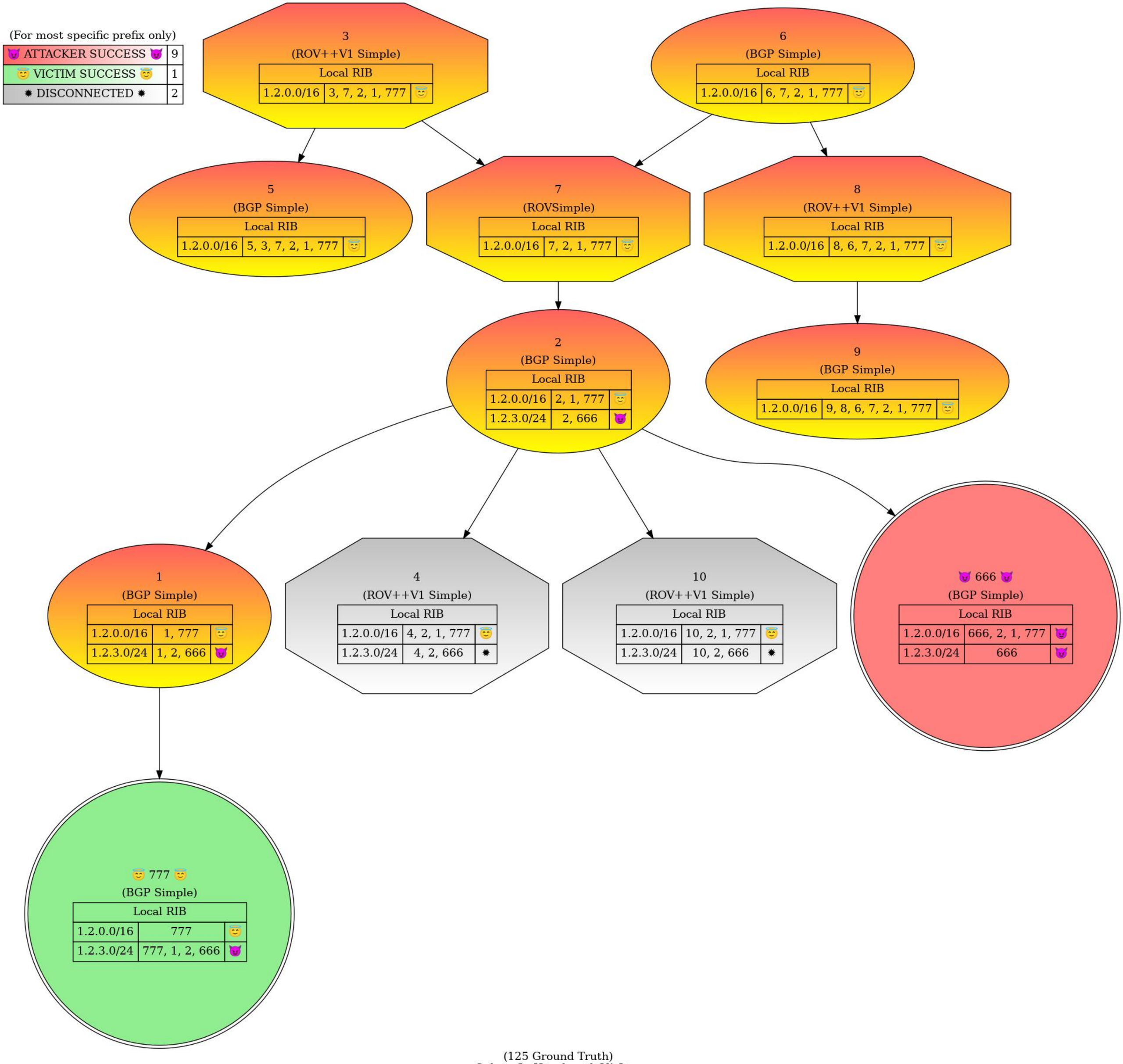
(123 Guess)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



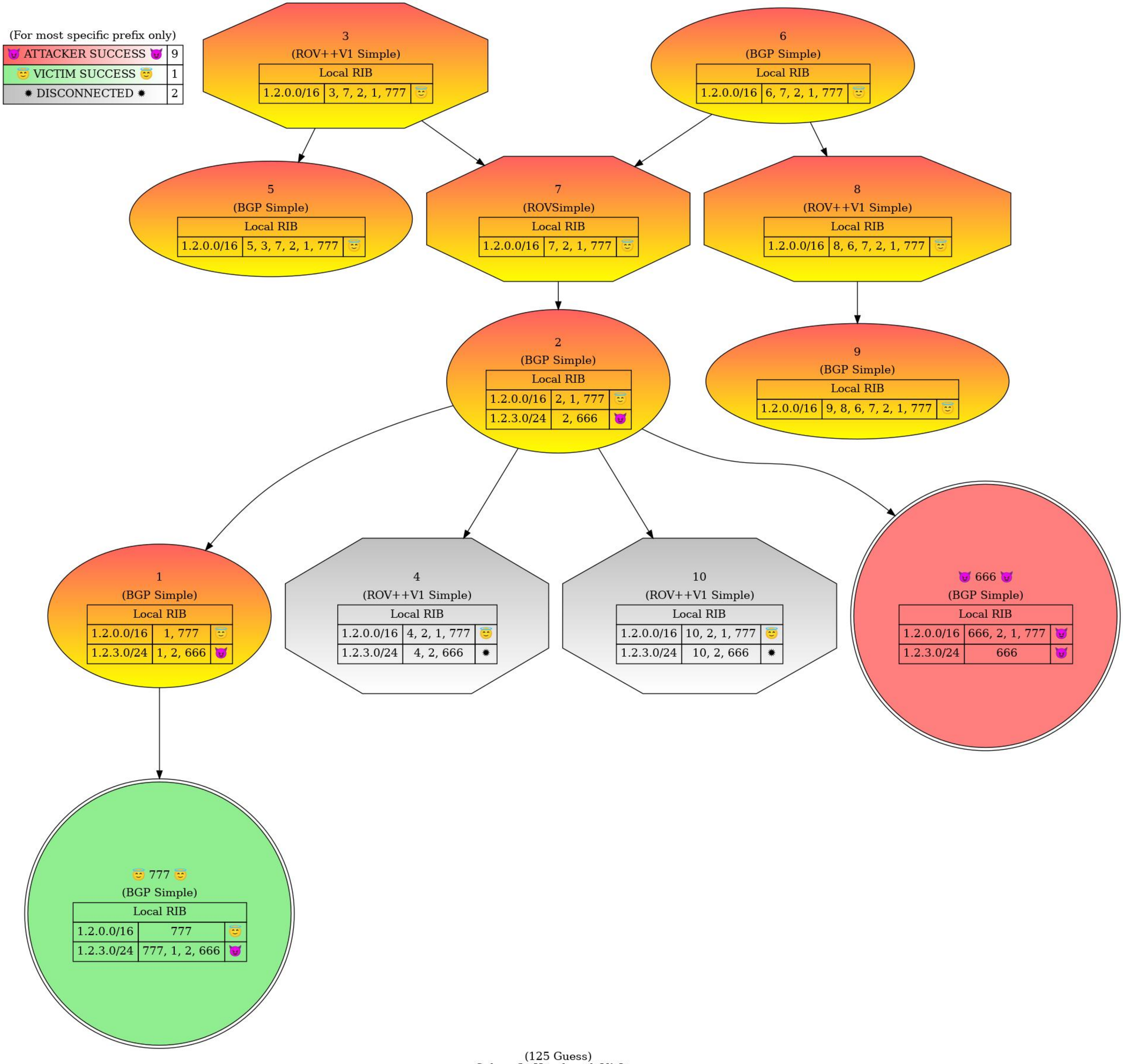
(124 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



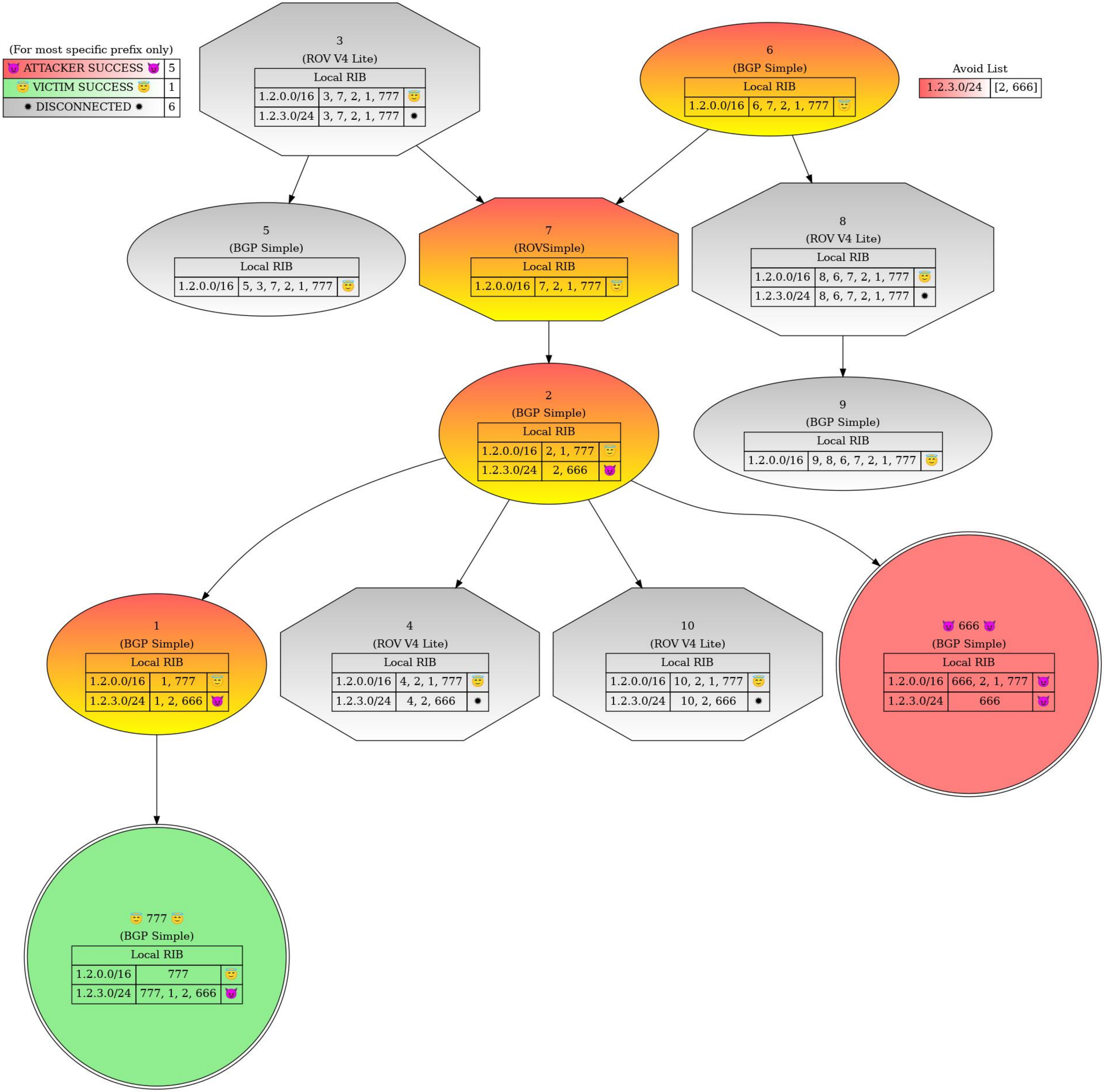
(124 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



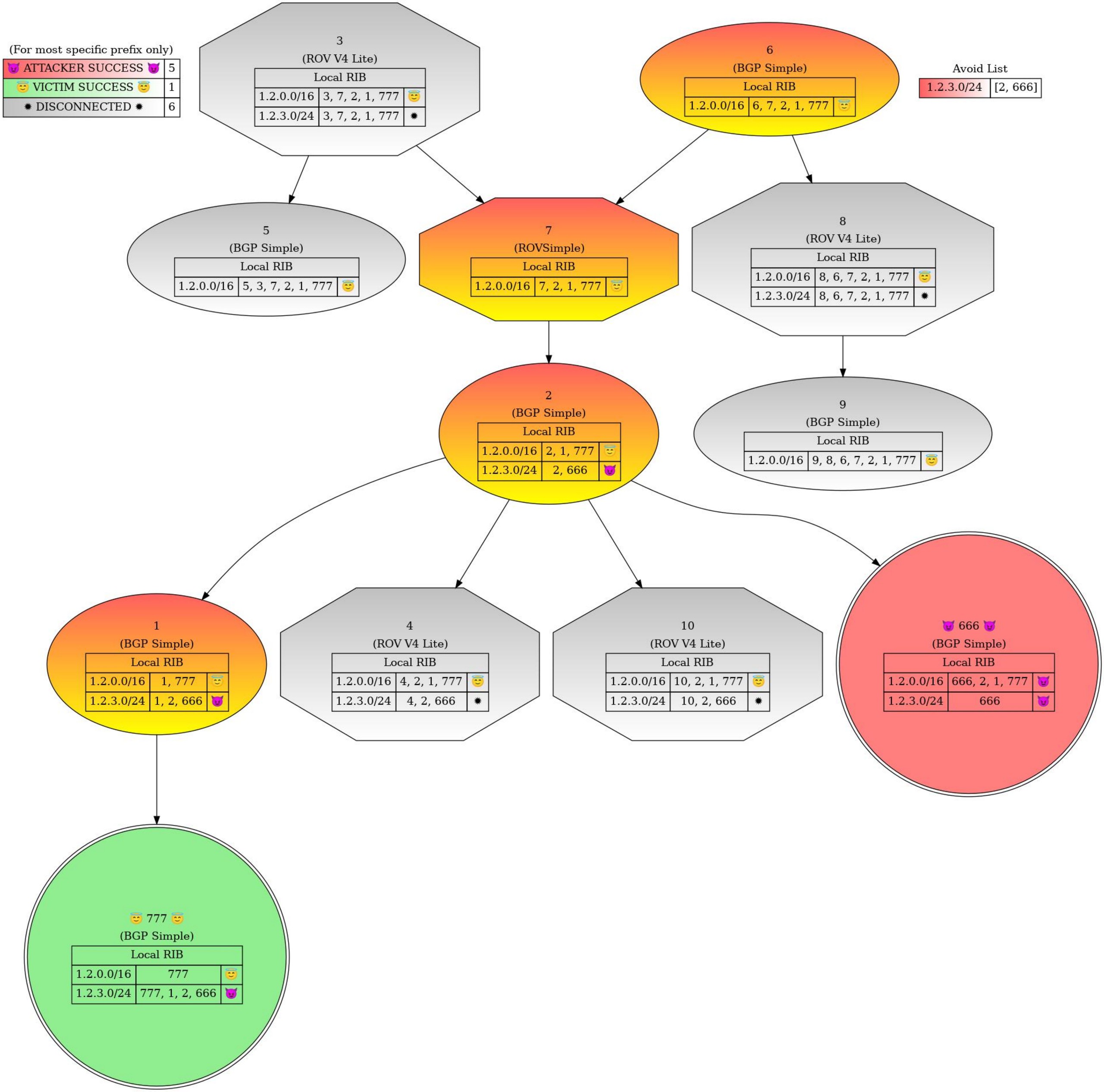
(125 Ground Truth)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



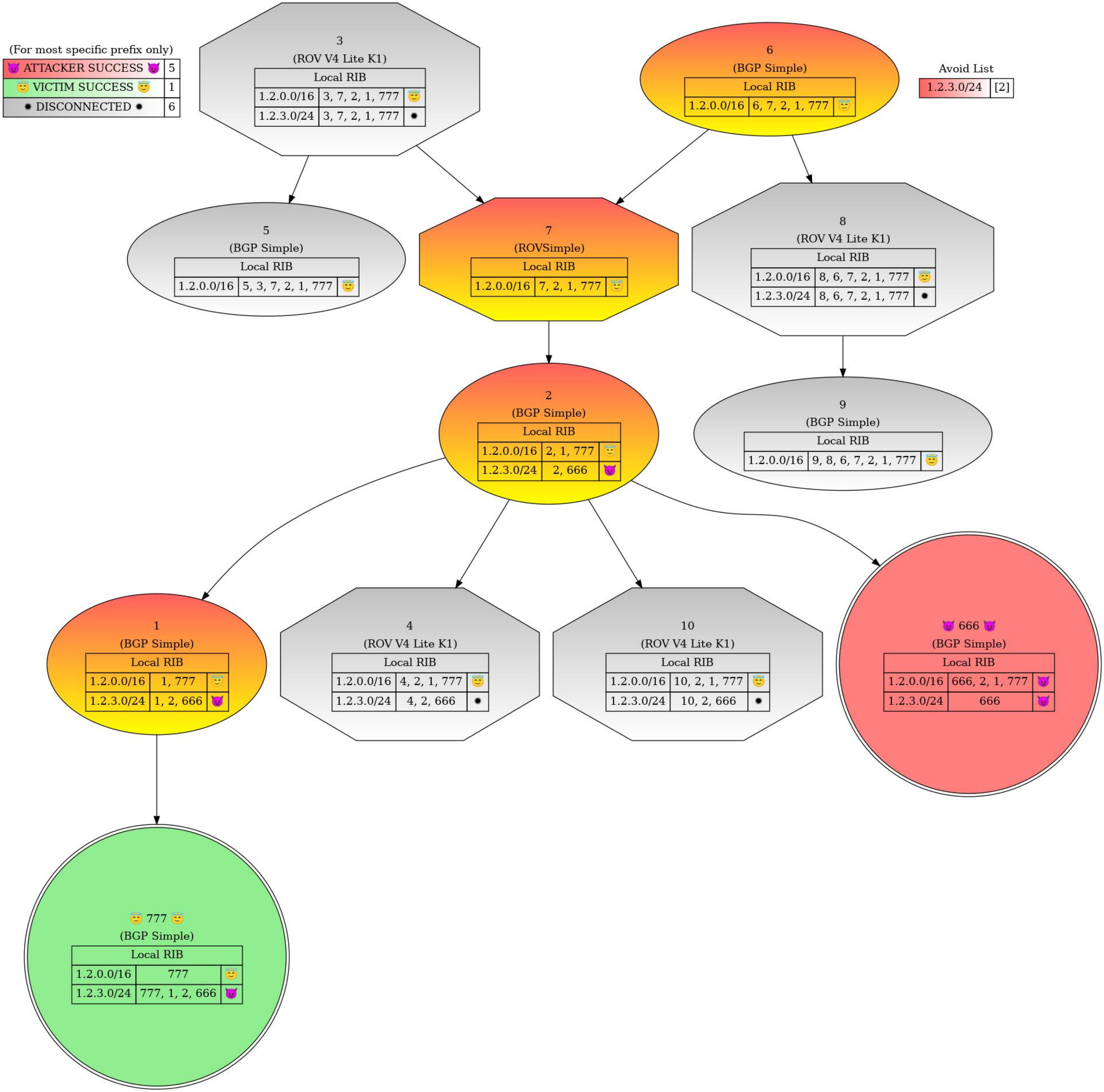
(125 Guess)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



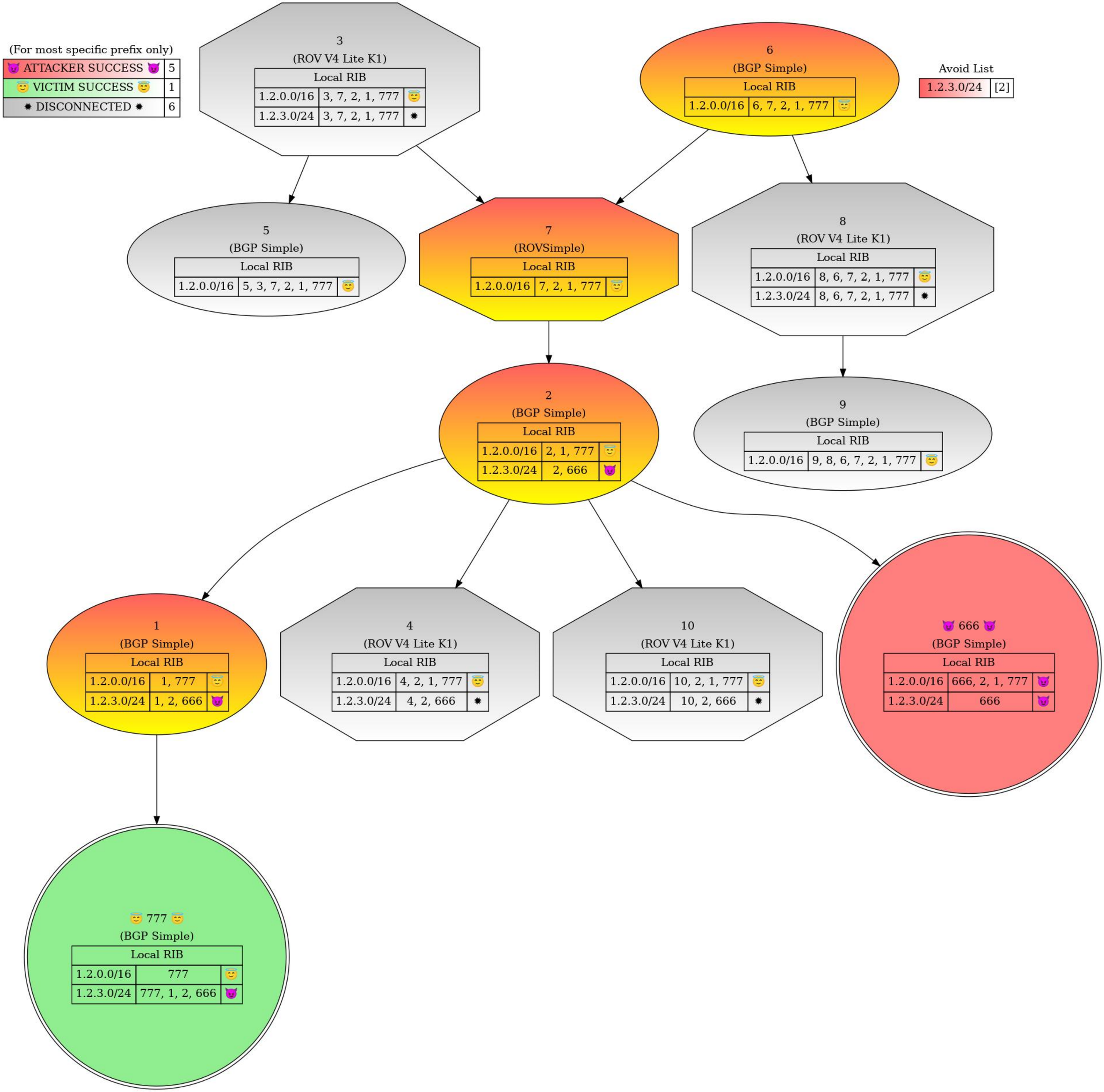
(126 Ground Truth)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



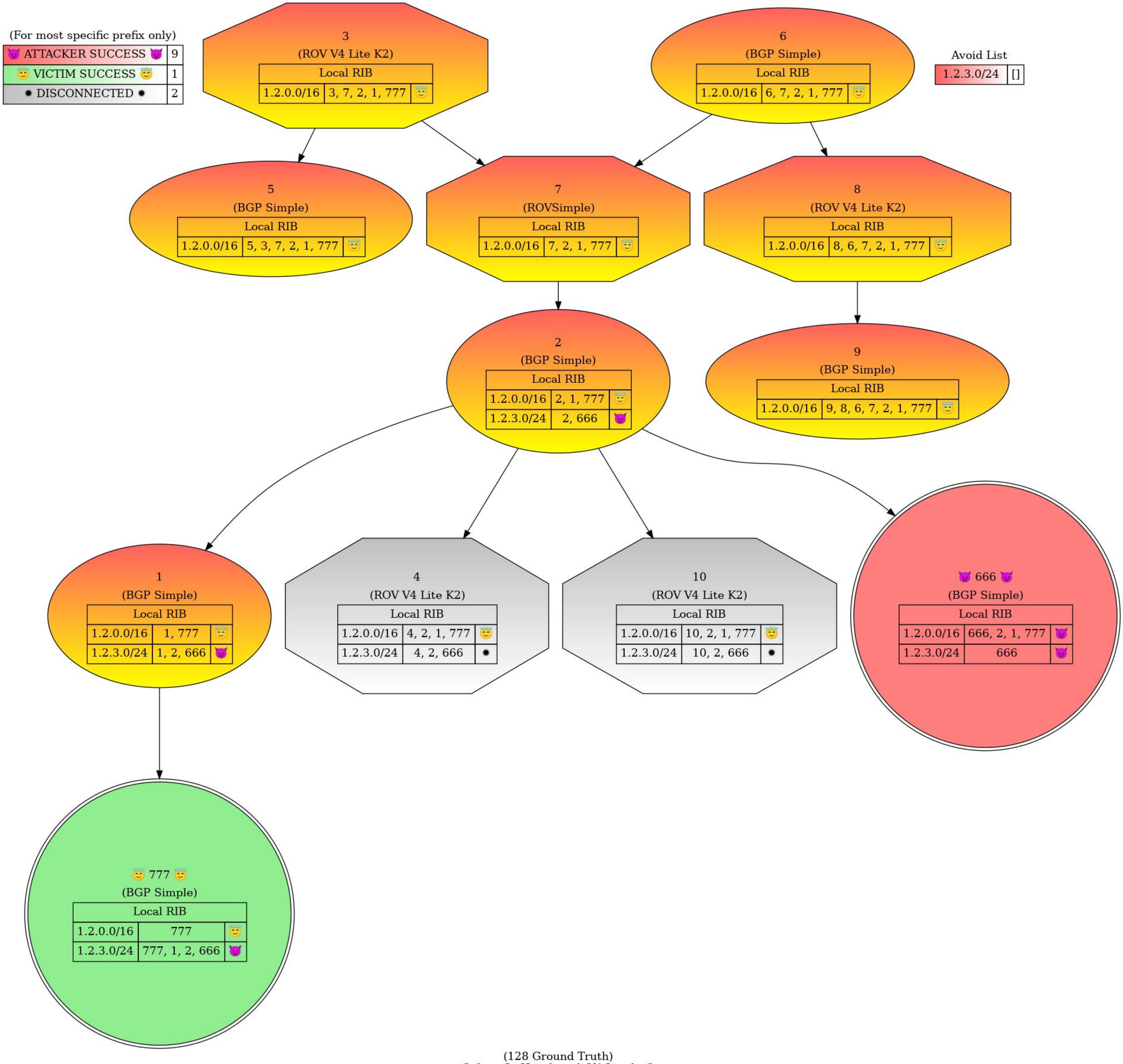
(126 Guess)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



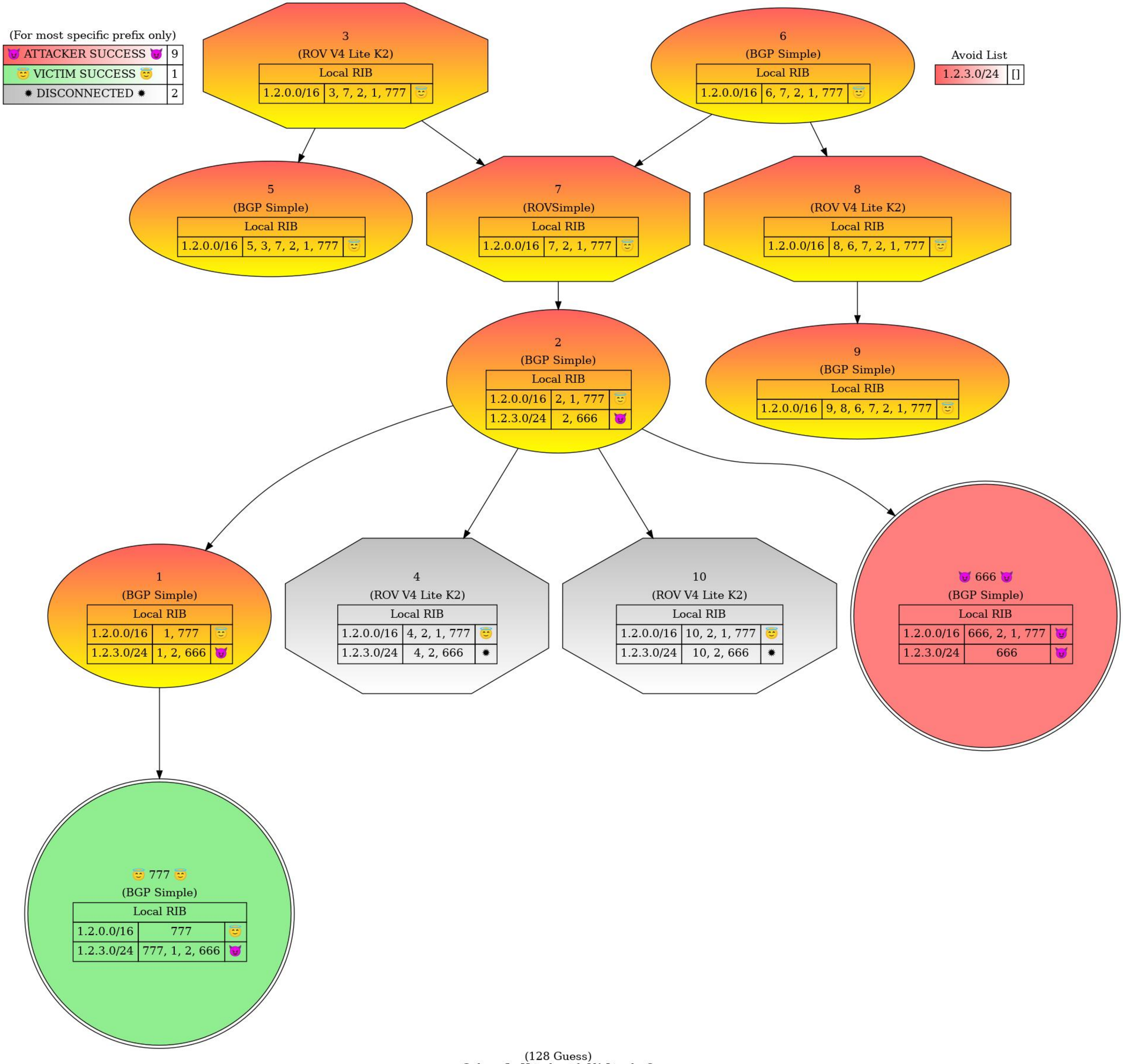
(127 Ground Truth)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



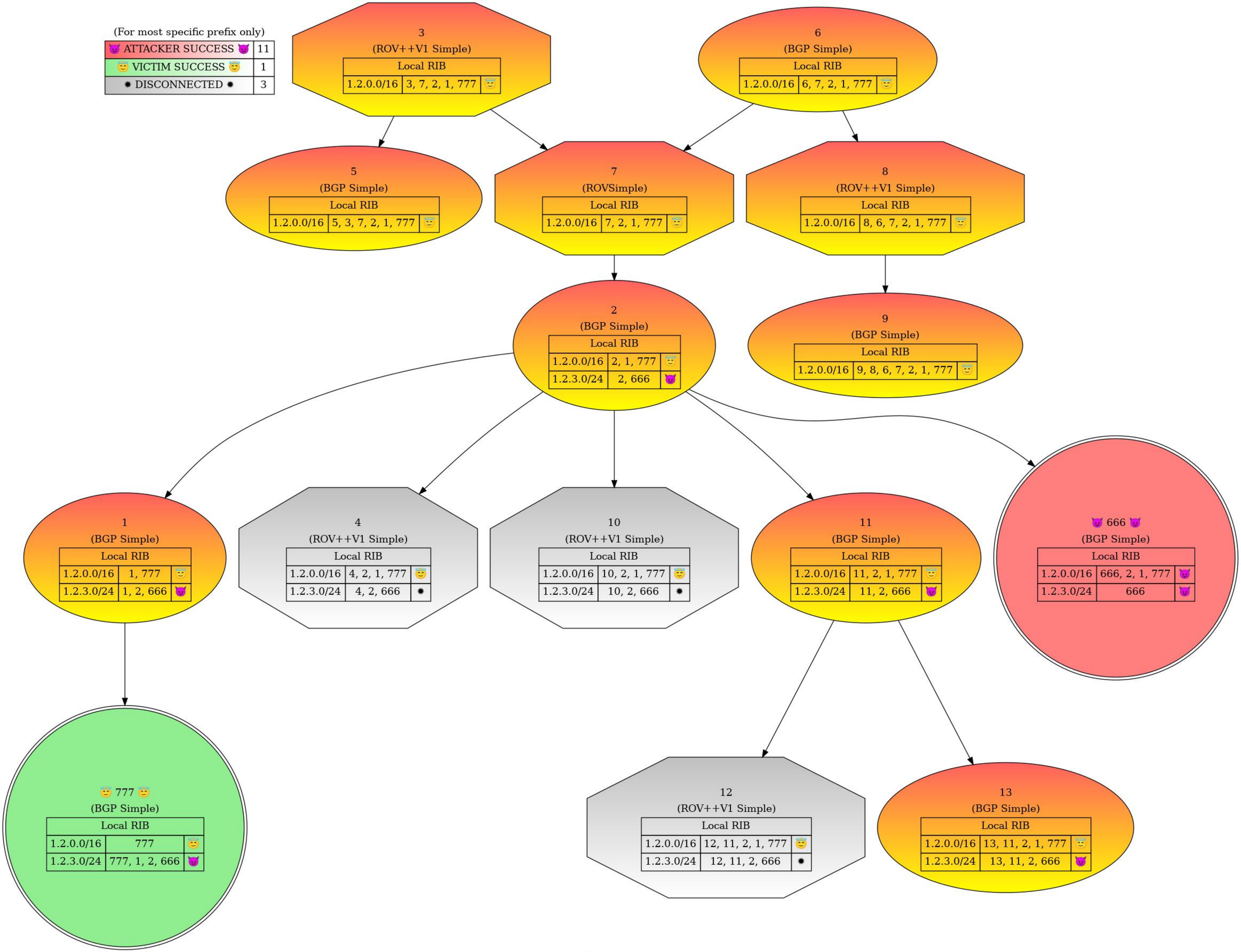
(127 Guess)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



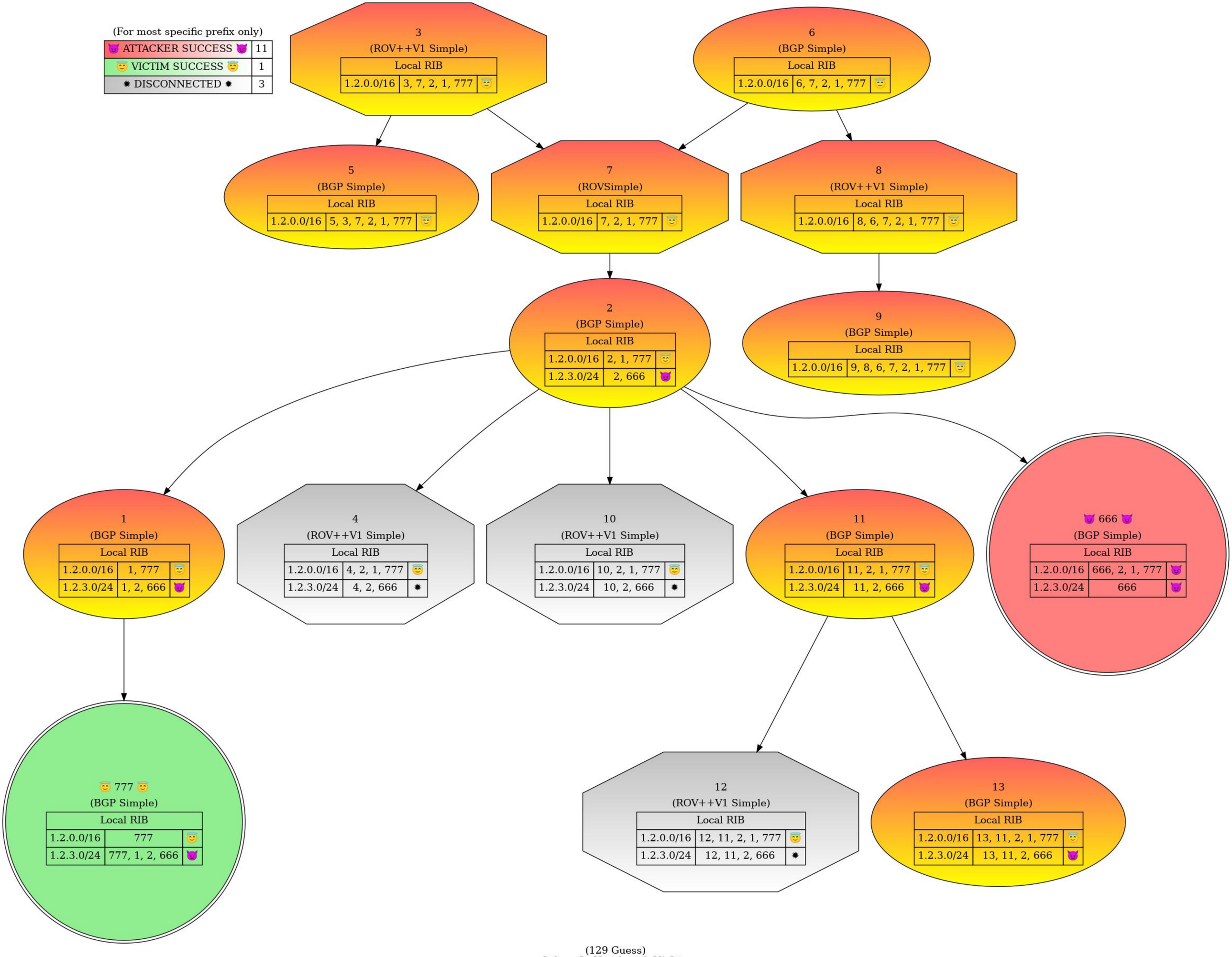
(128 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



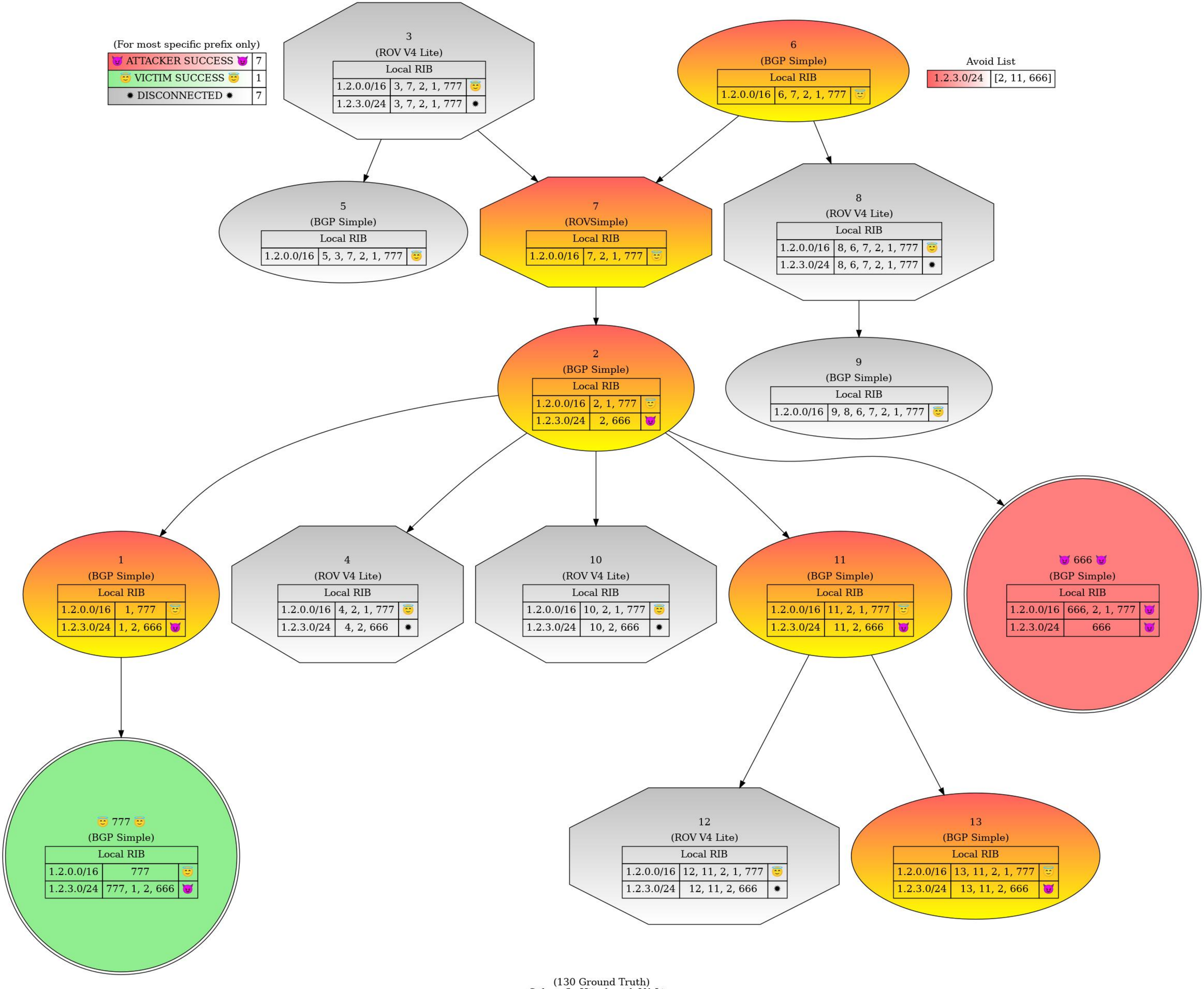
(128 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



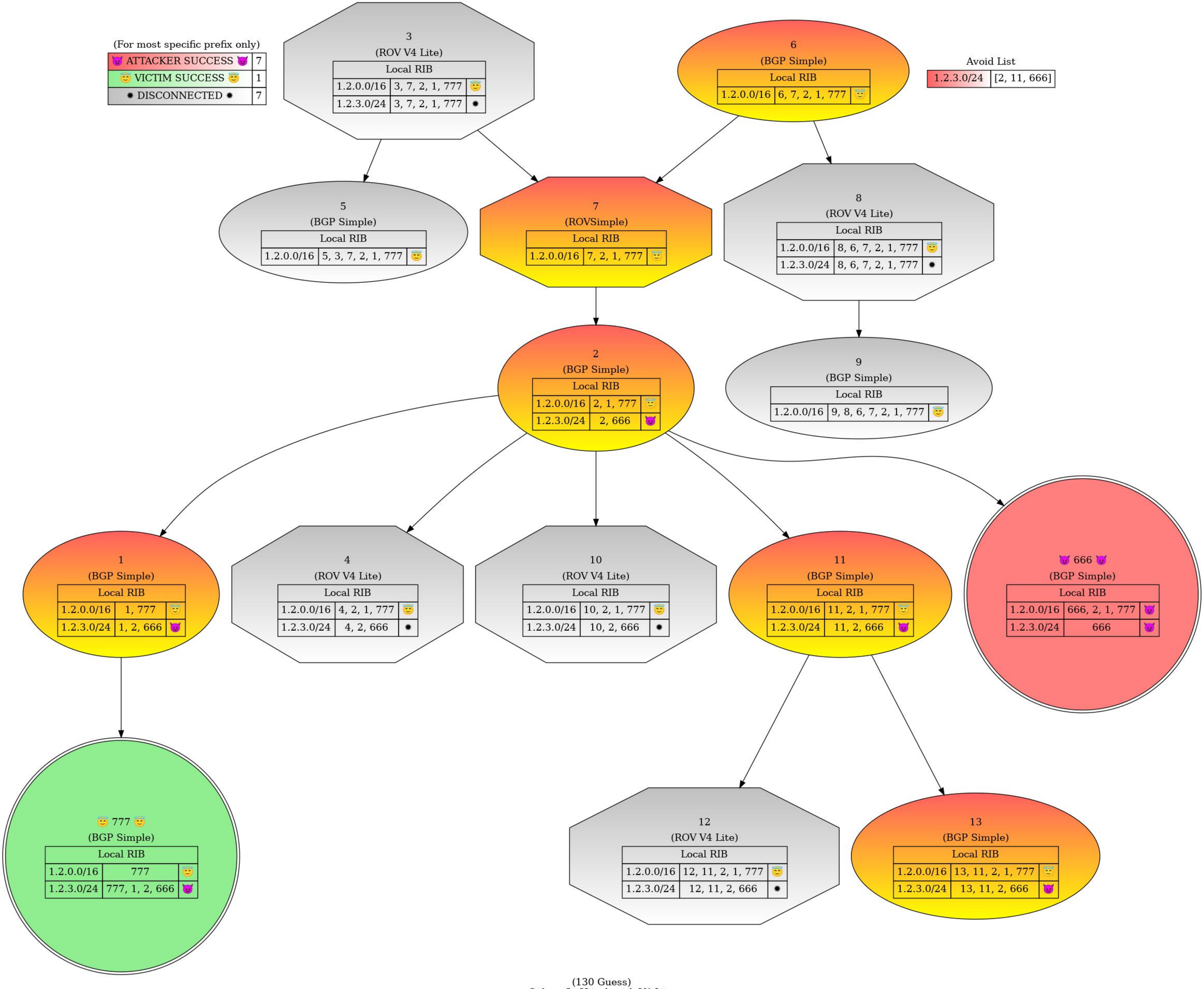
(129 Ground Truth)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



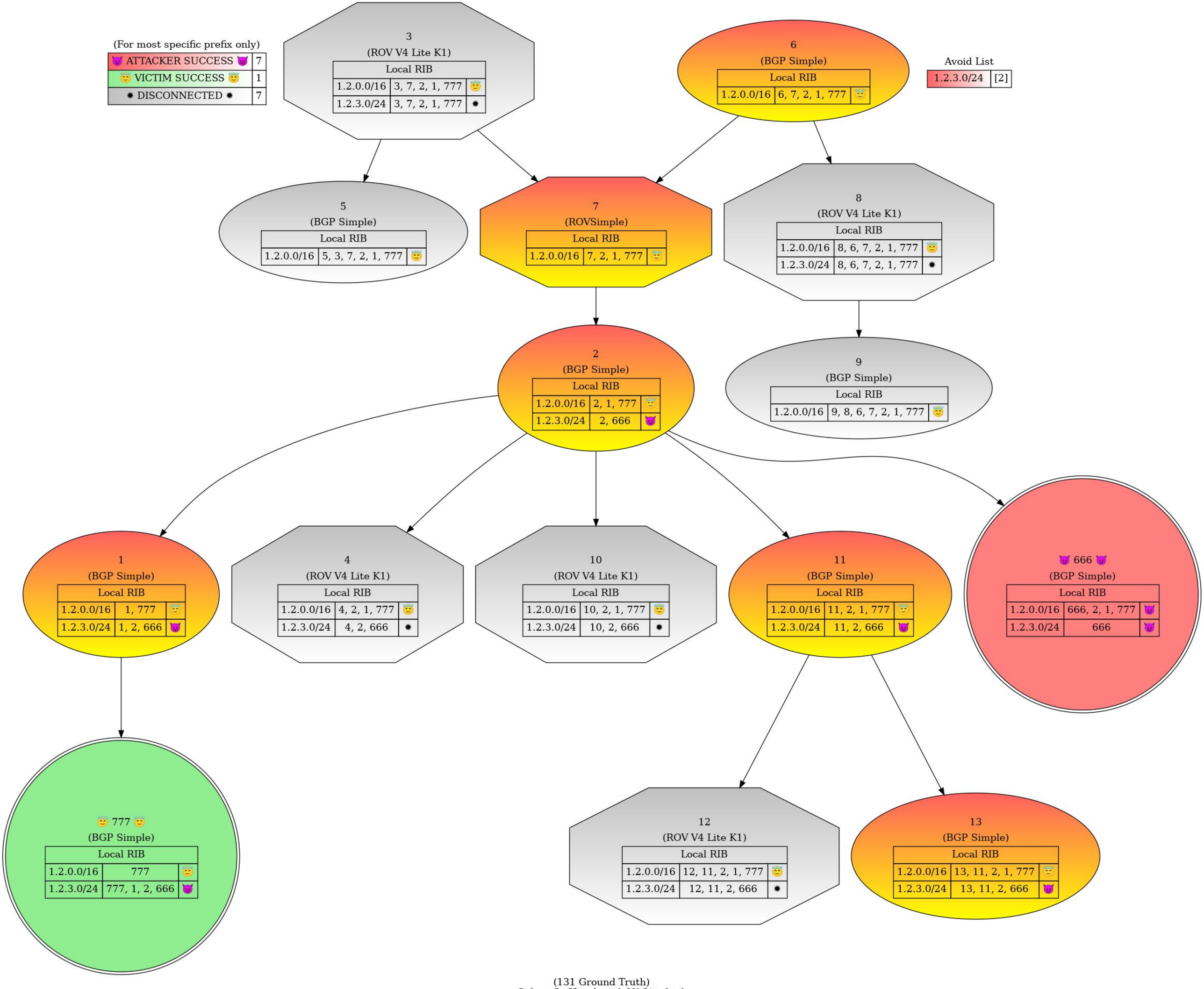
(129 Guess)
Subprefix Hijack with V1 Lite
Traceback for 1.2.3.0/24



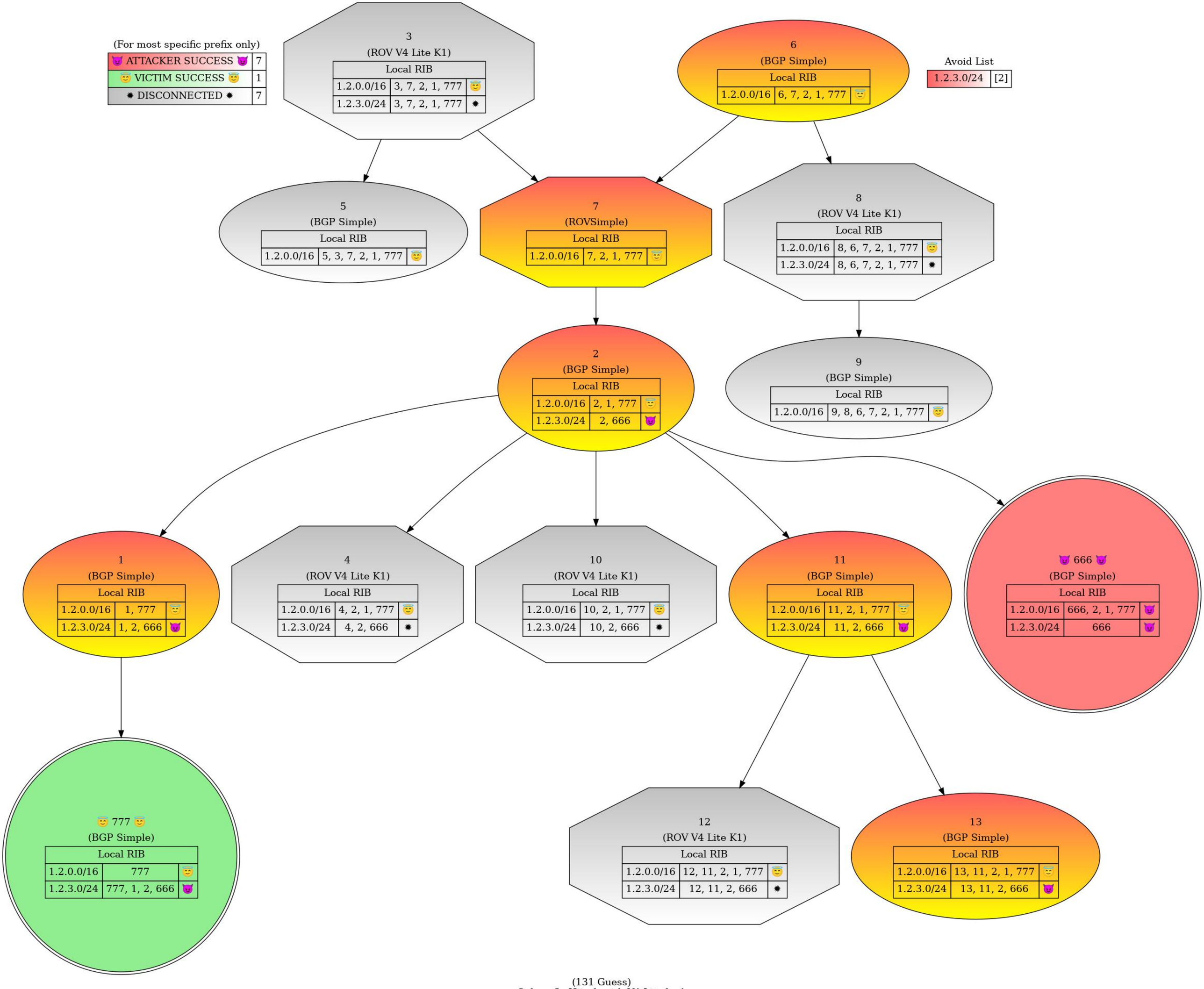
(130 Ground Truth)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



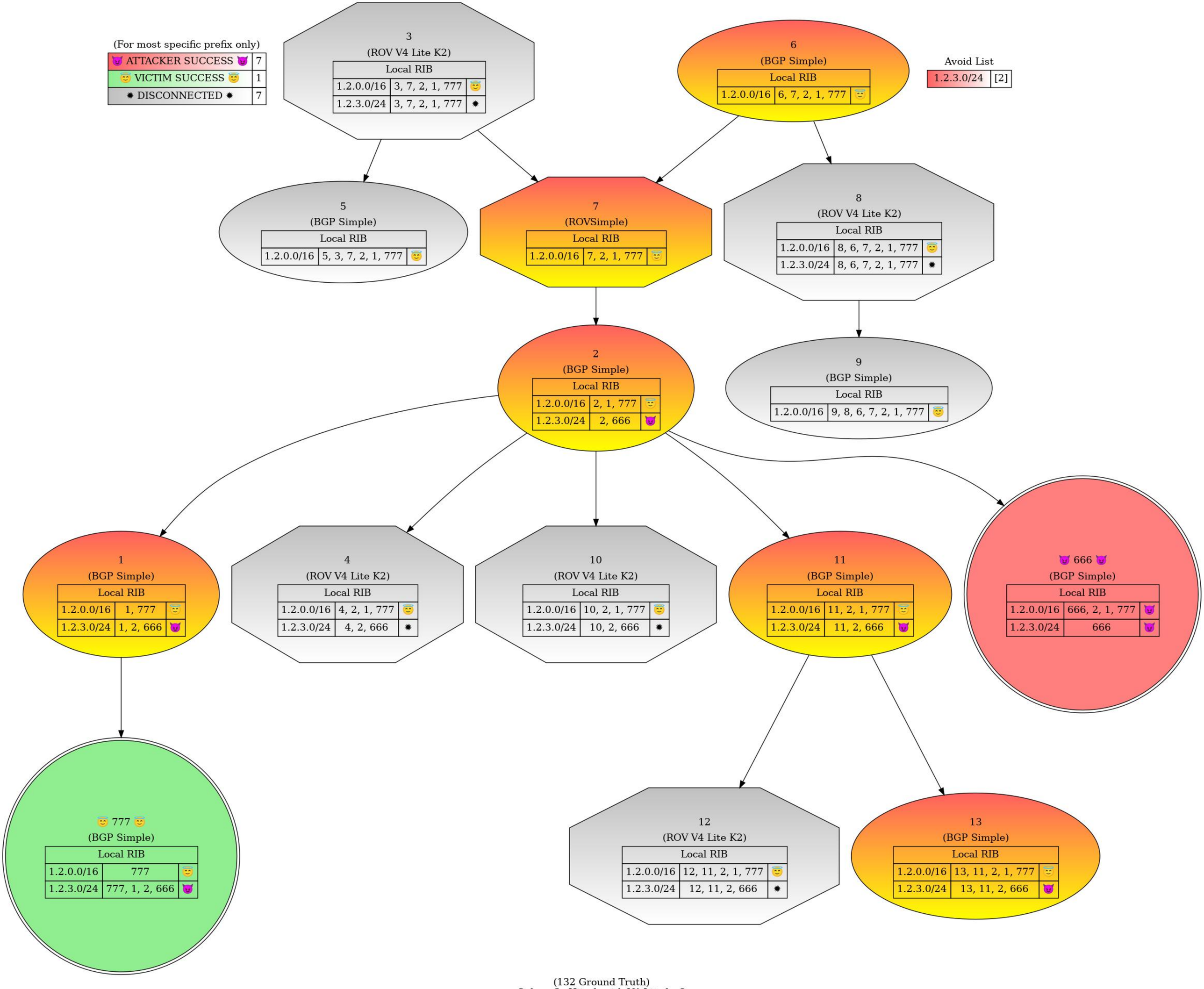
(130 Guess)
Subprefix Hijack with V4 Lite
Traceback for 1.2.3.0/24



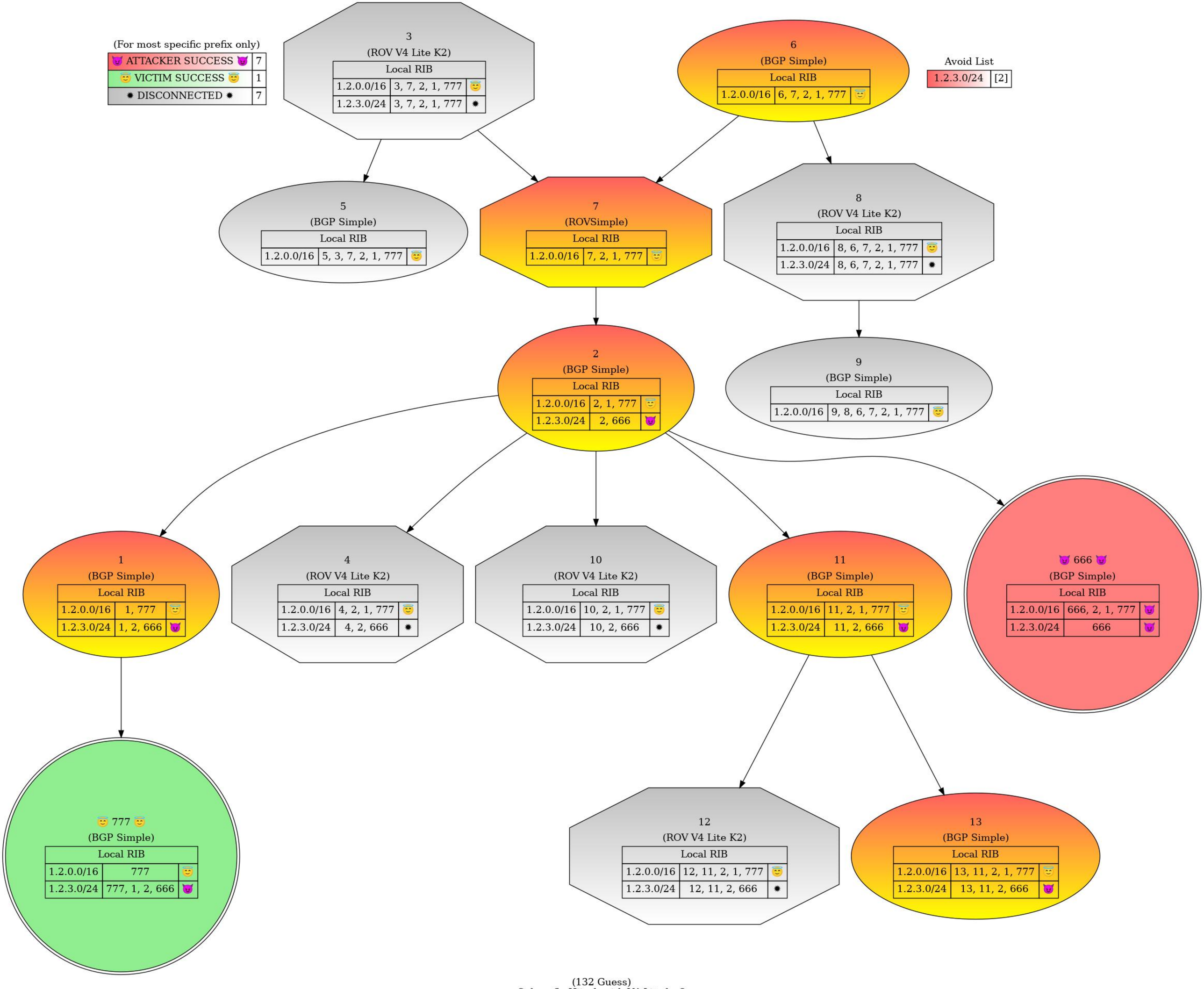
(131 Ground Truth)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



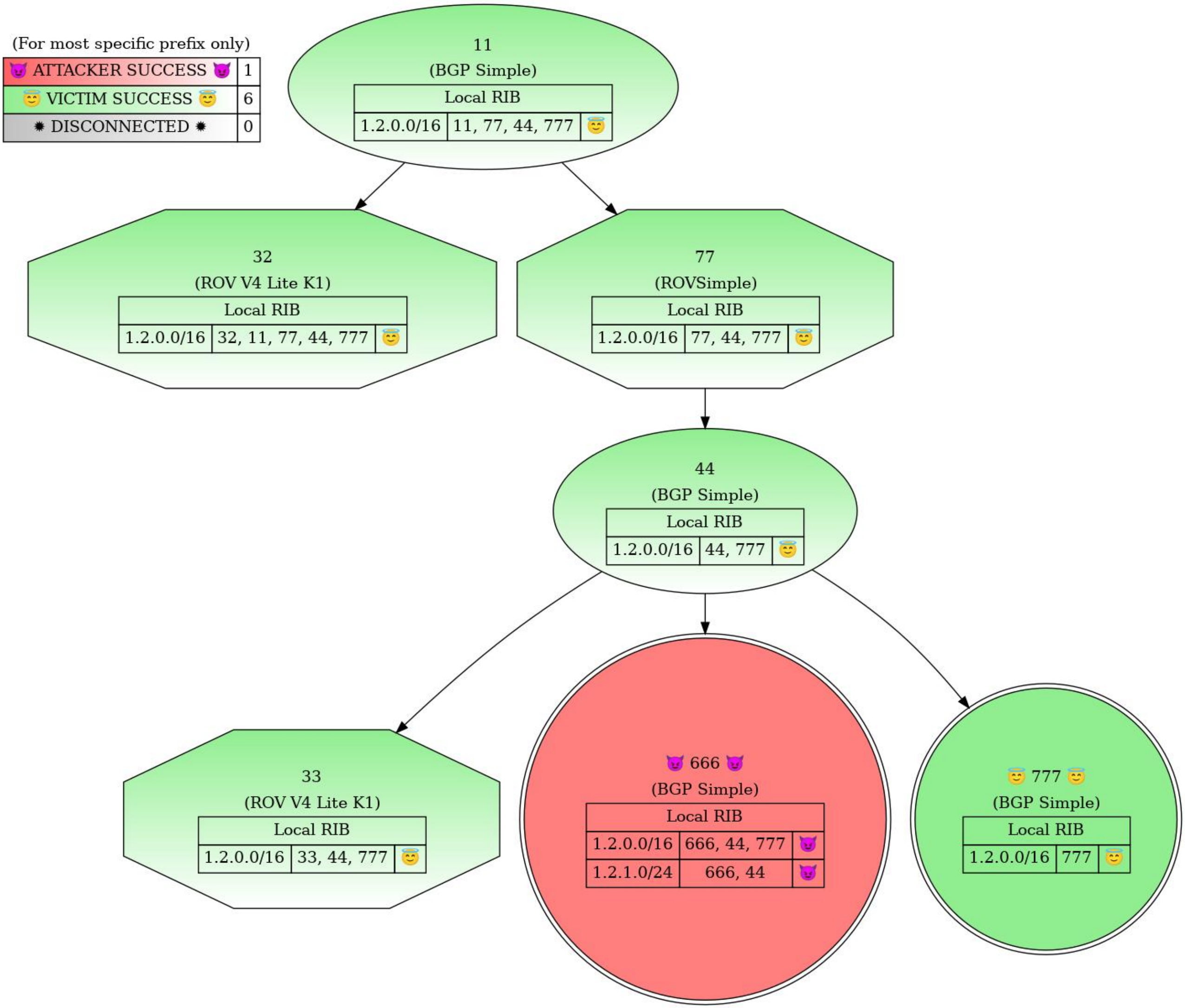
(131 Guess)
Subprefix Hijack with V4 Lite k=1
Traceback for 1.2.3.0/24



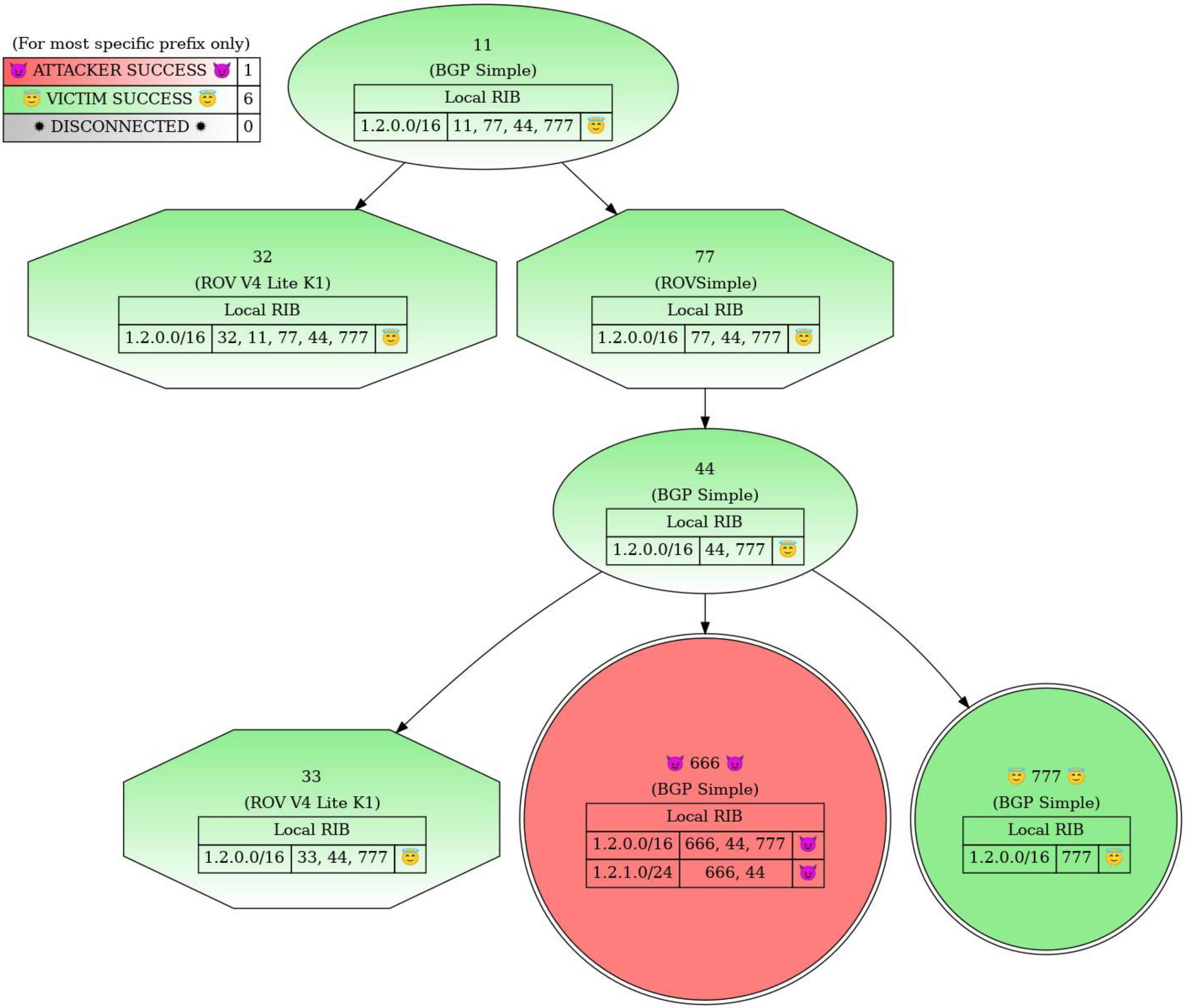
(132 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



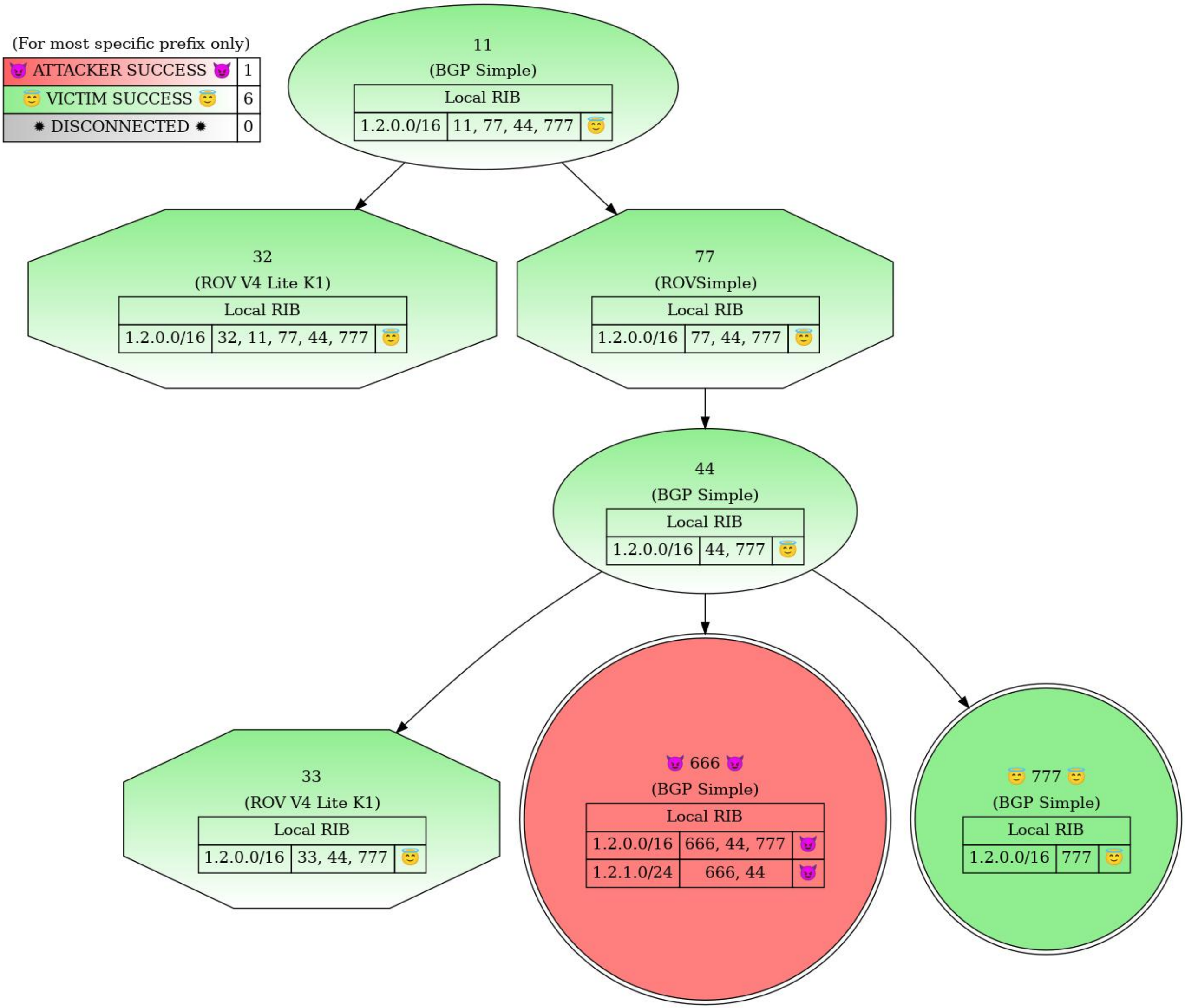
(132 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



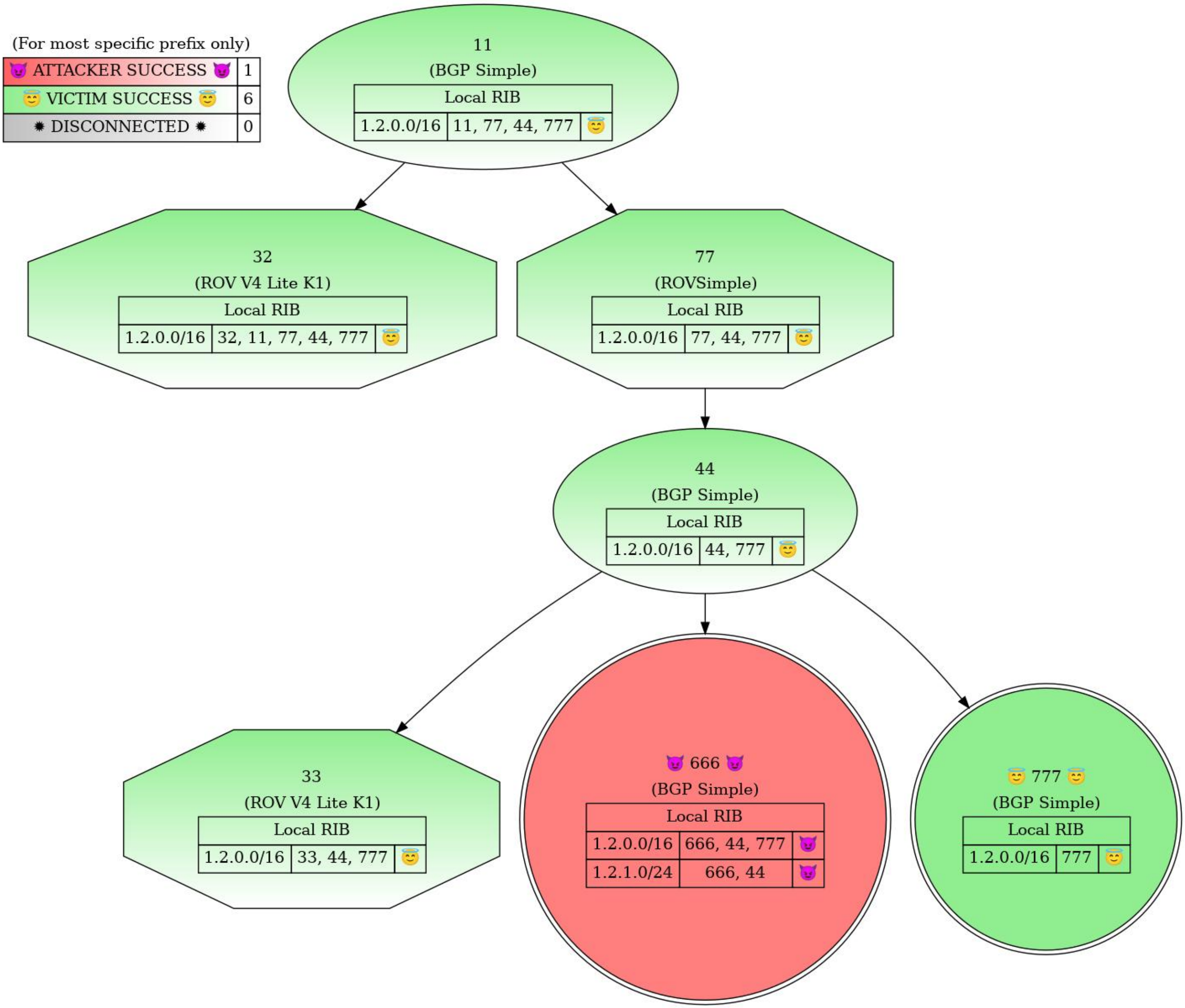
(133 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



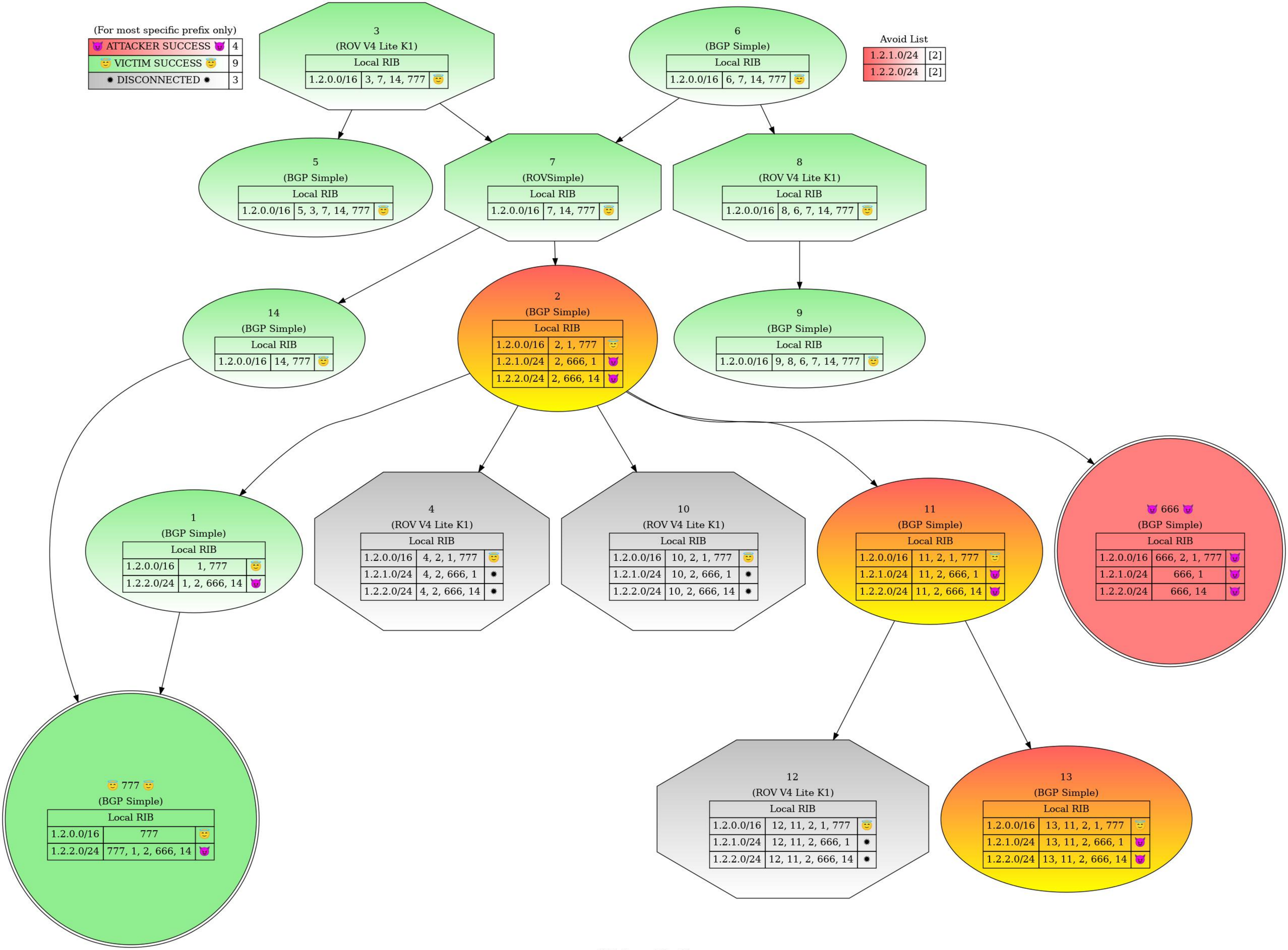
(133 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



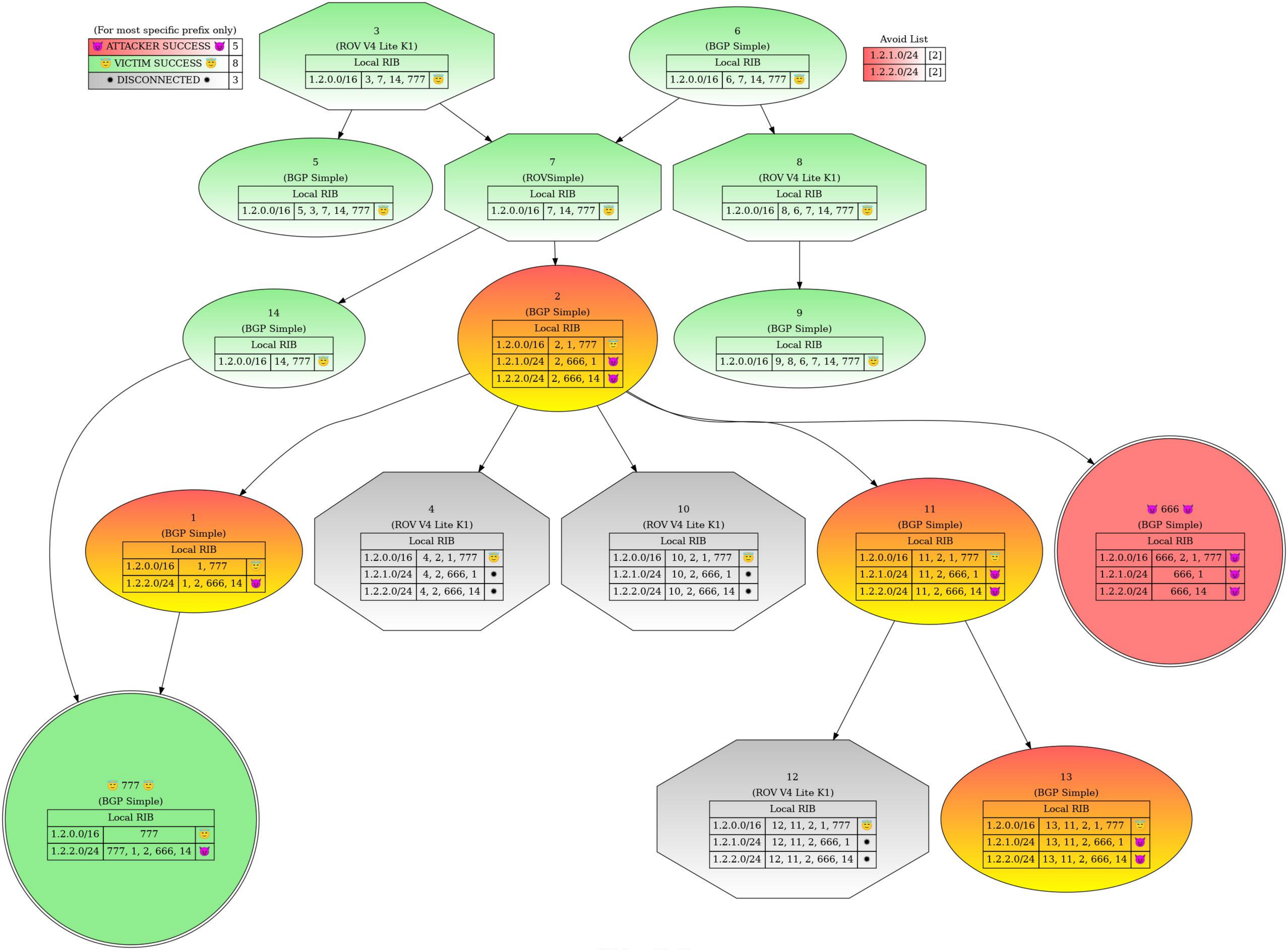
(133 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



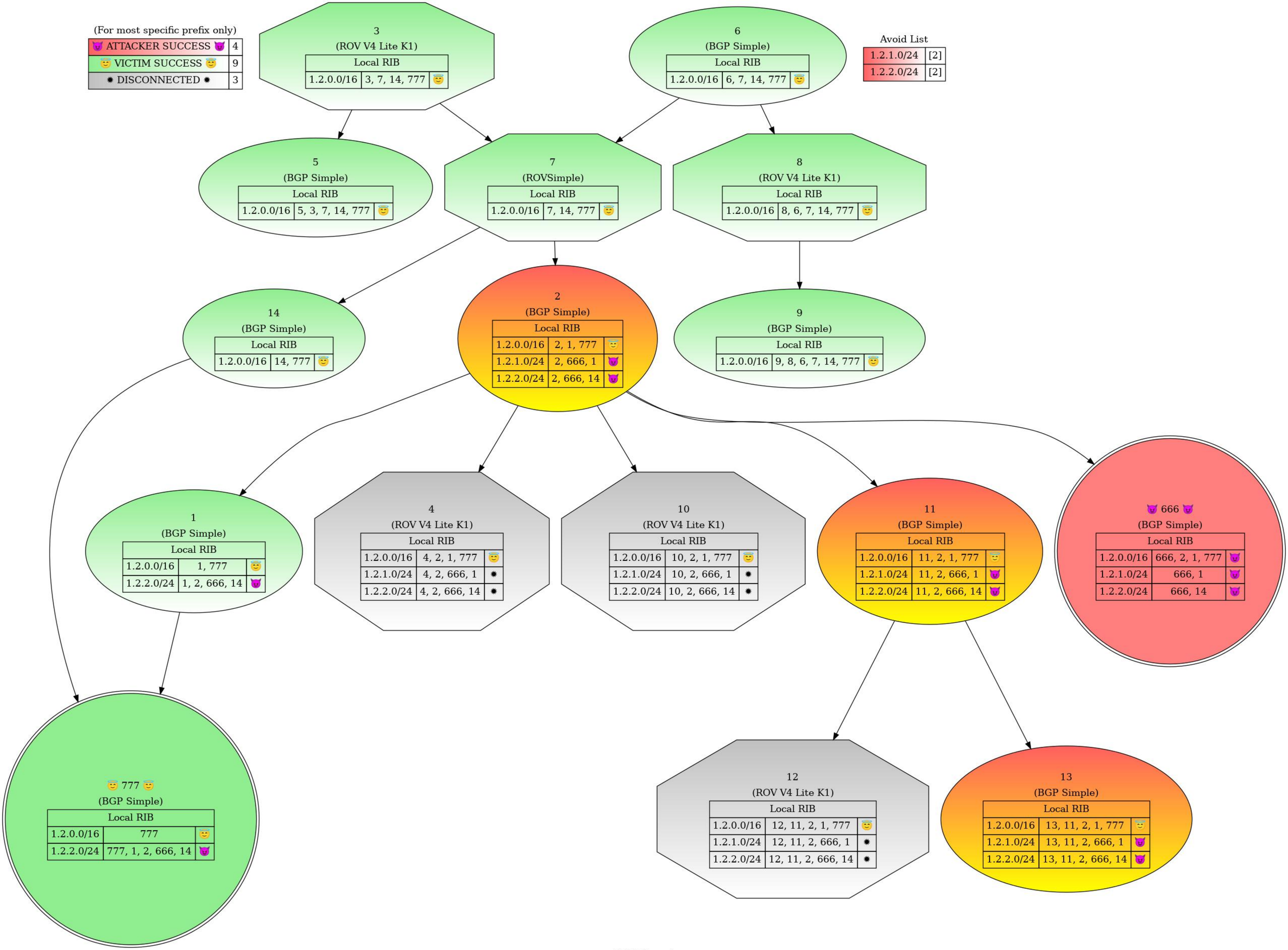
(133 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



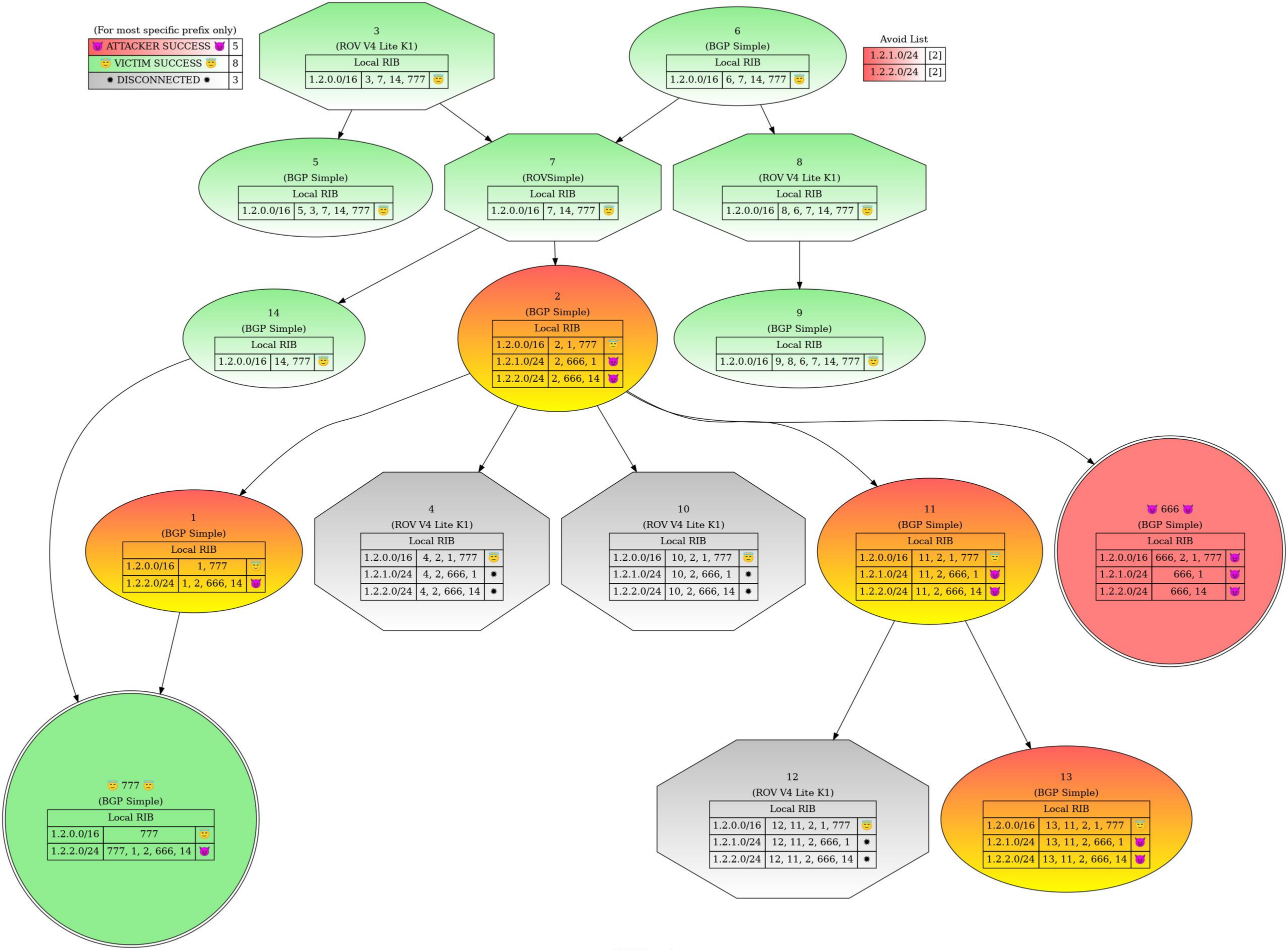
(134 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



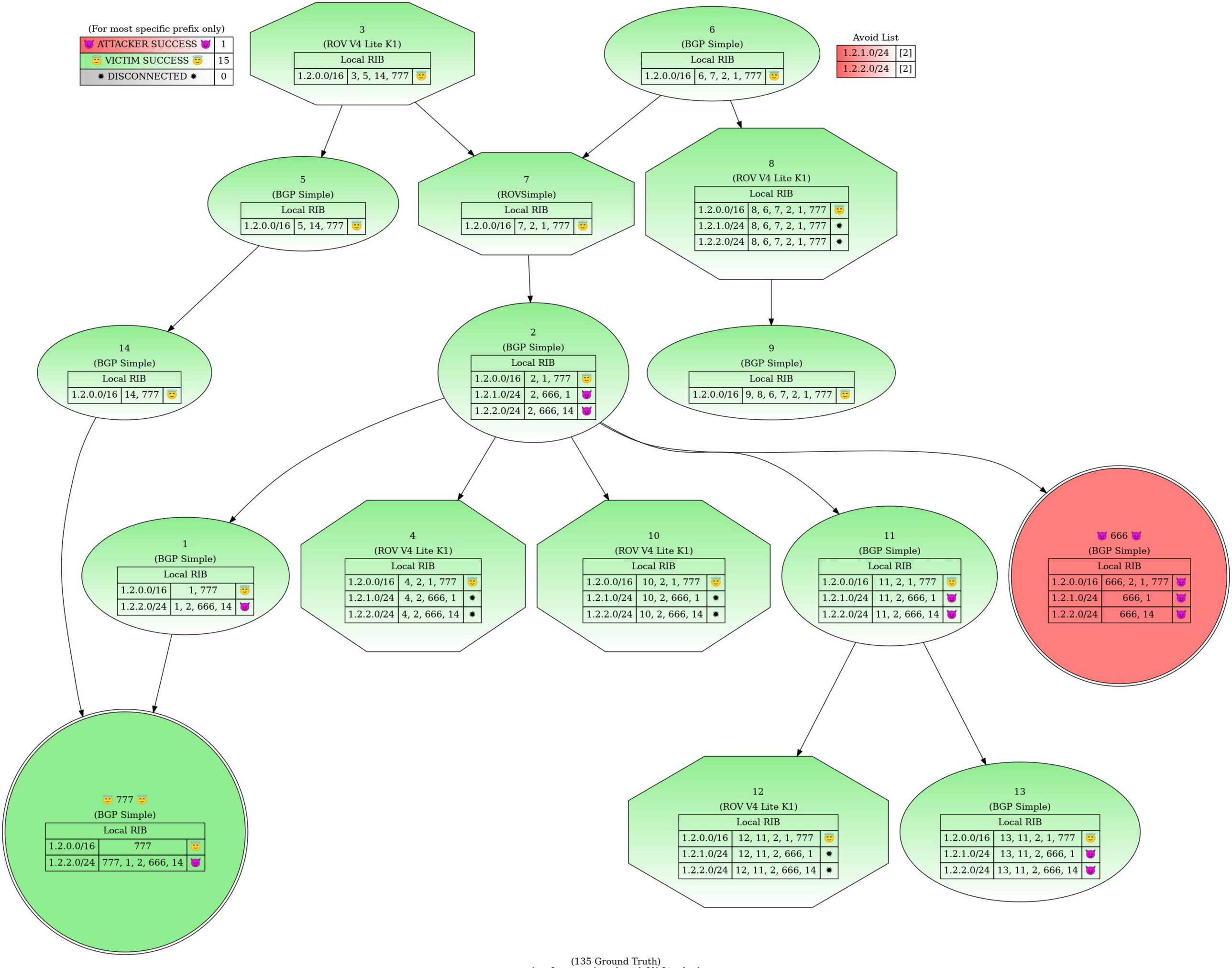
(134 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



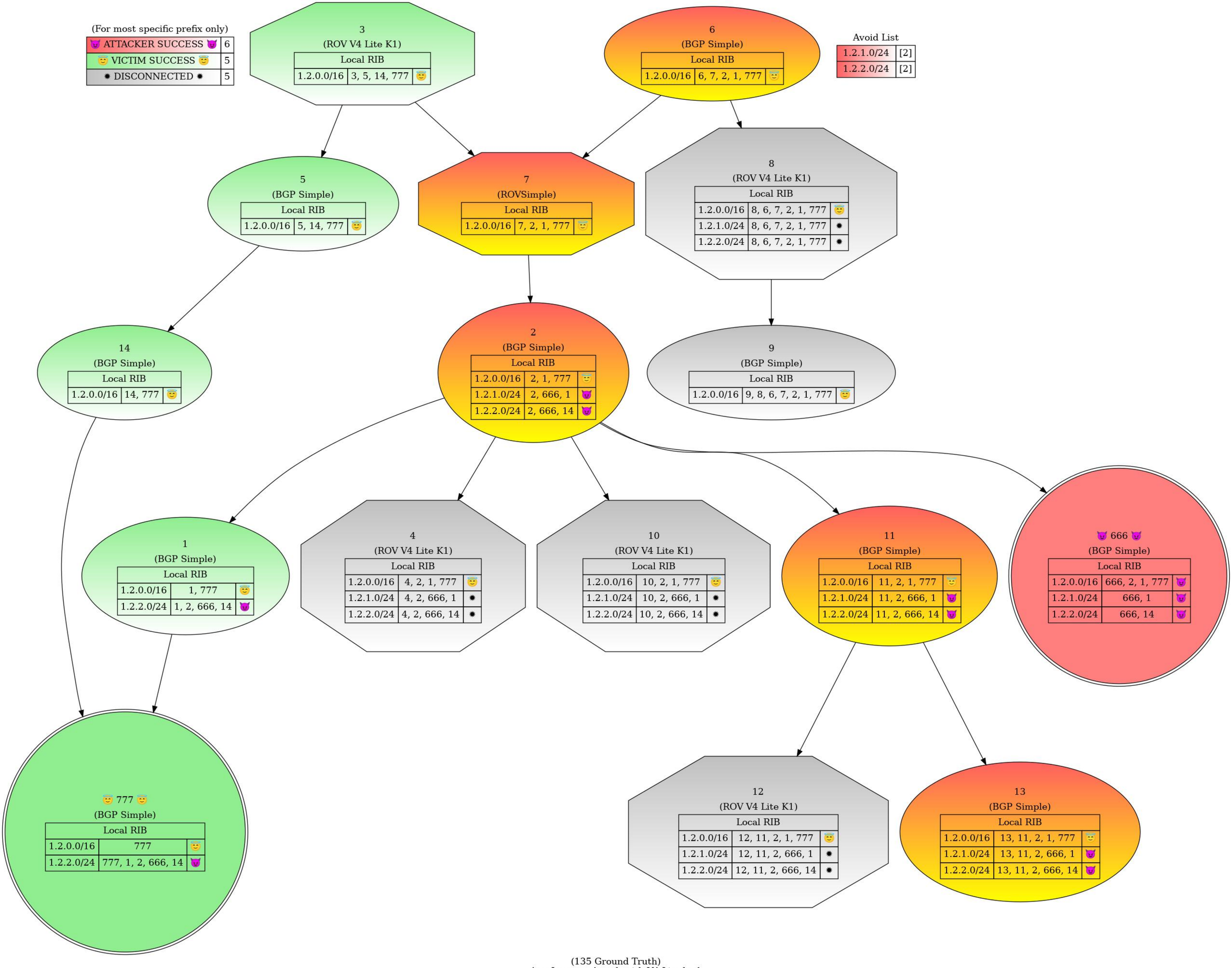
(134 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



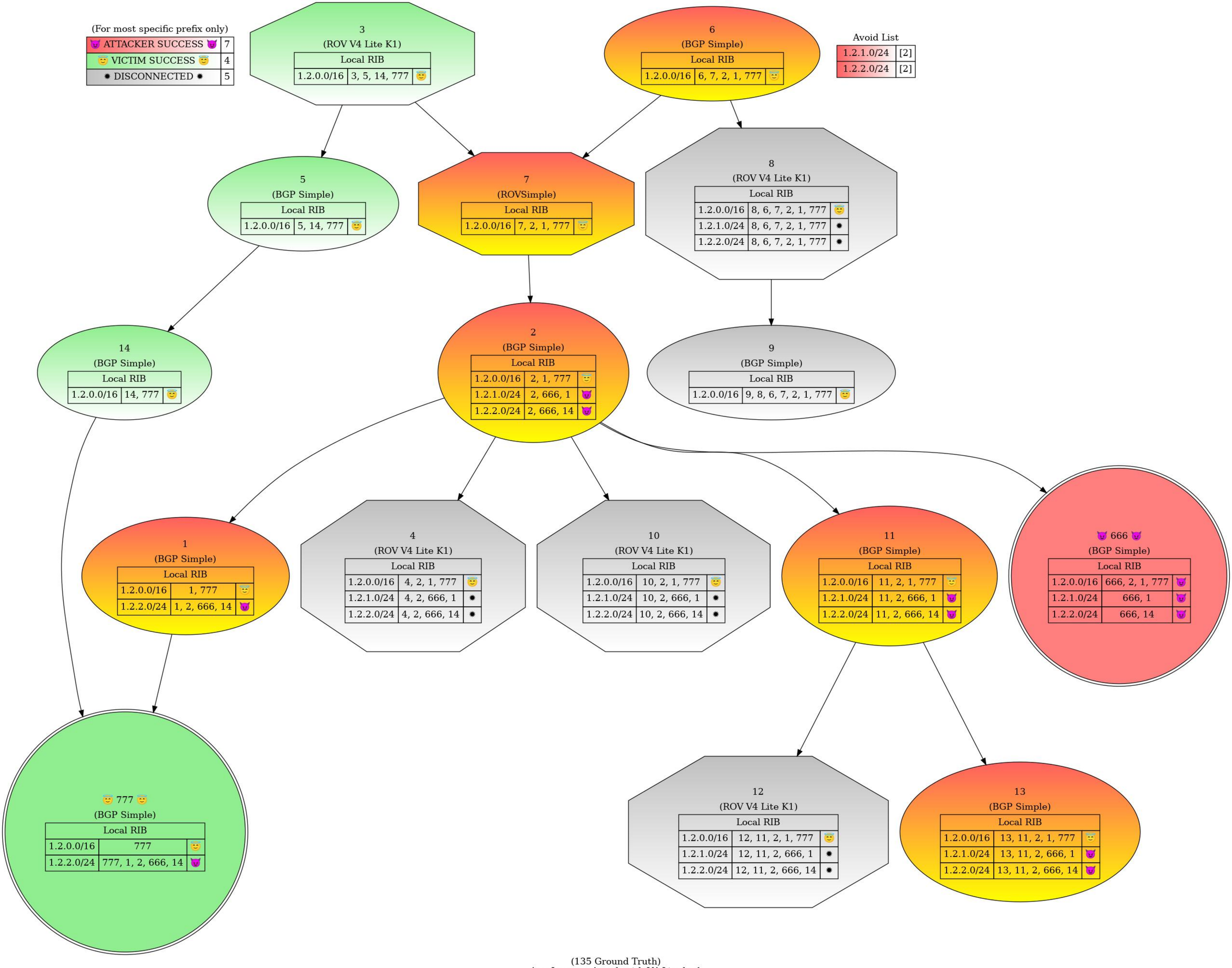
(134 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



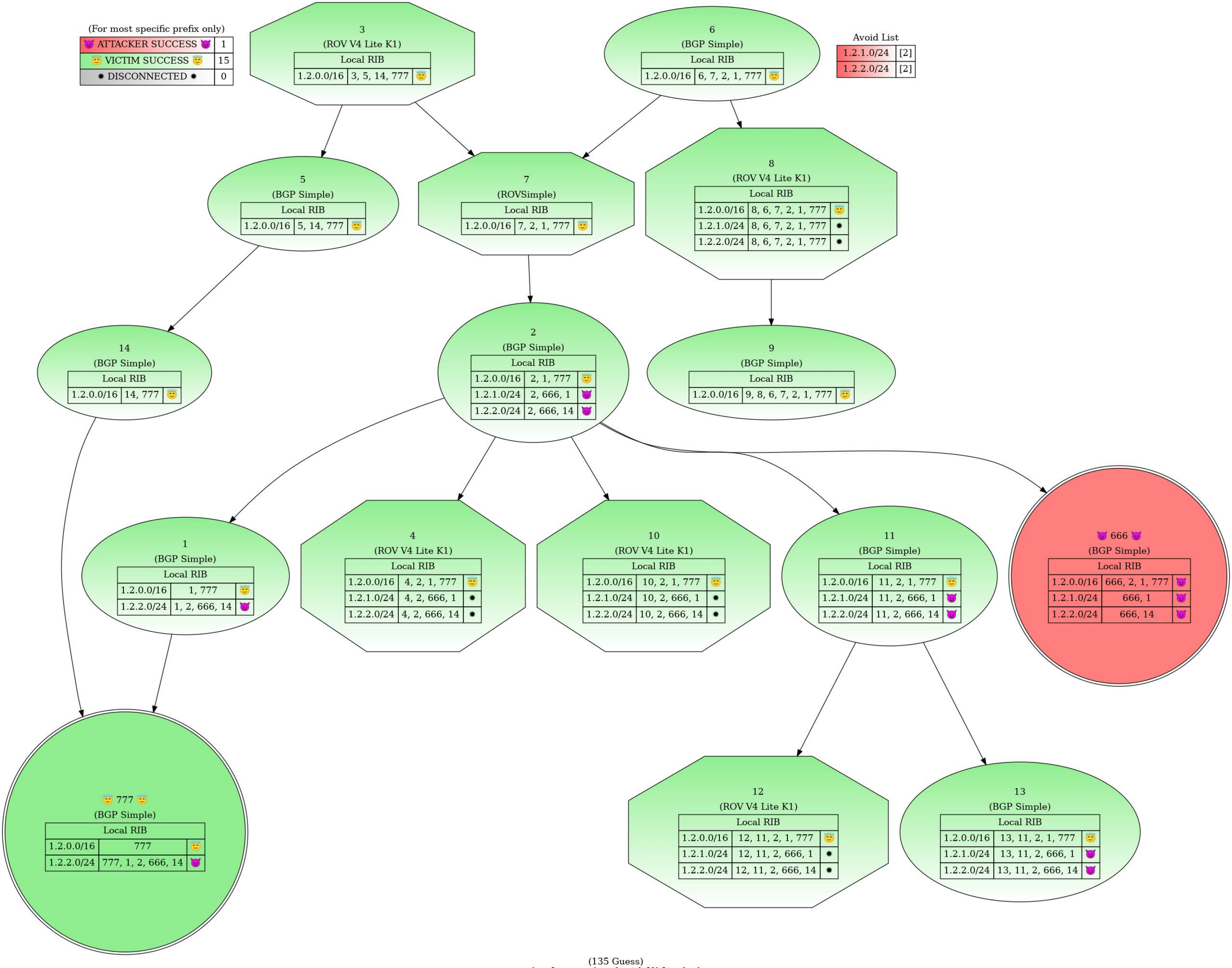
(135 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



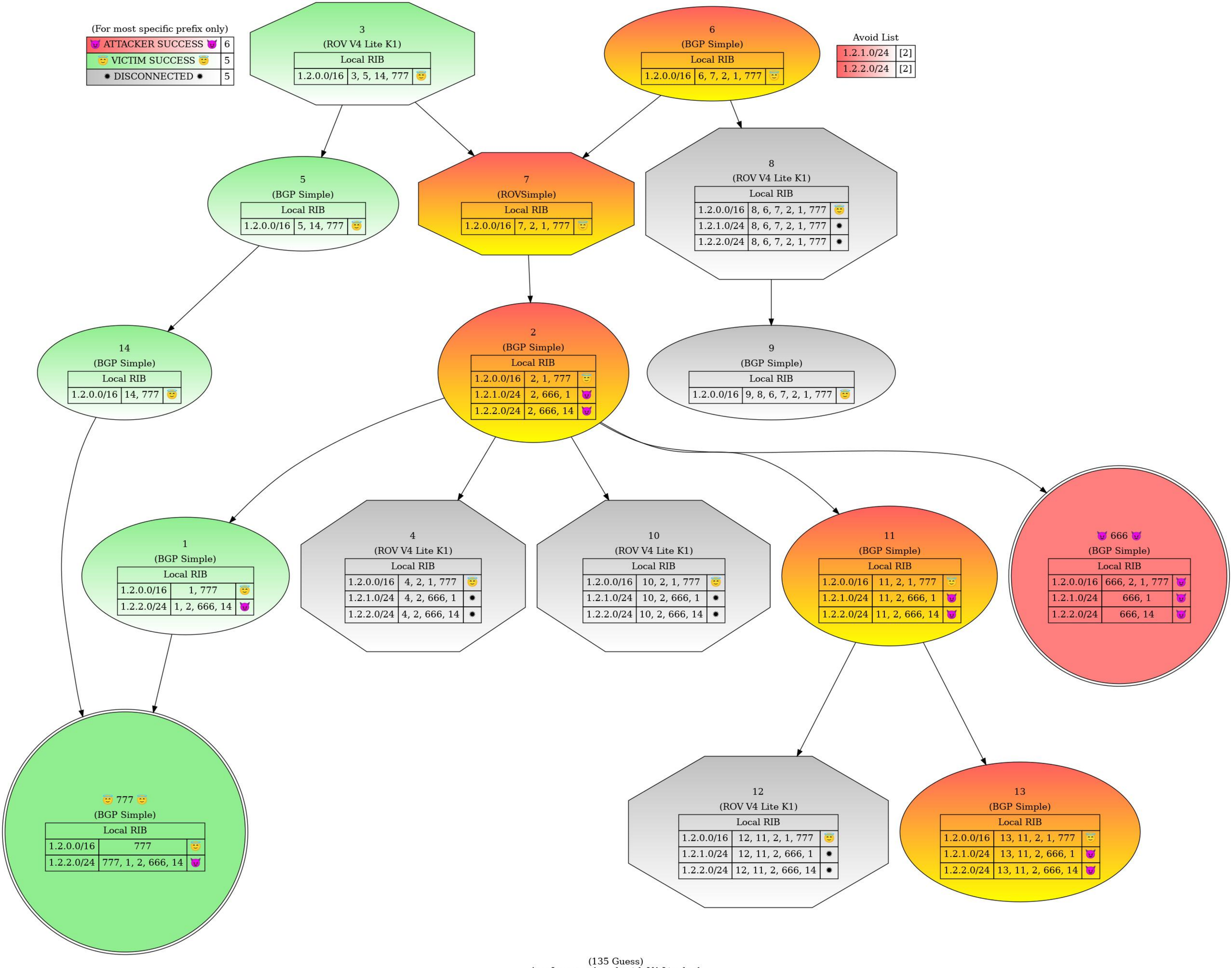
(135 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



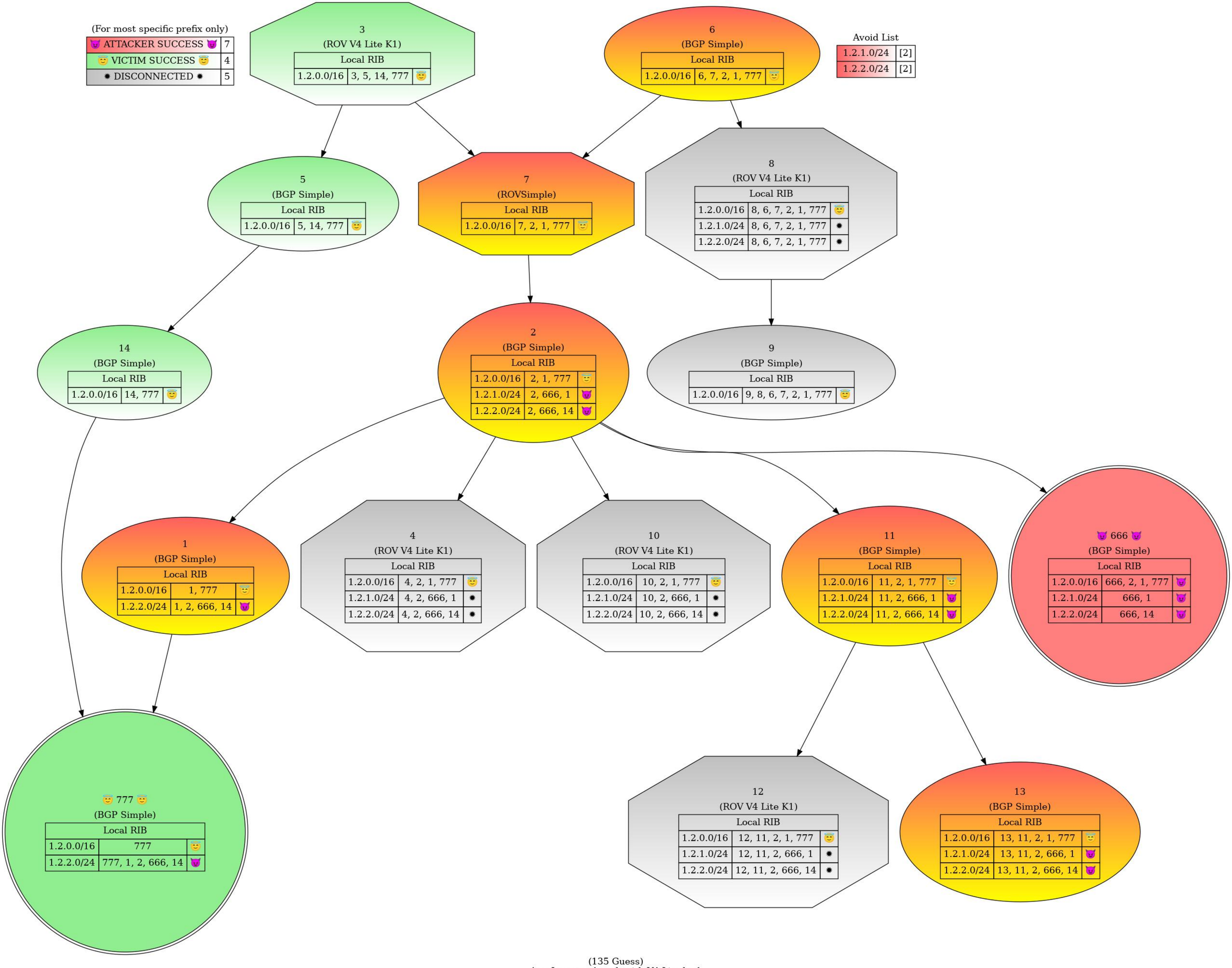
(135 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



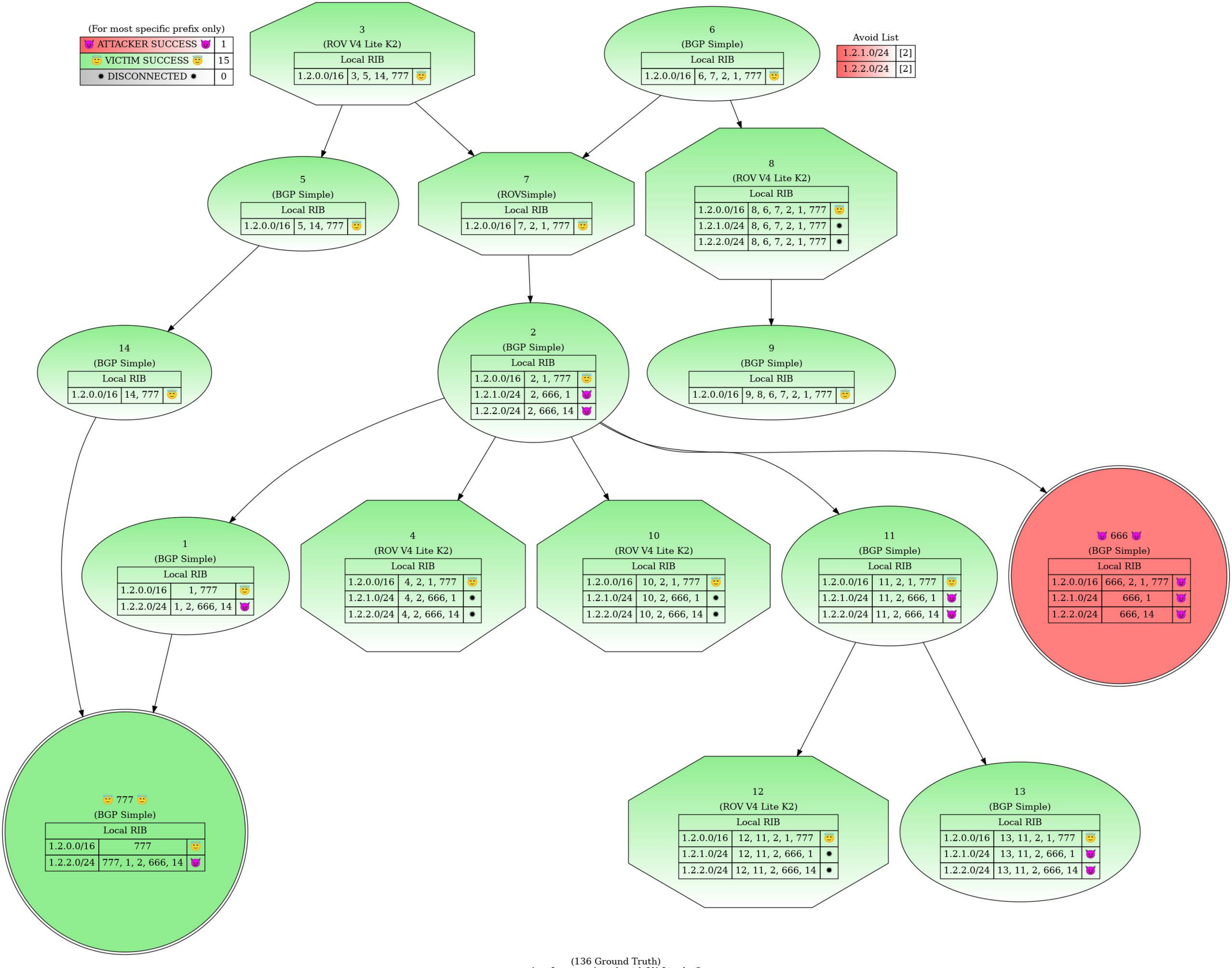
(135 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



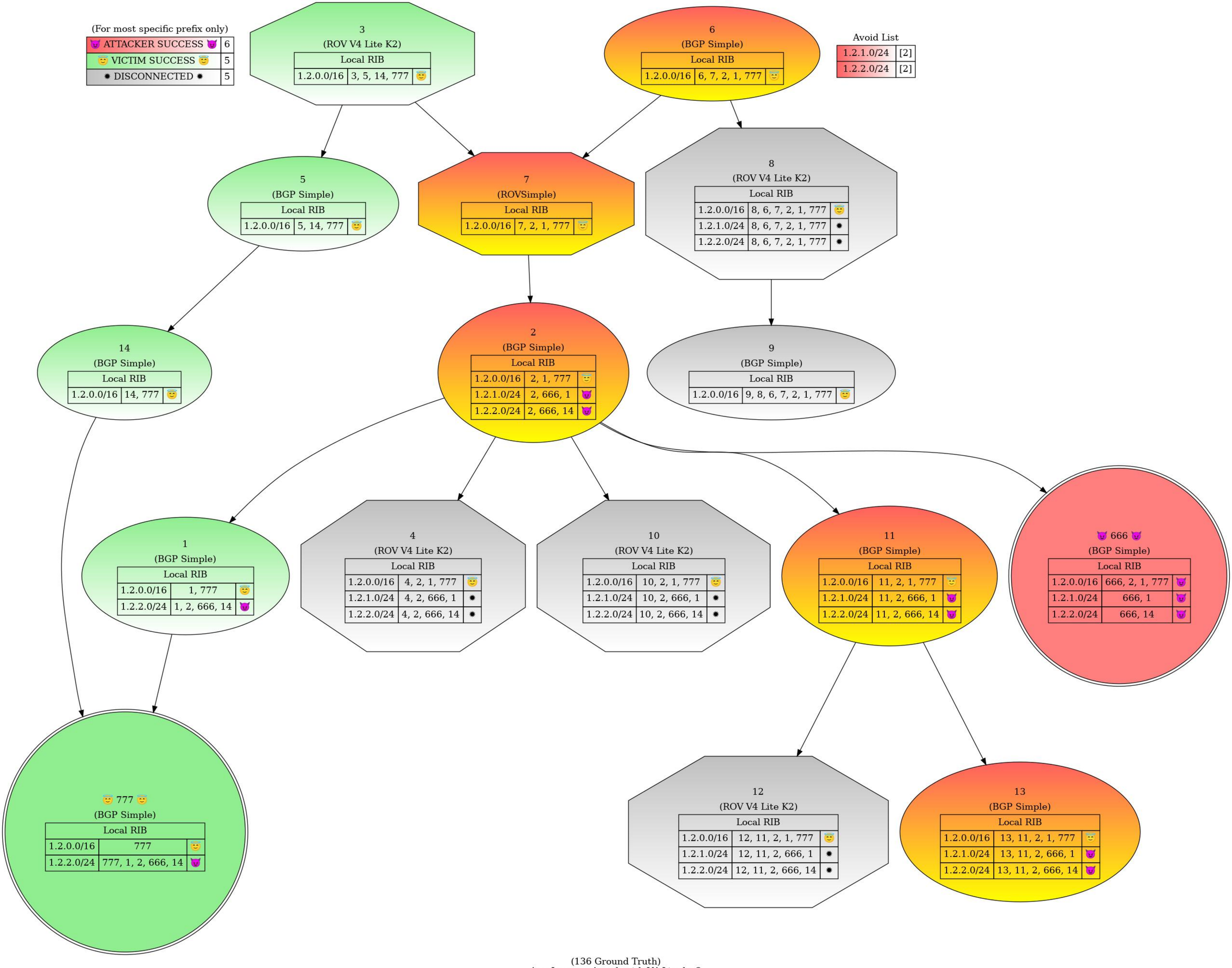
(135 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



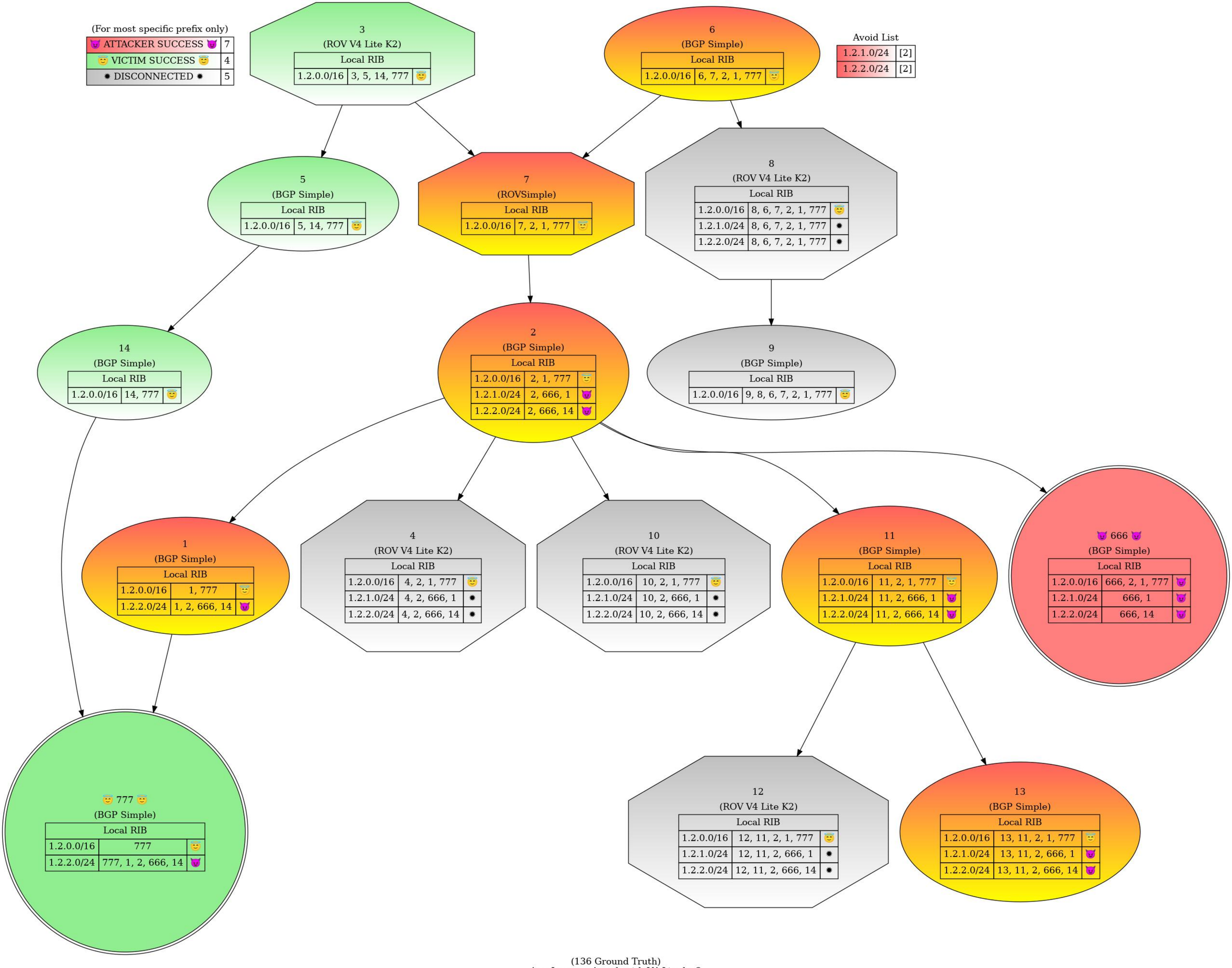
(135 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



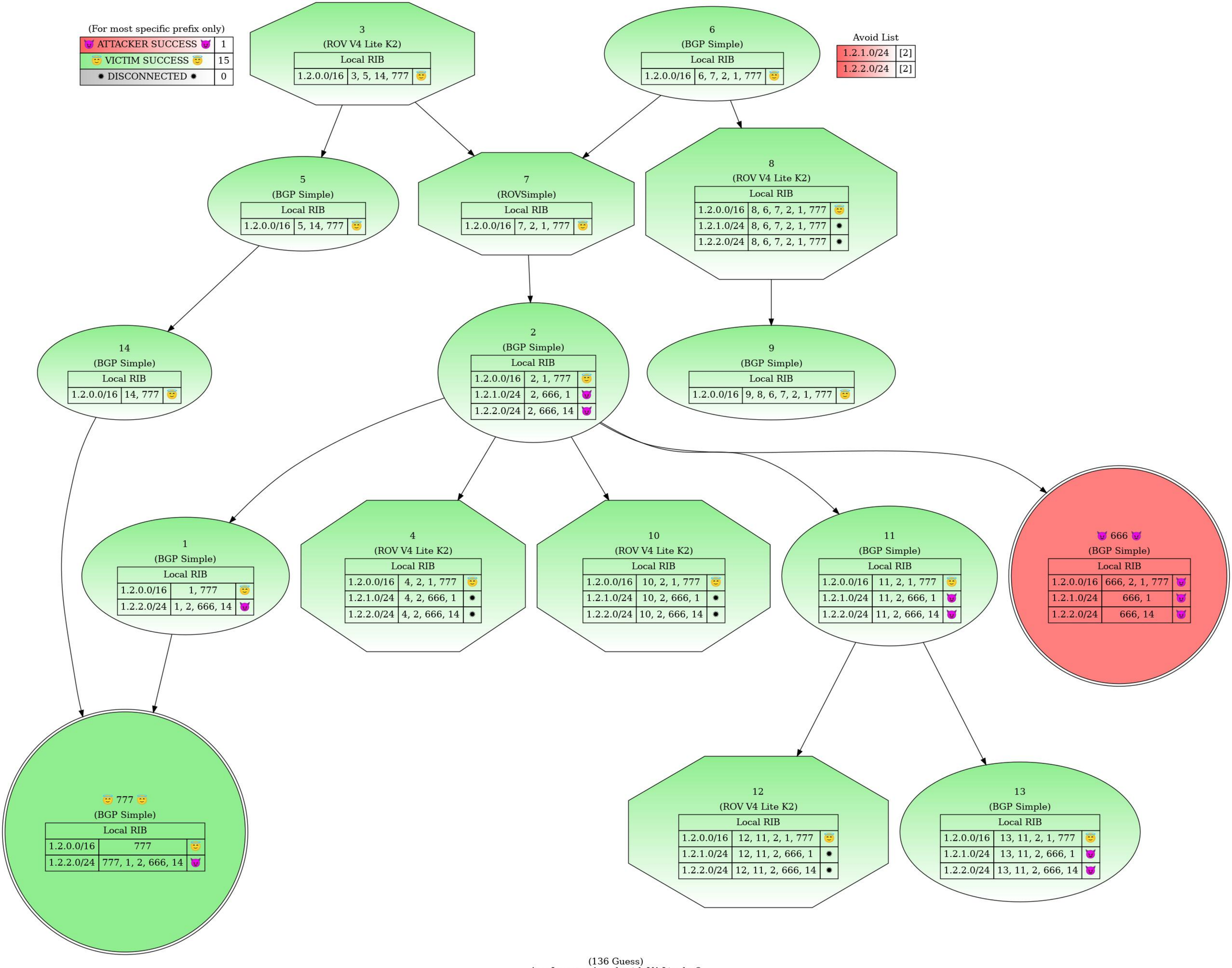
(136 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.0.0/16



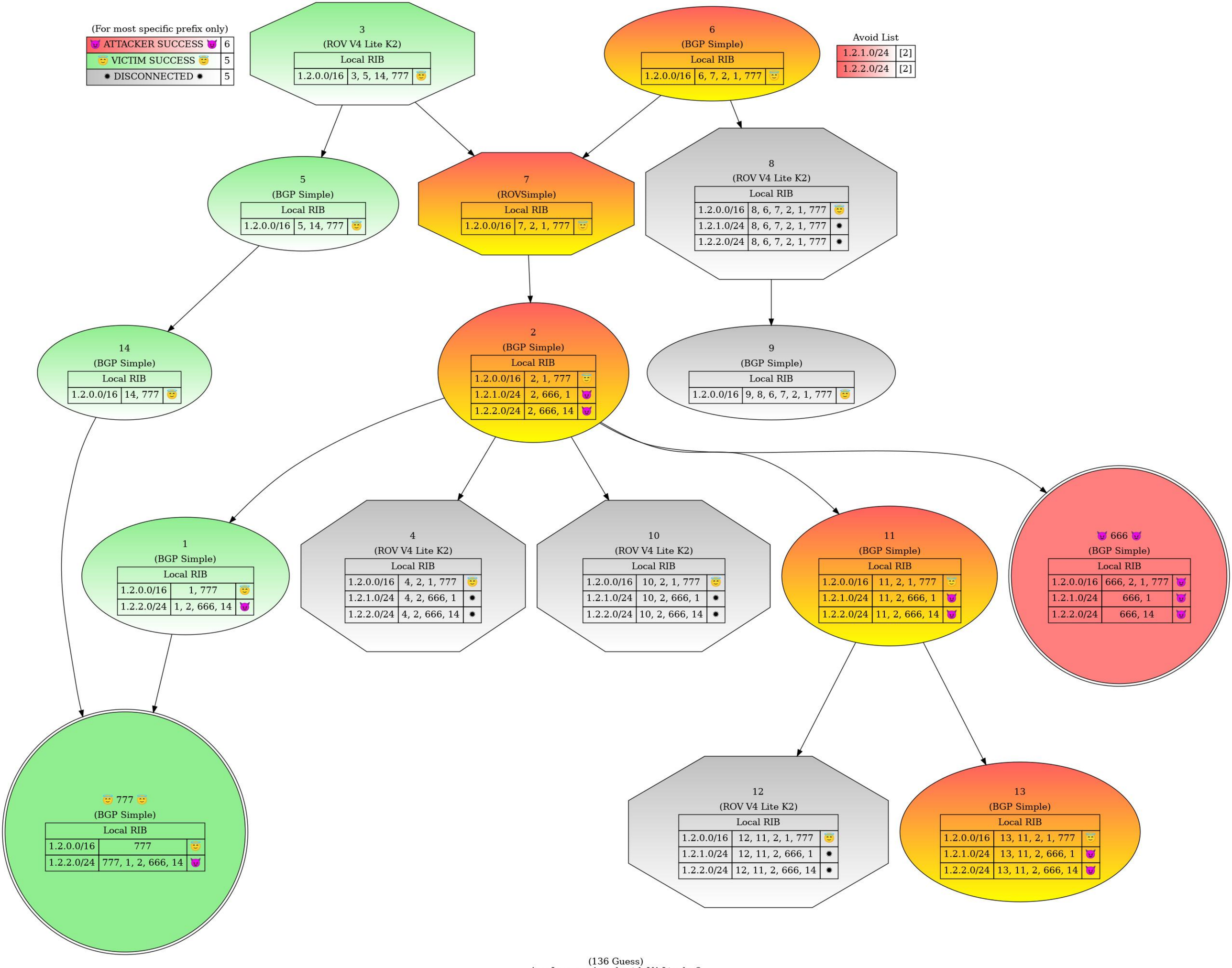
(136 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



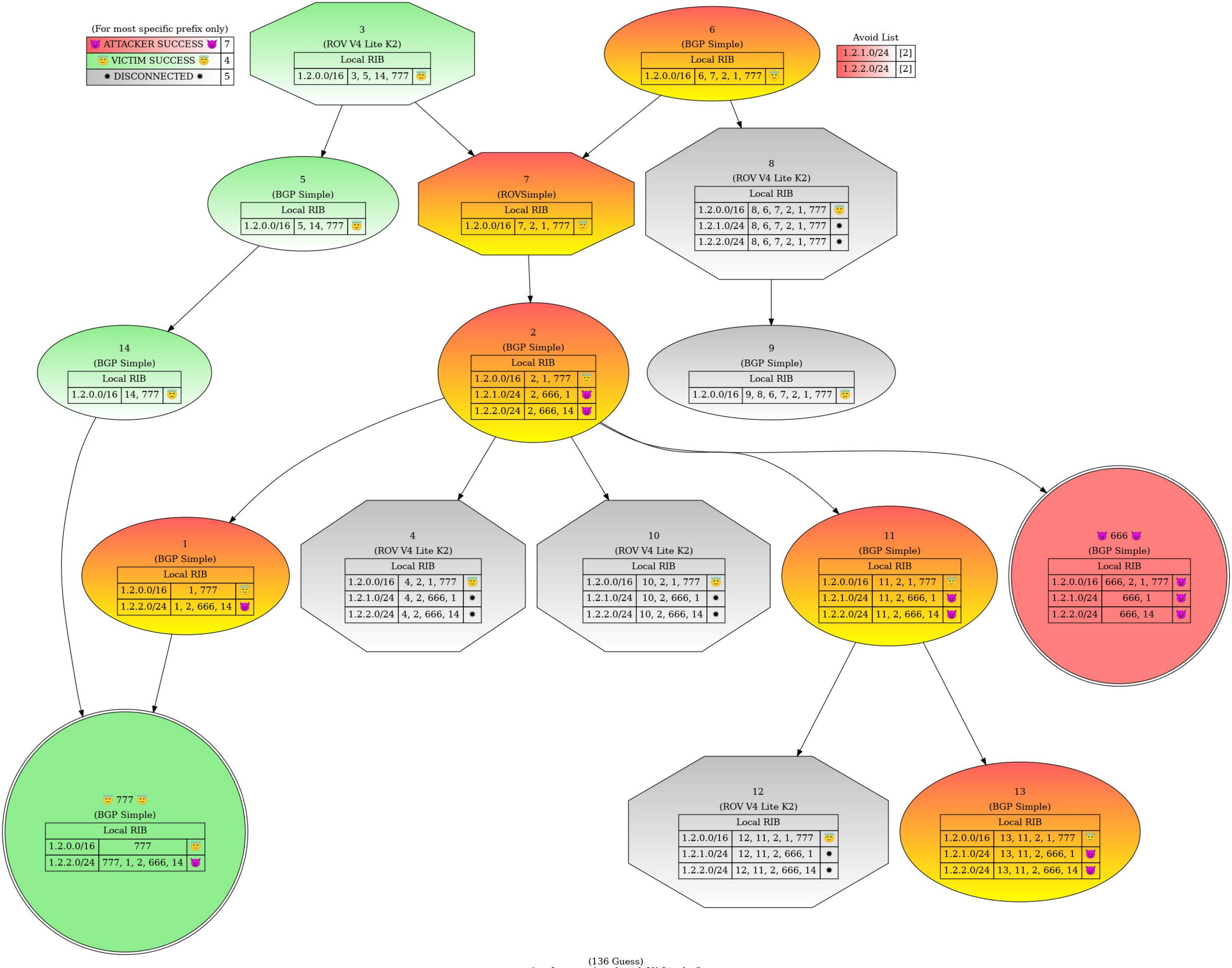
(136 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.2.0/24



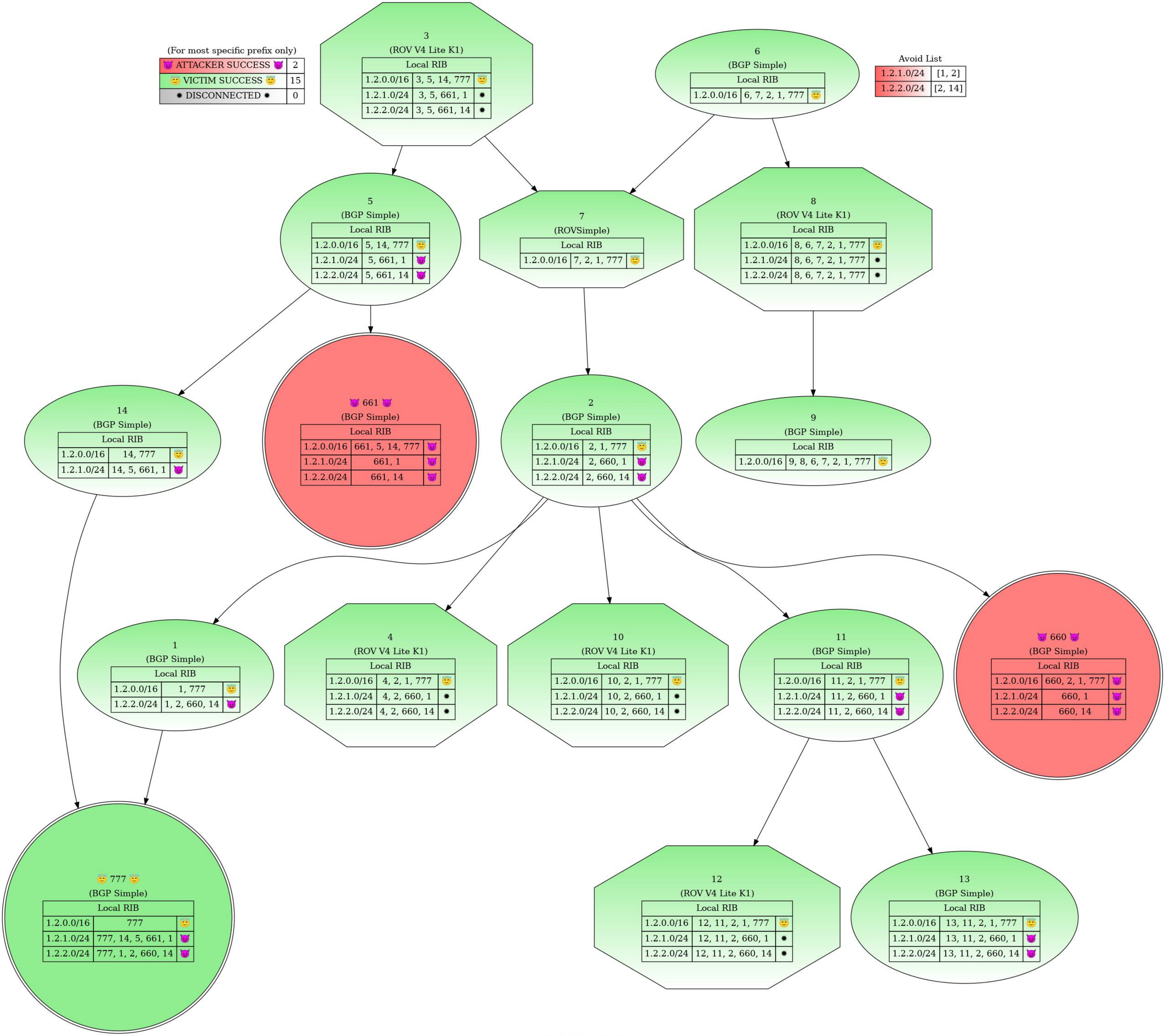
(136 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.0.0/16



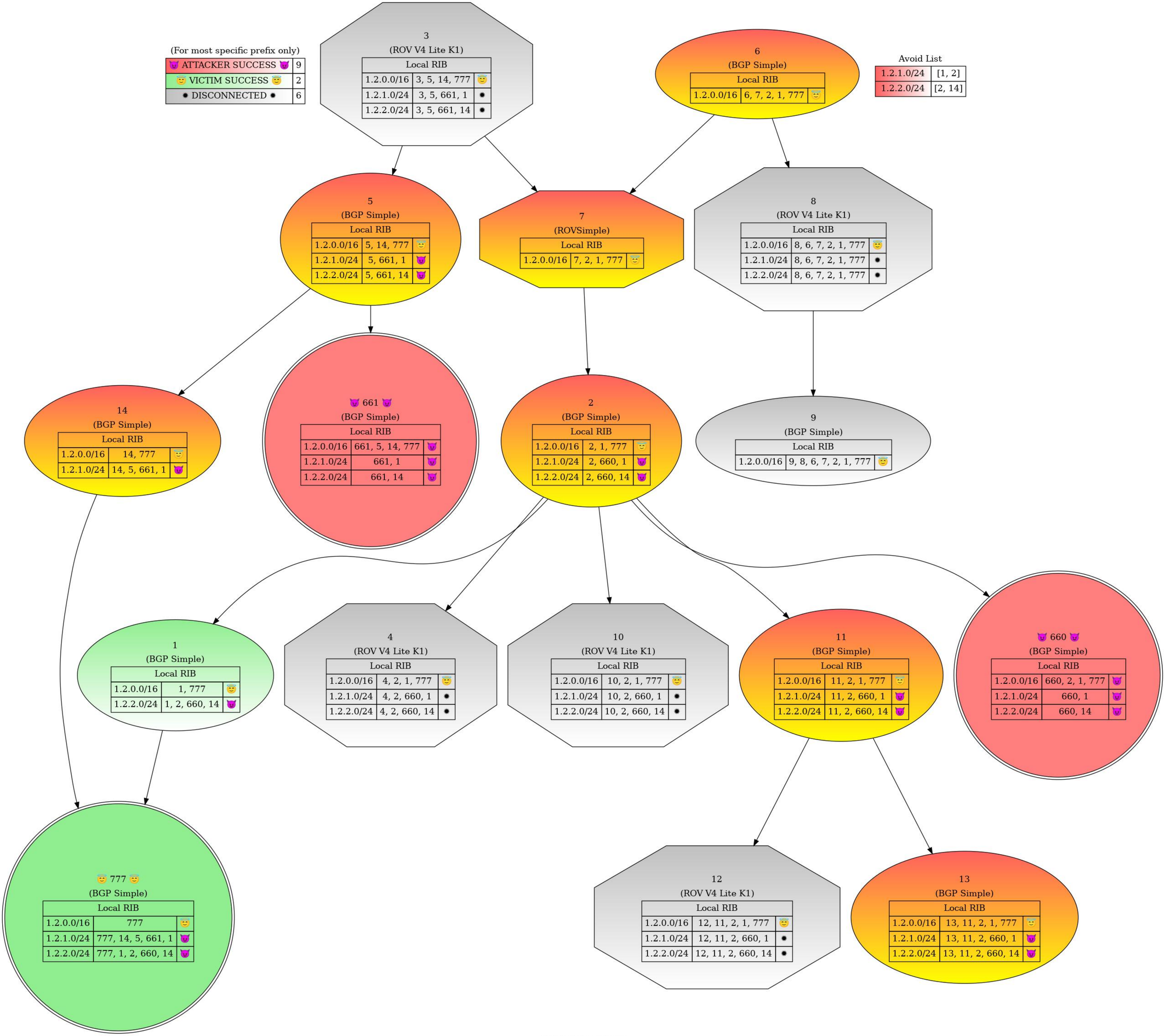
(136 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



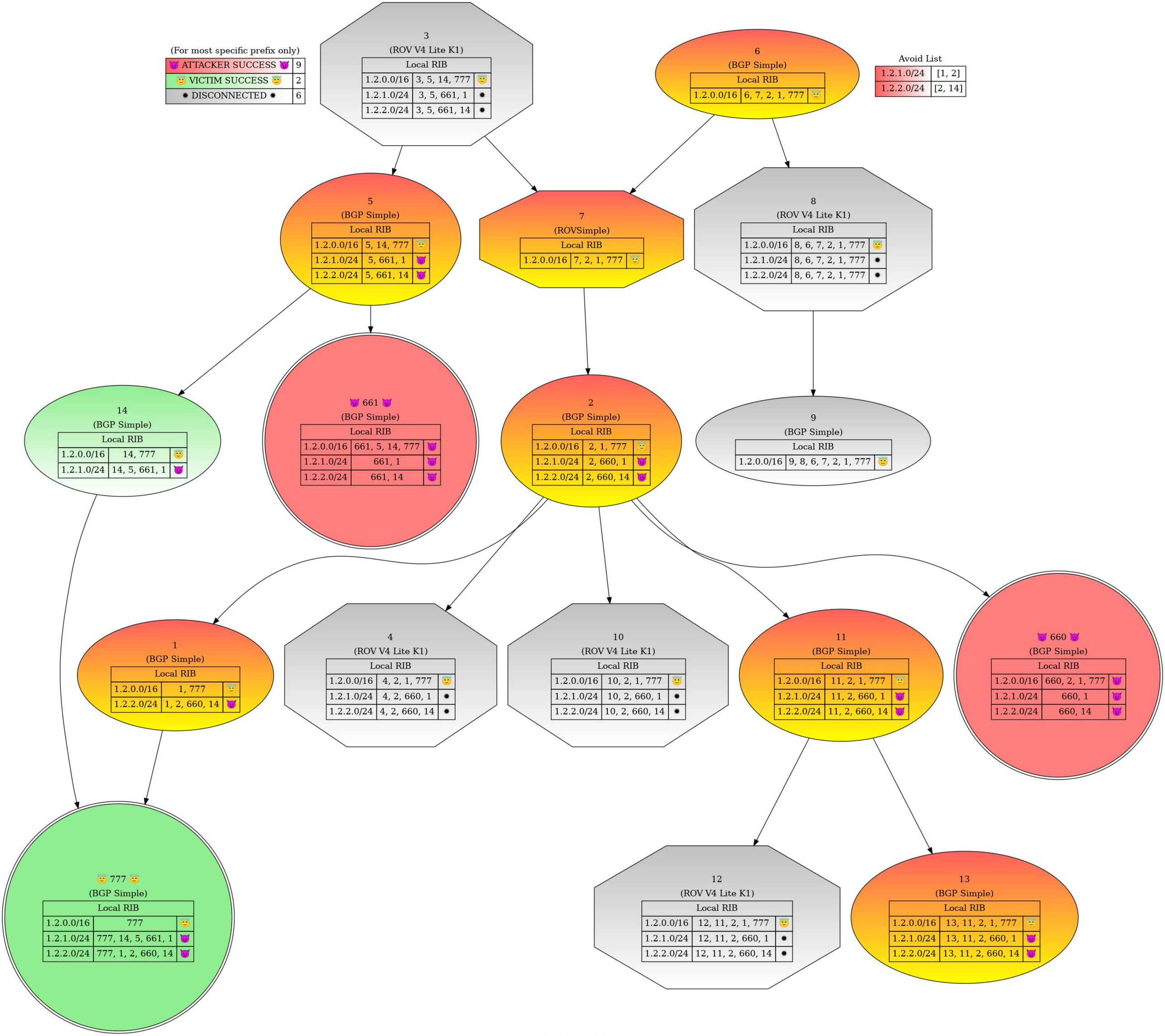
(136 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.2.0/24



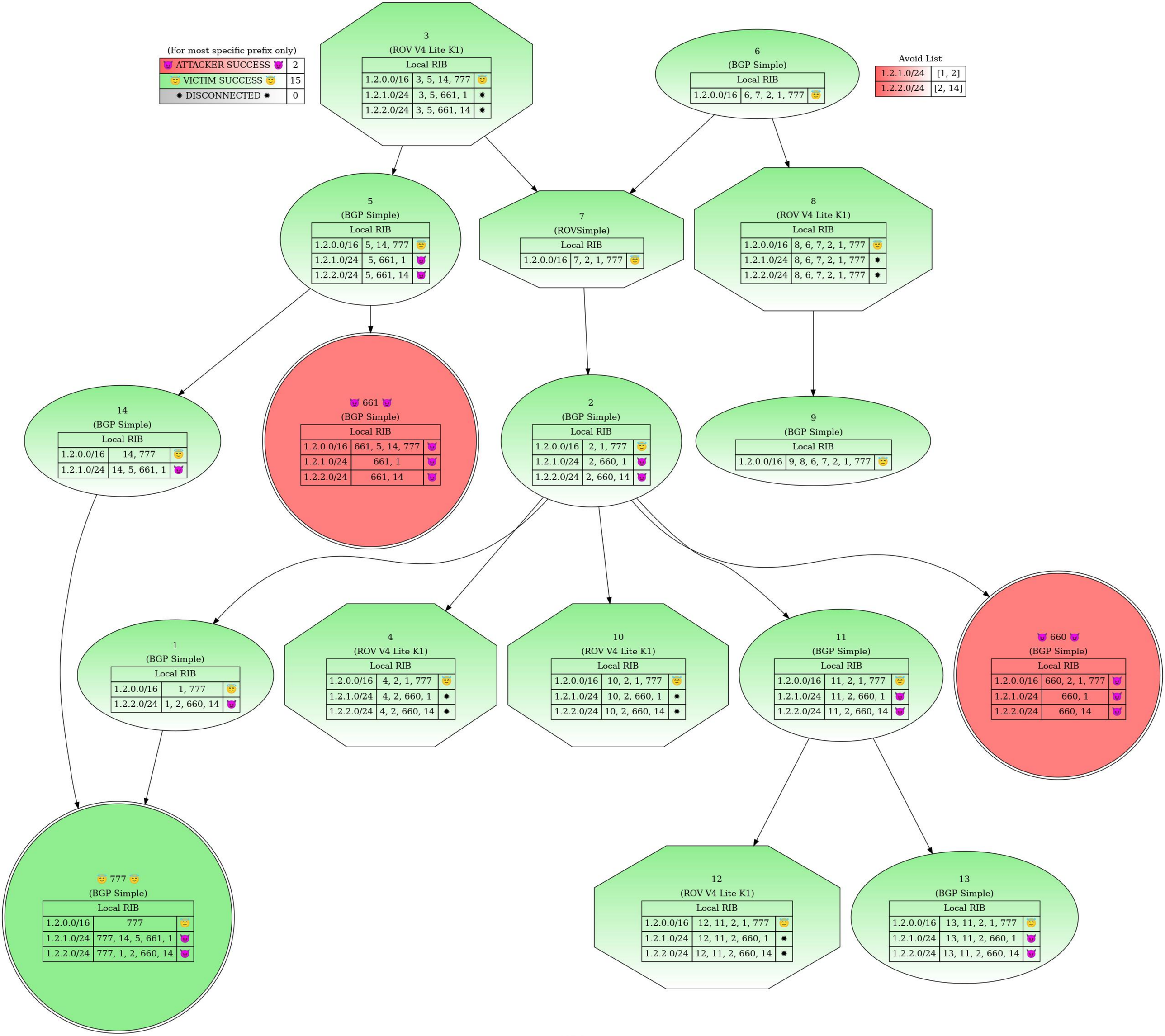
(137 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



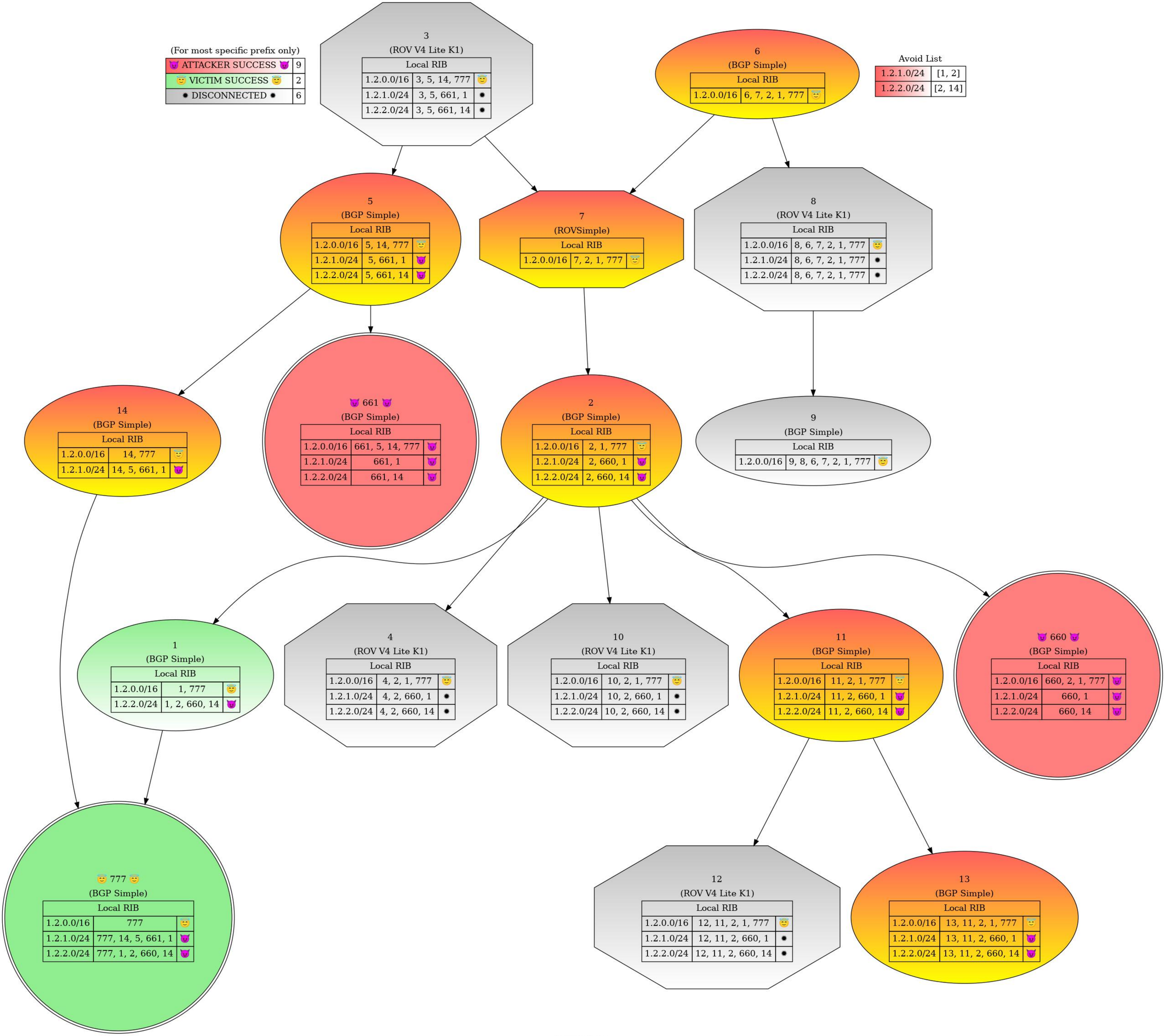
(137 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



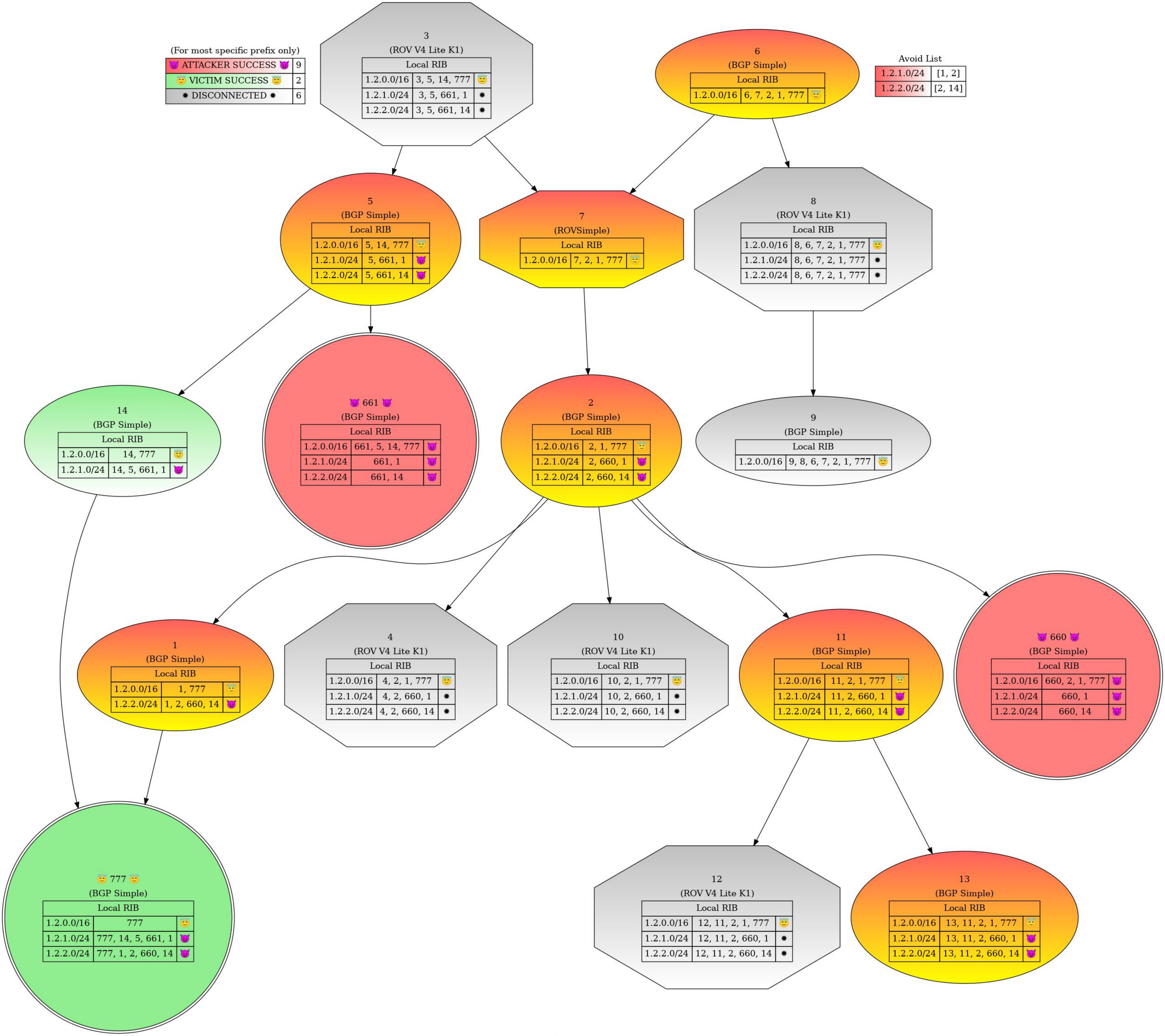
(137 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



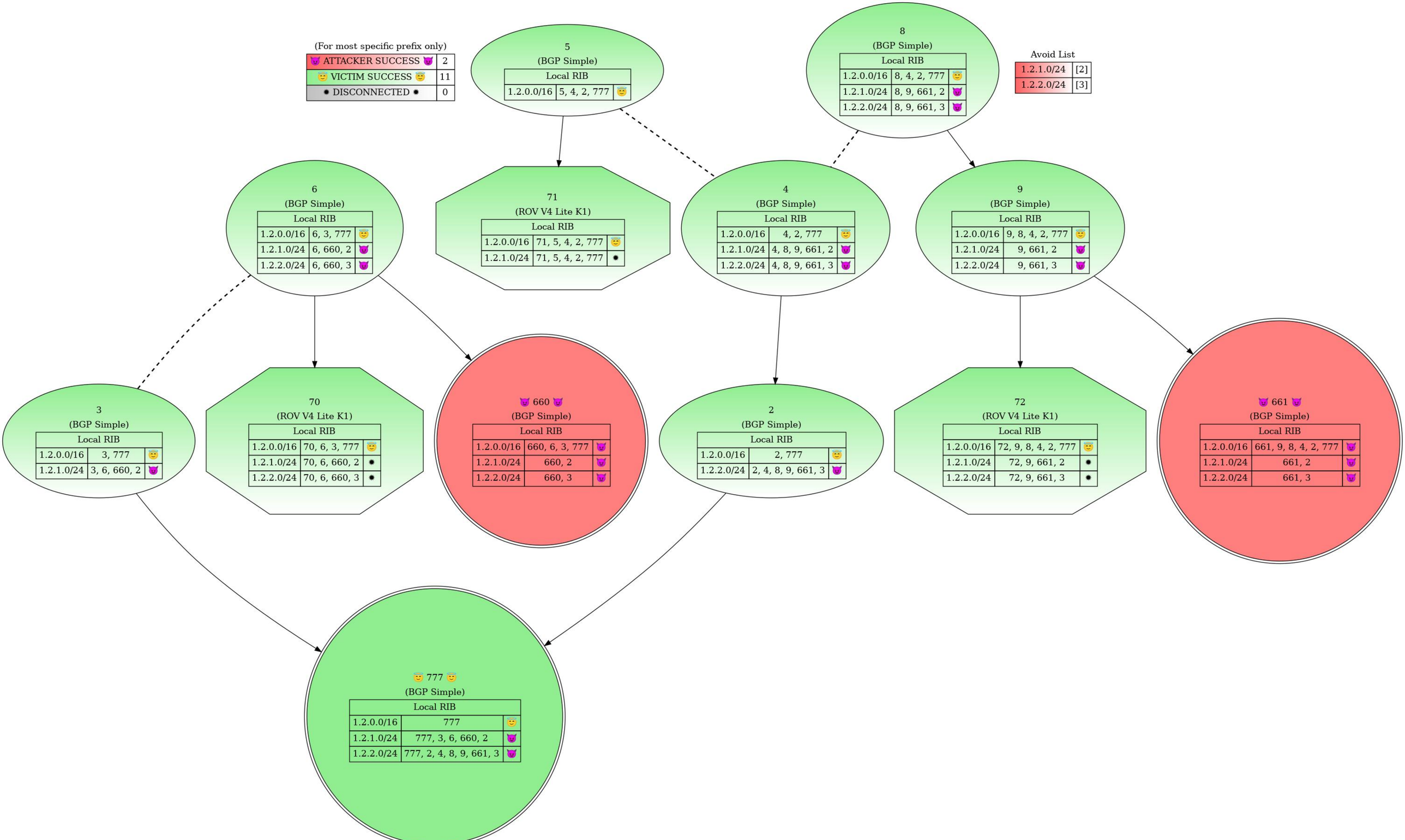
(137 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



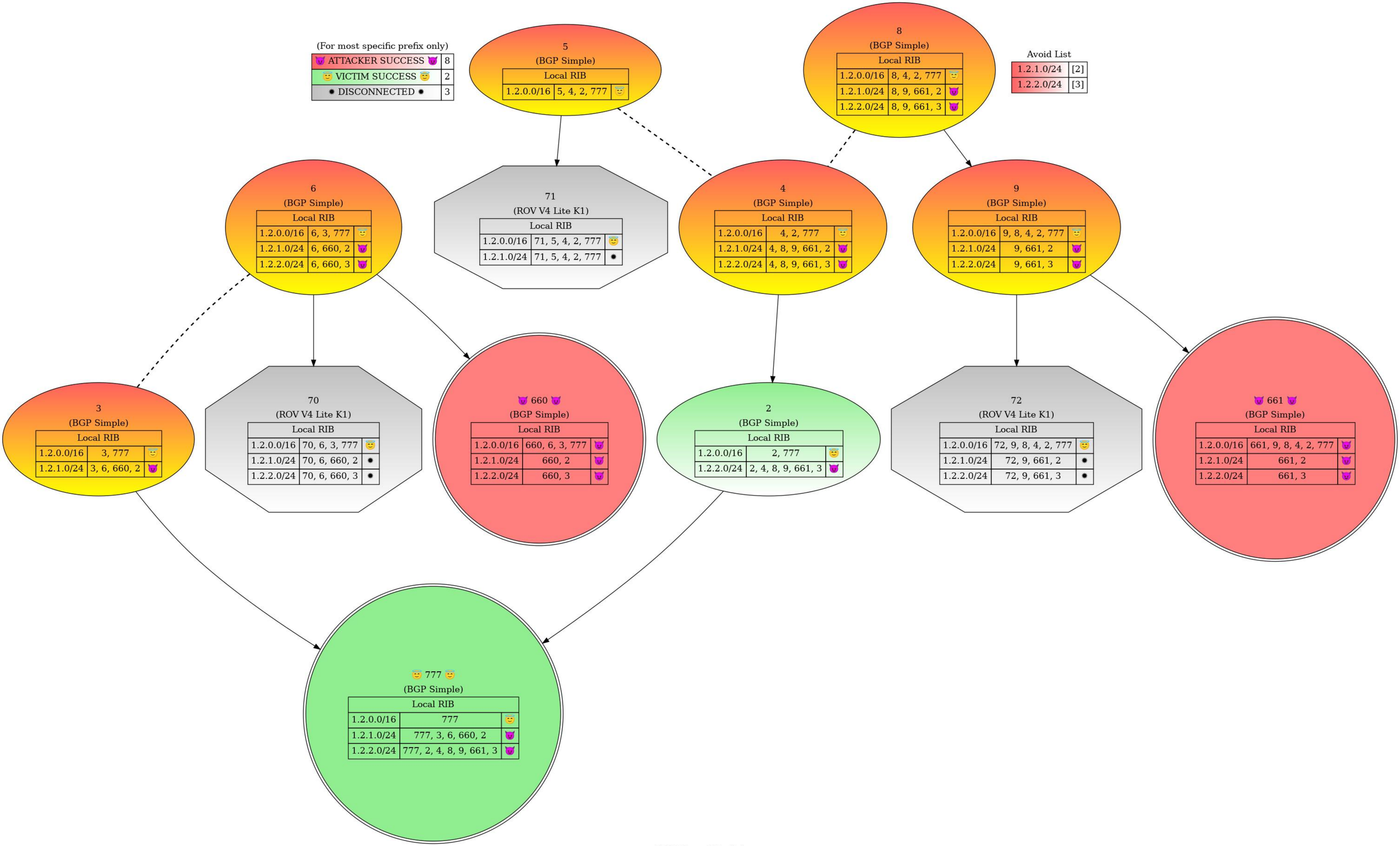
(137 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



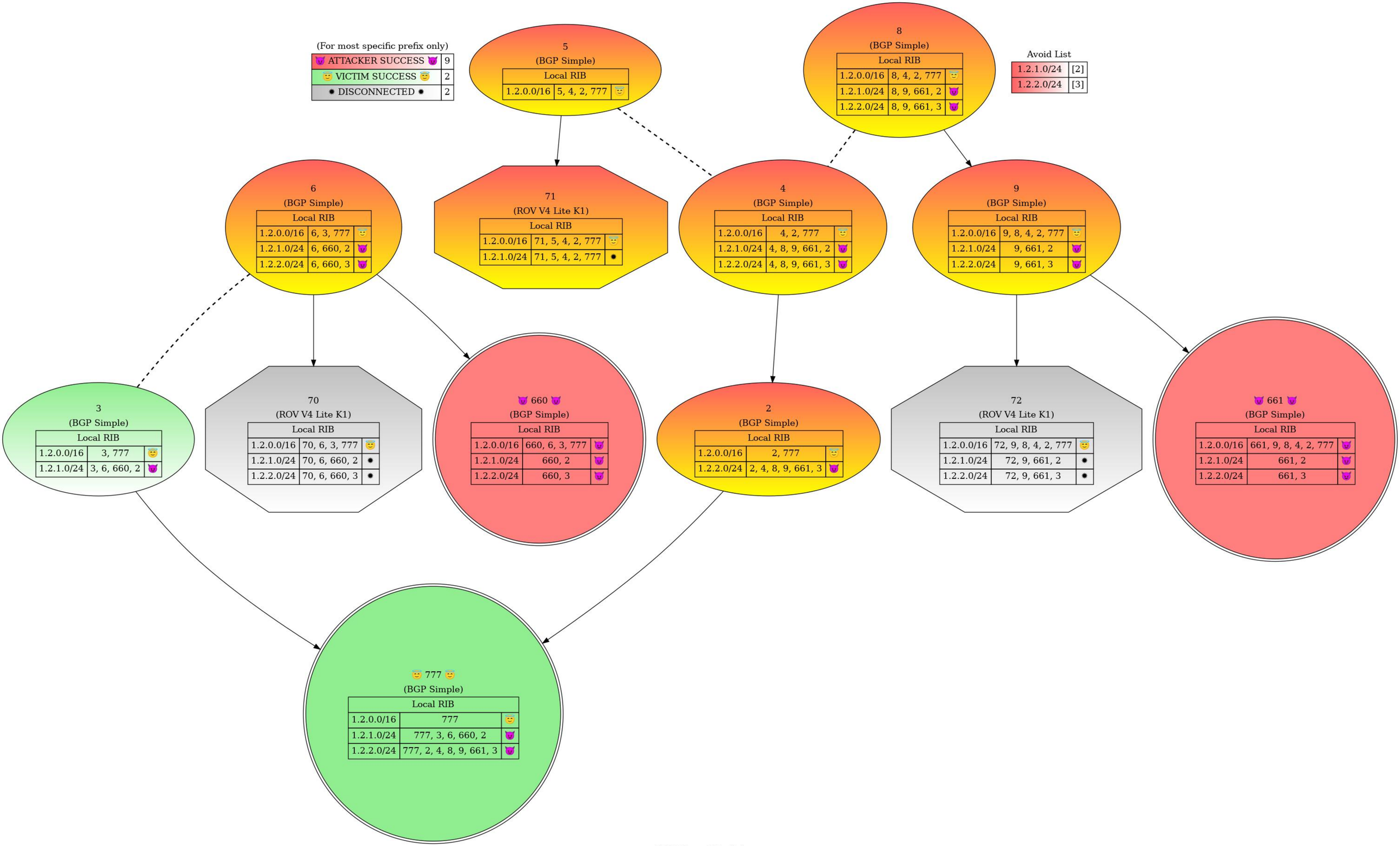
(137 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



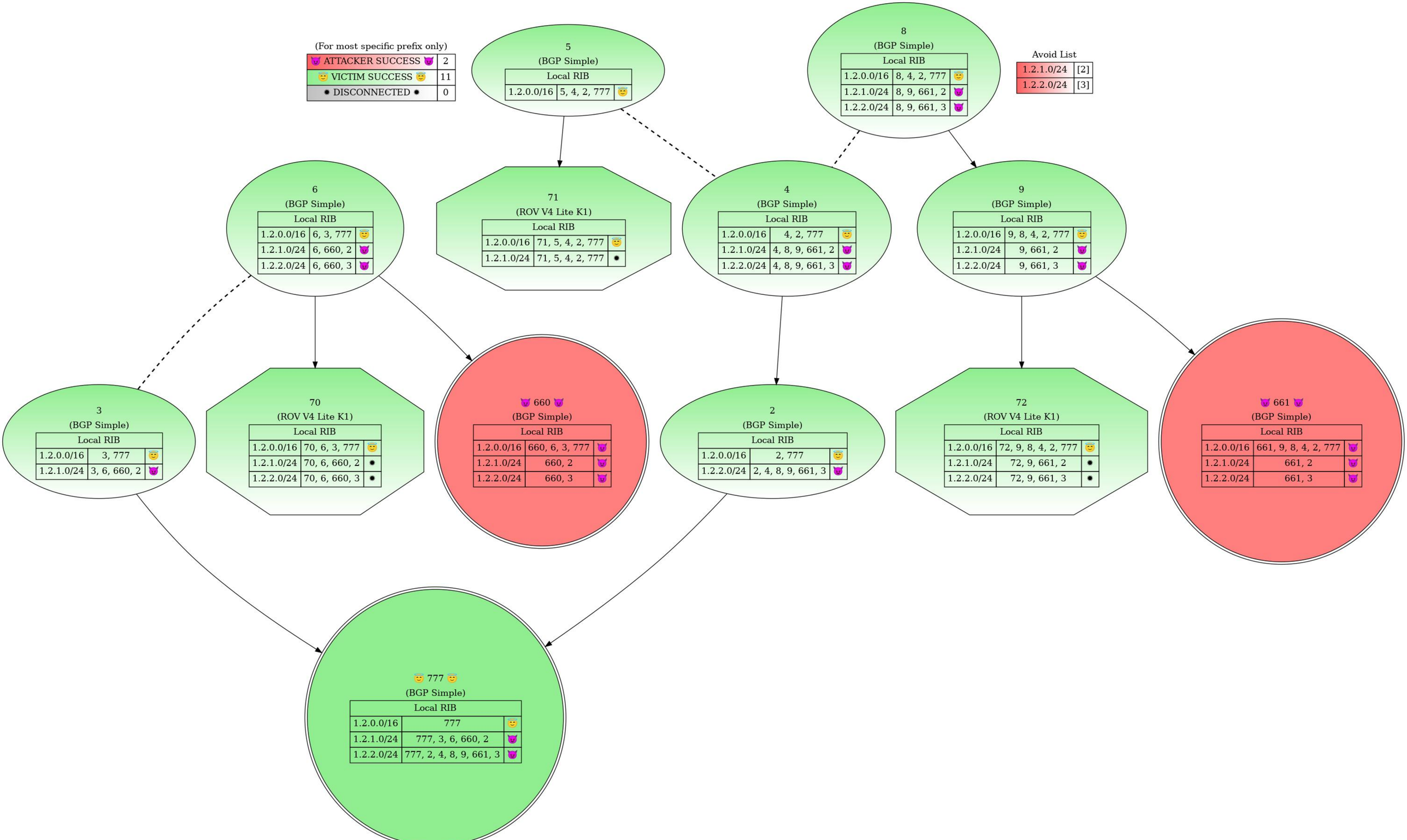
(138 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



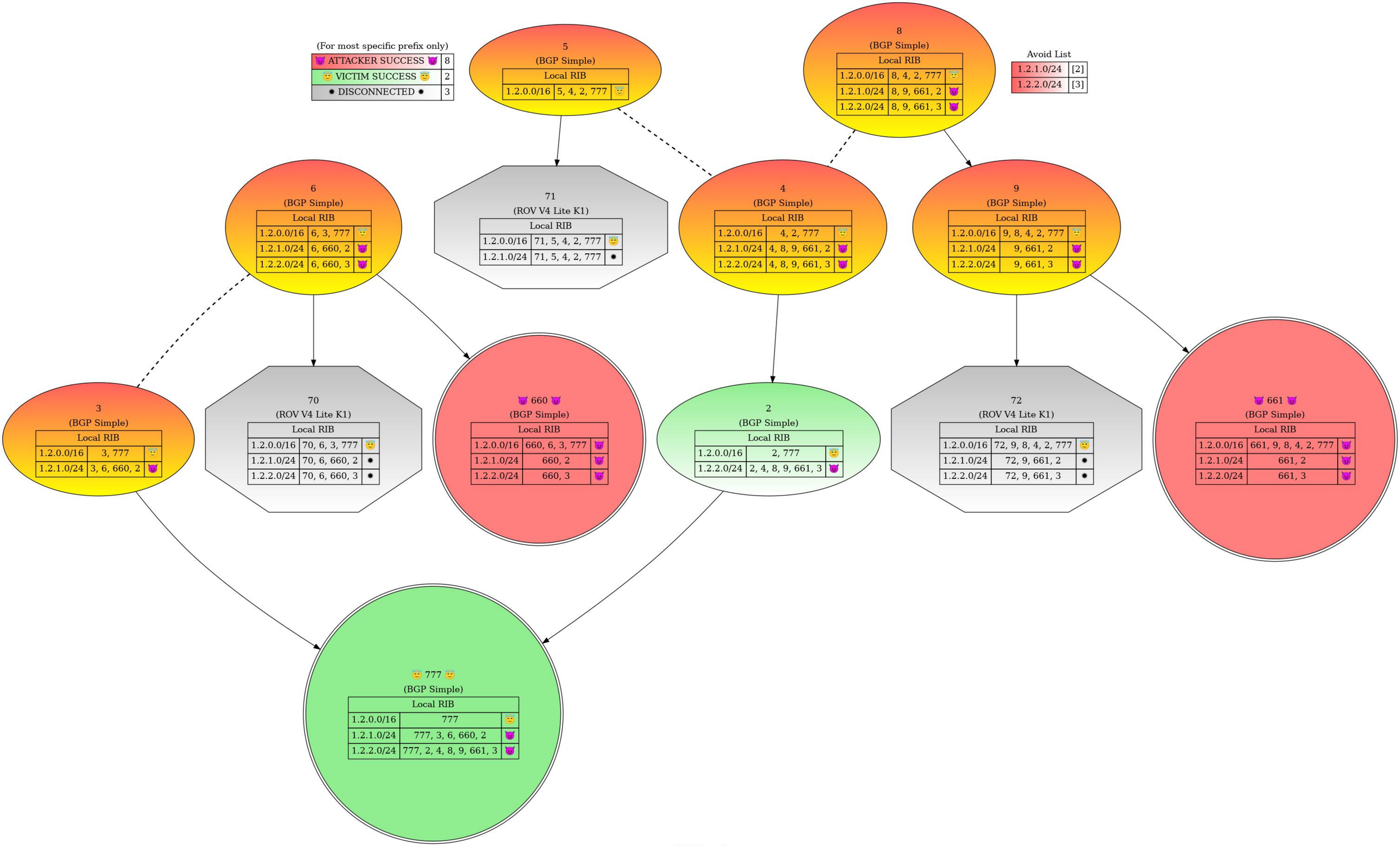
(138 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



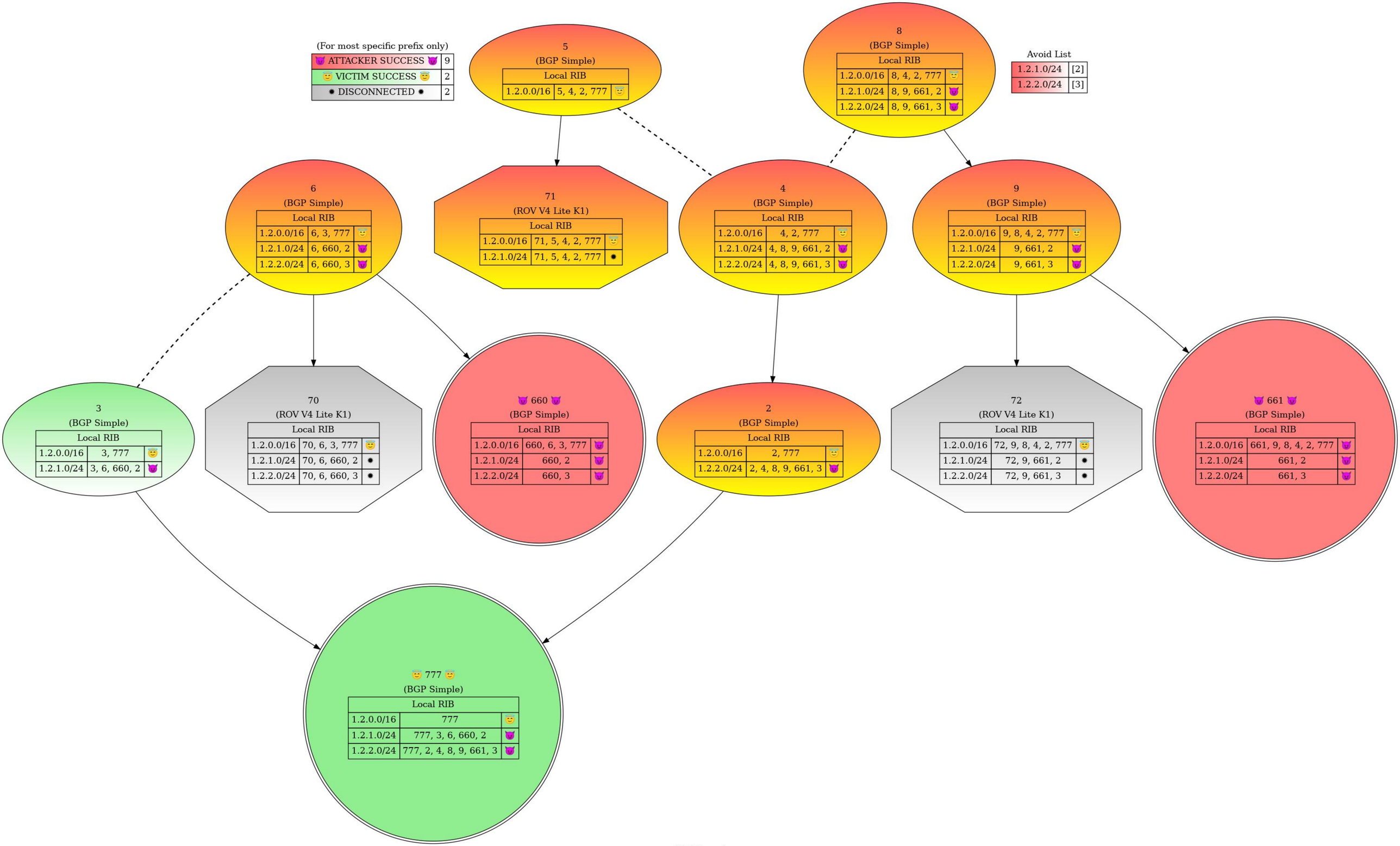
(138 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



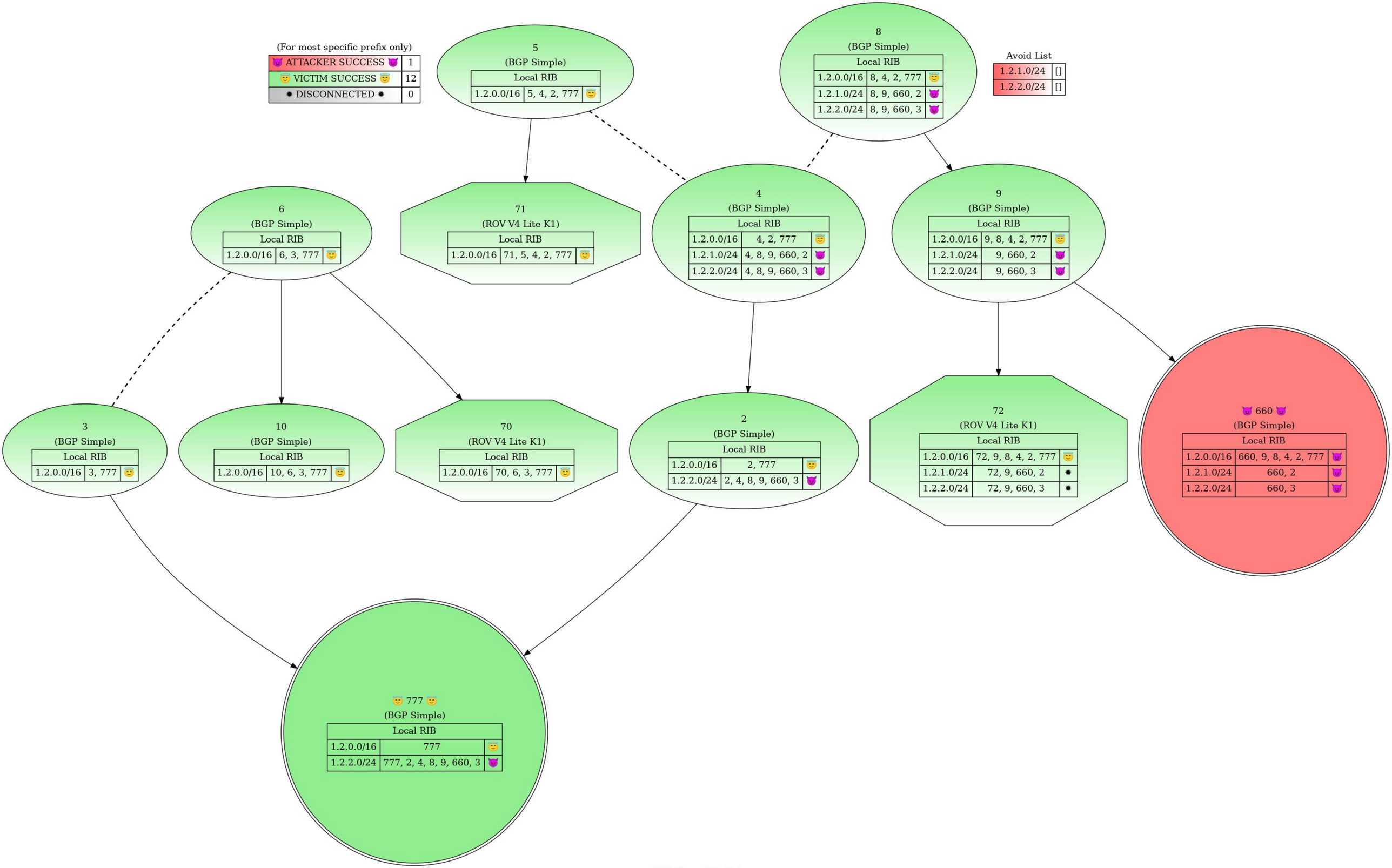
(138 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



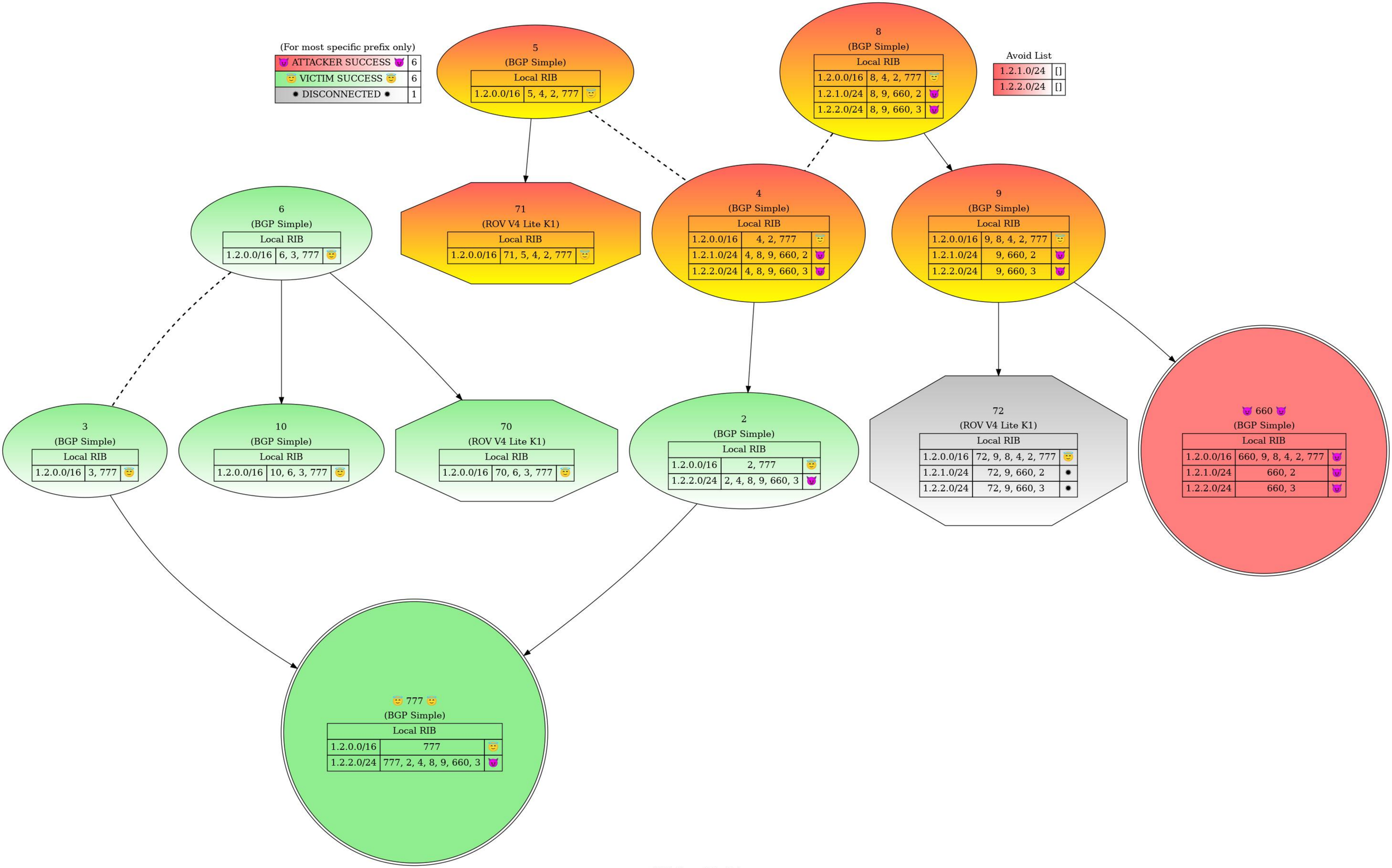
(138 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



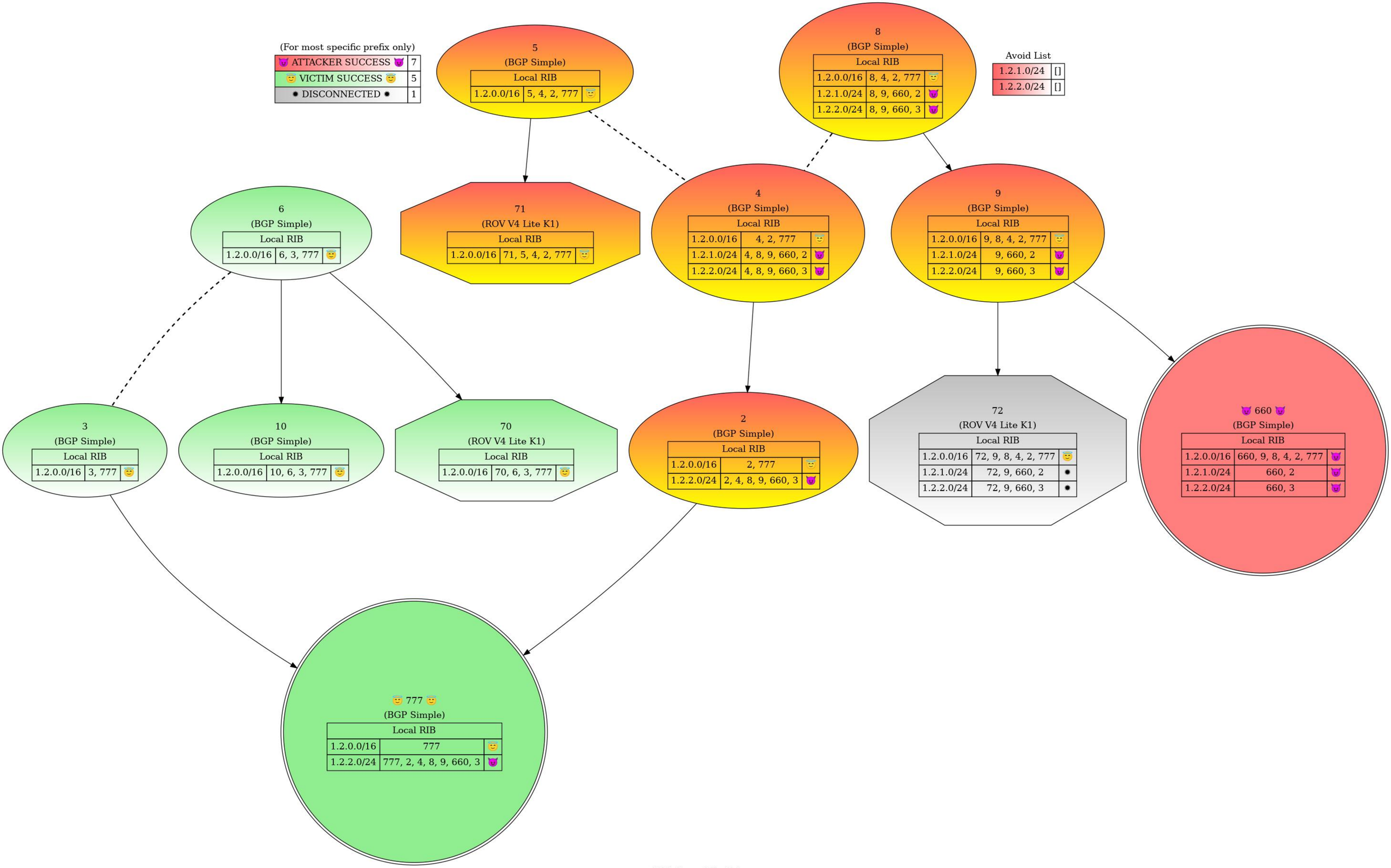
(138 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



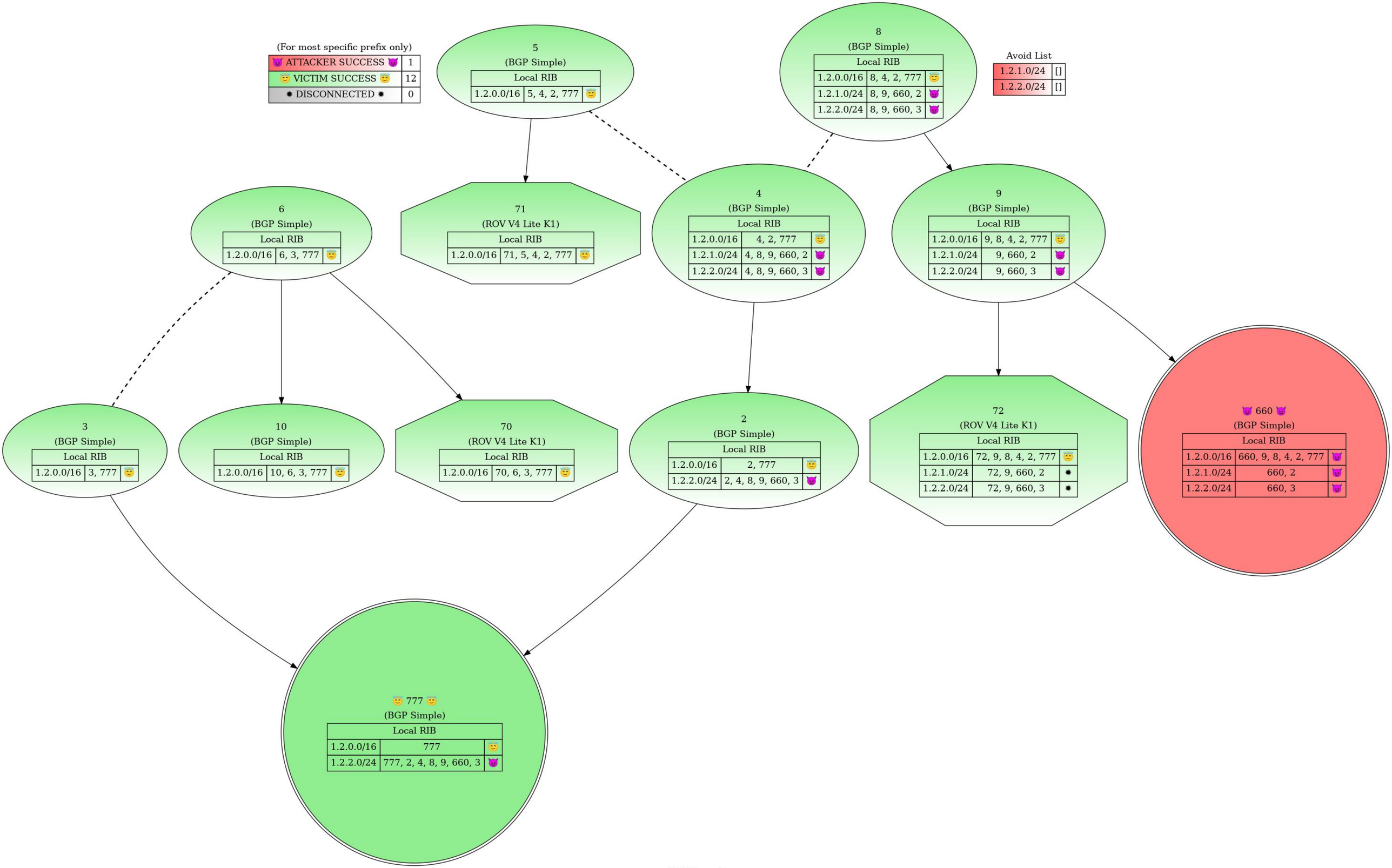
(139 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



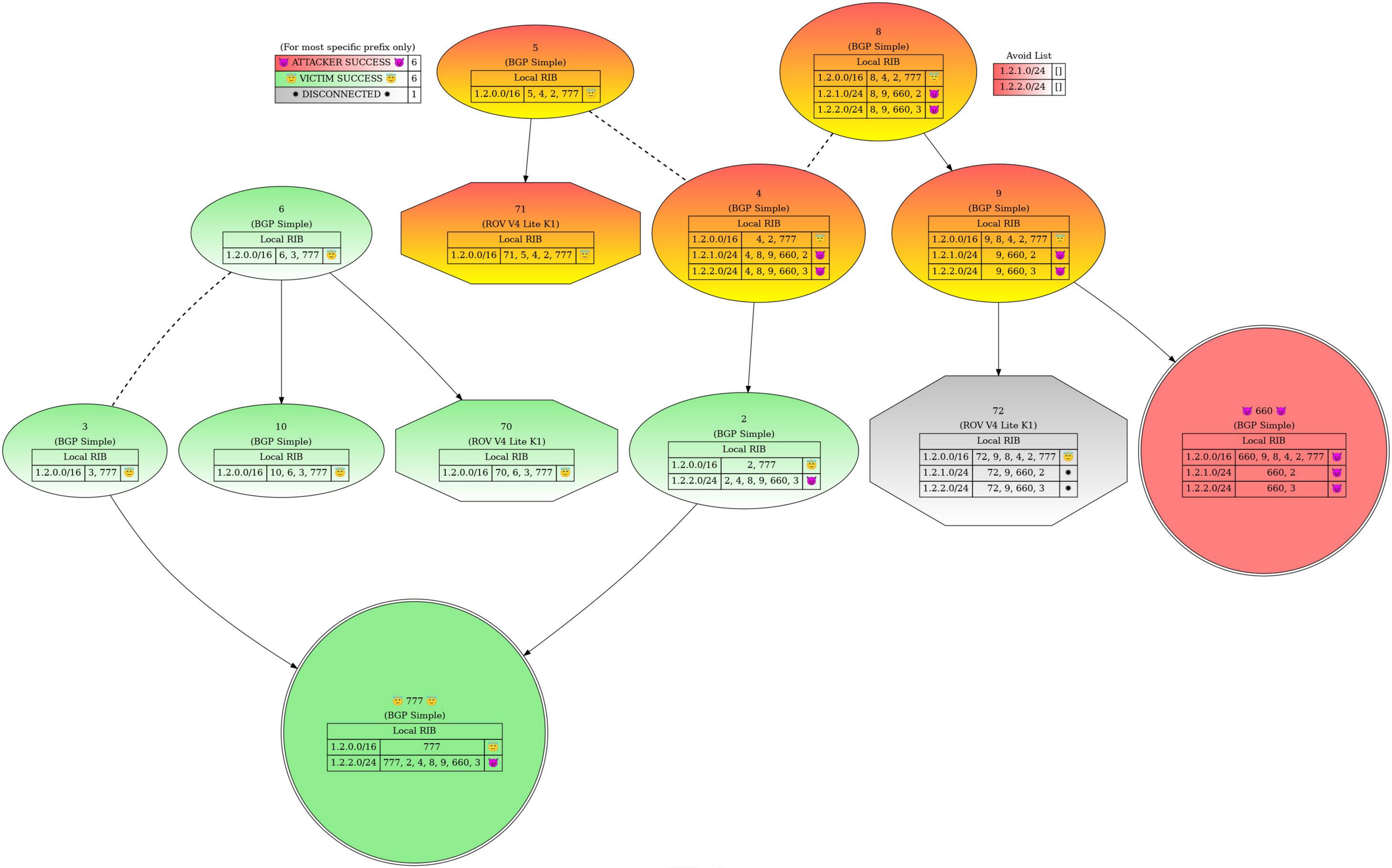
(139 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



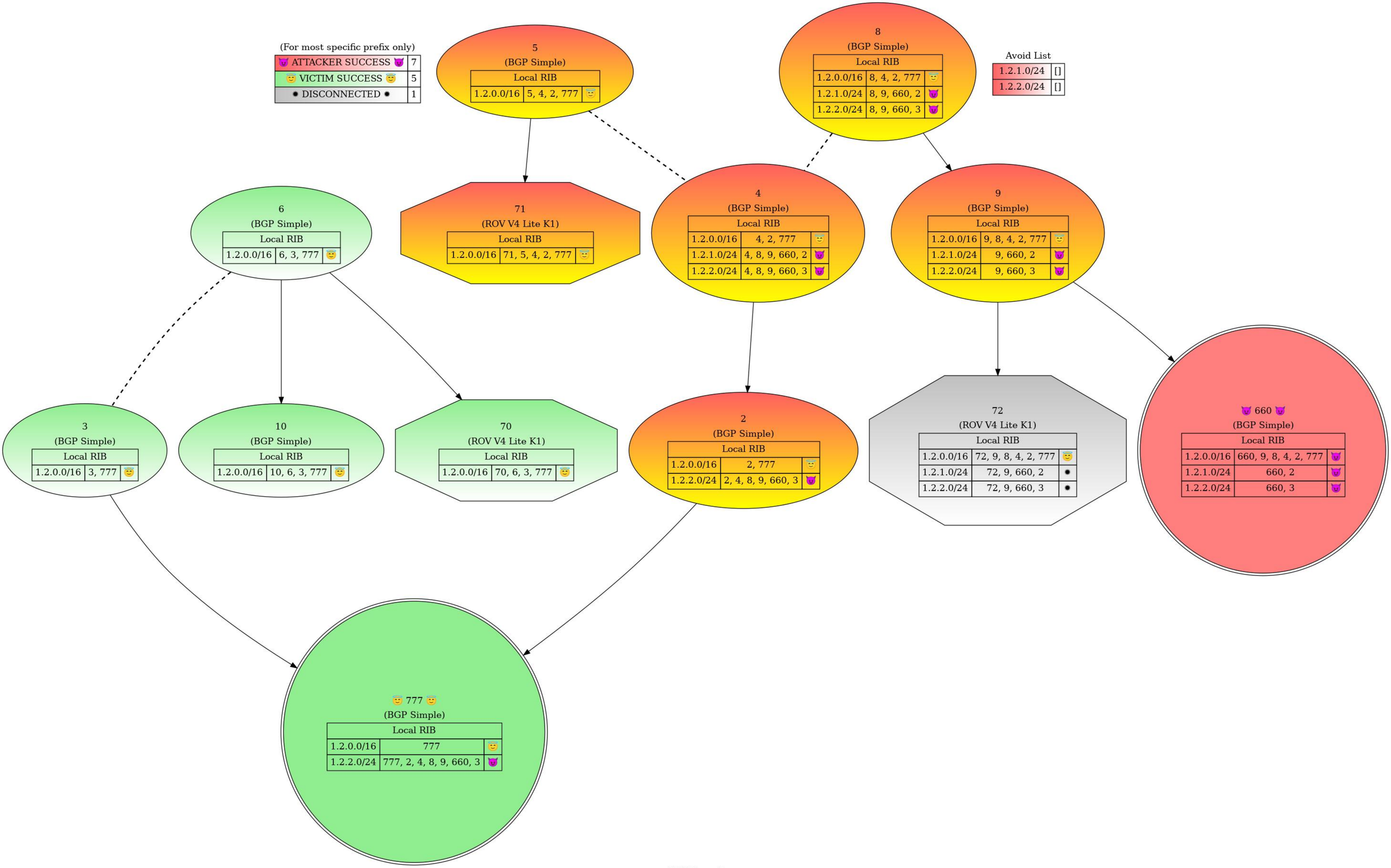
(139 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



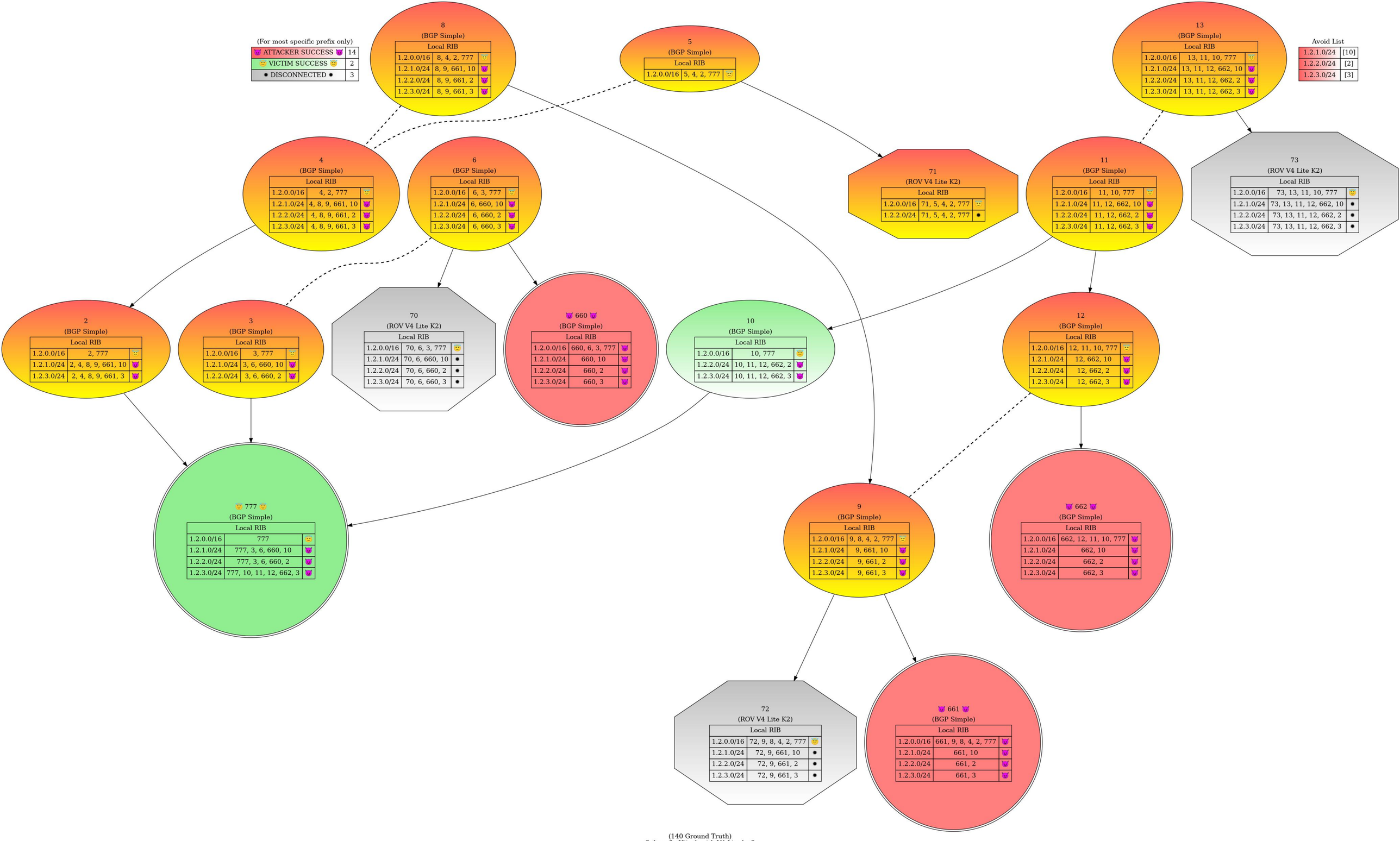
(139 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



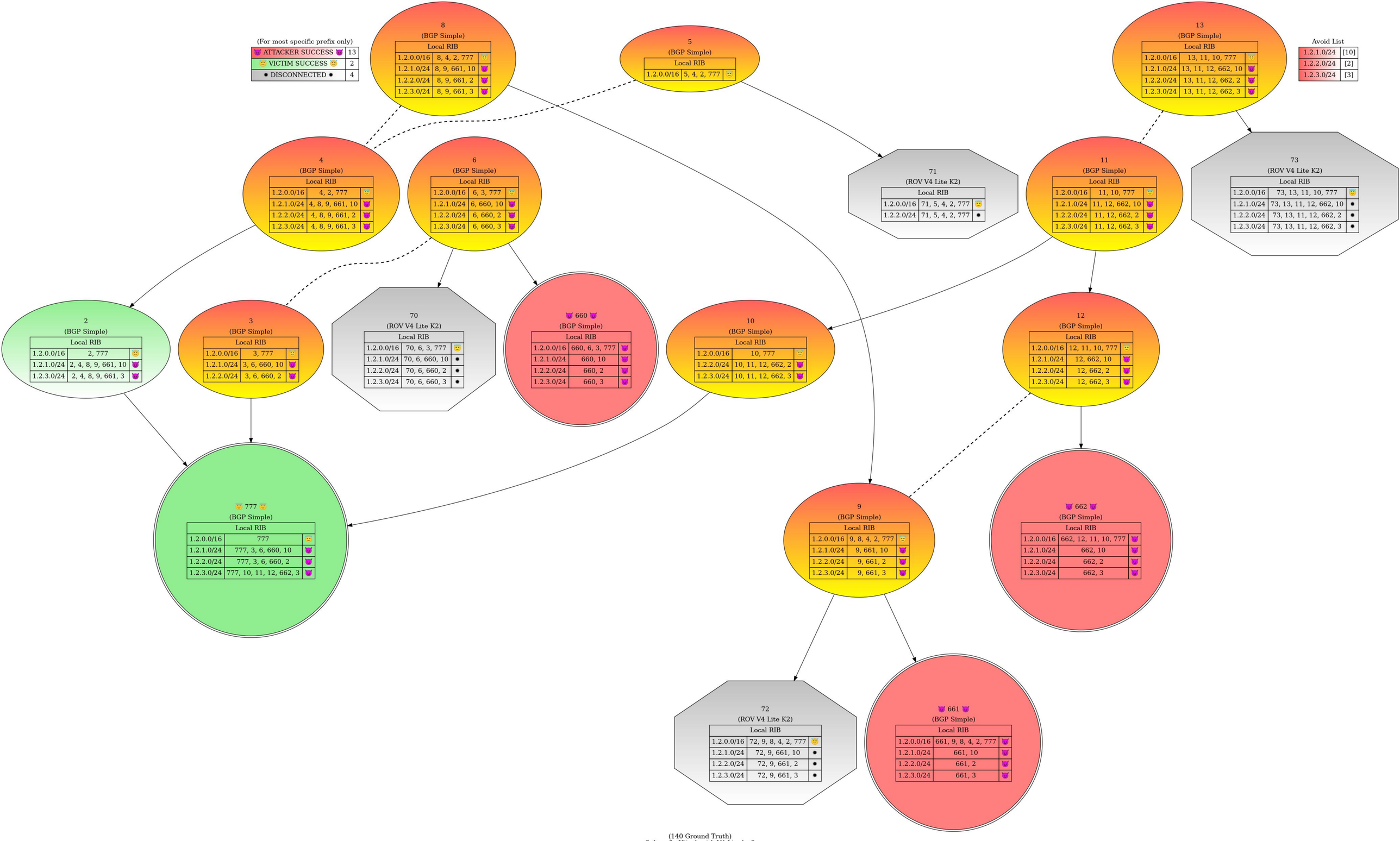
(139 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



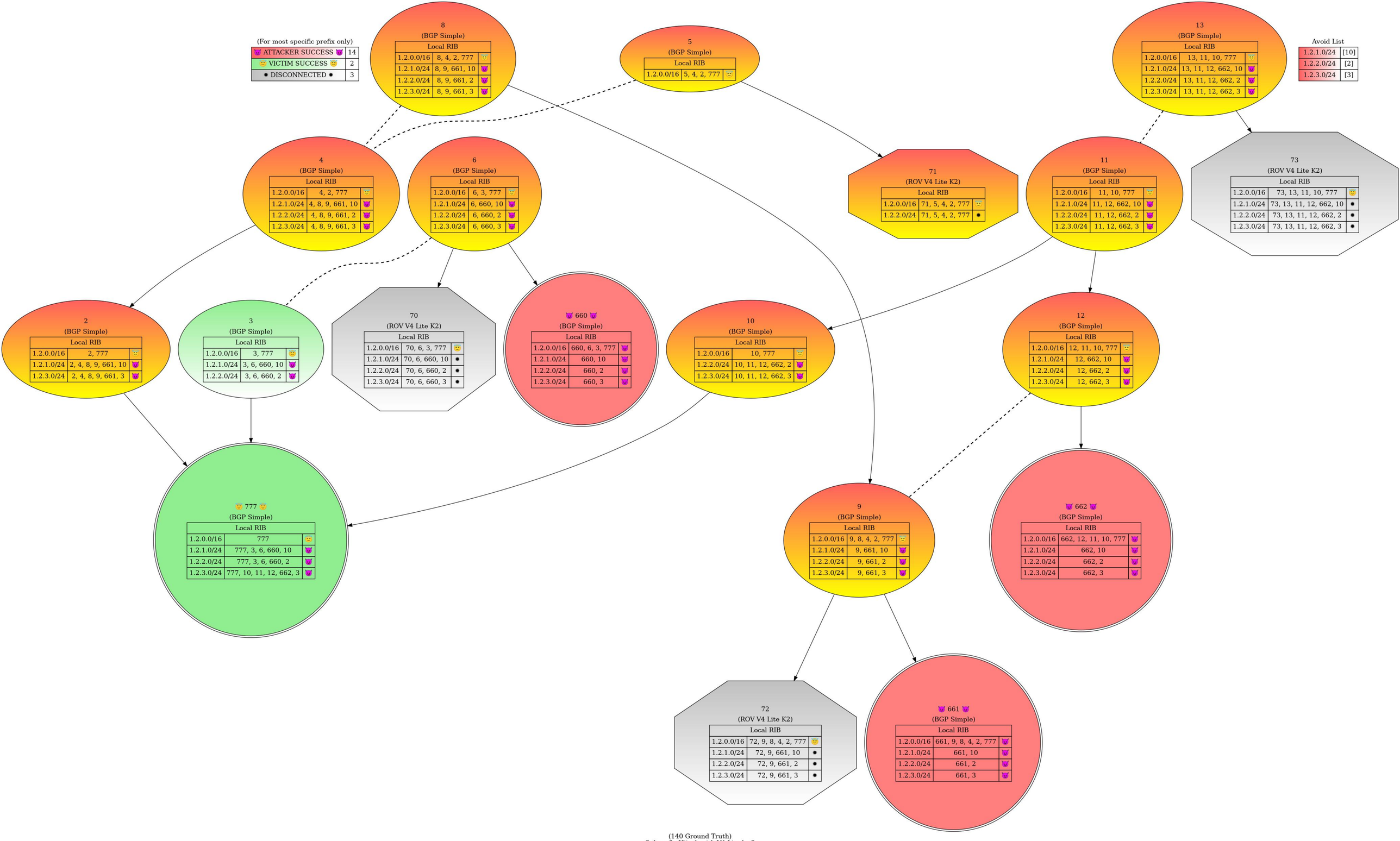
(139 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



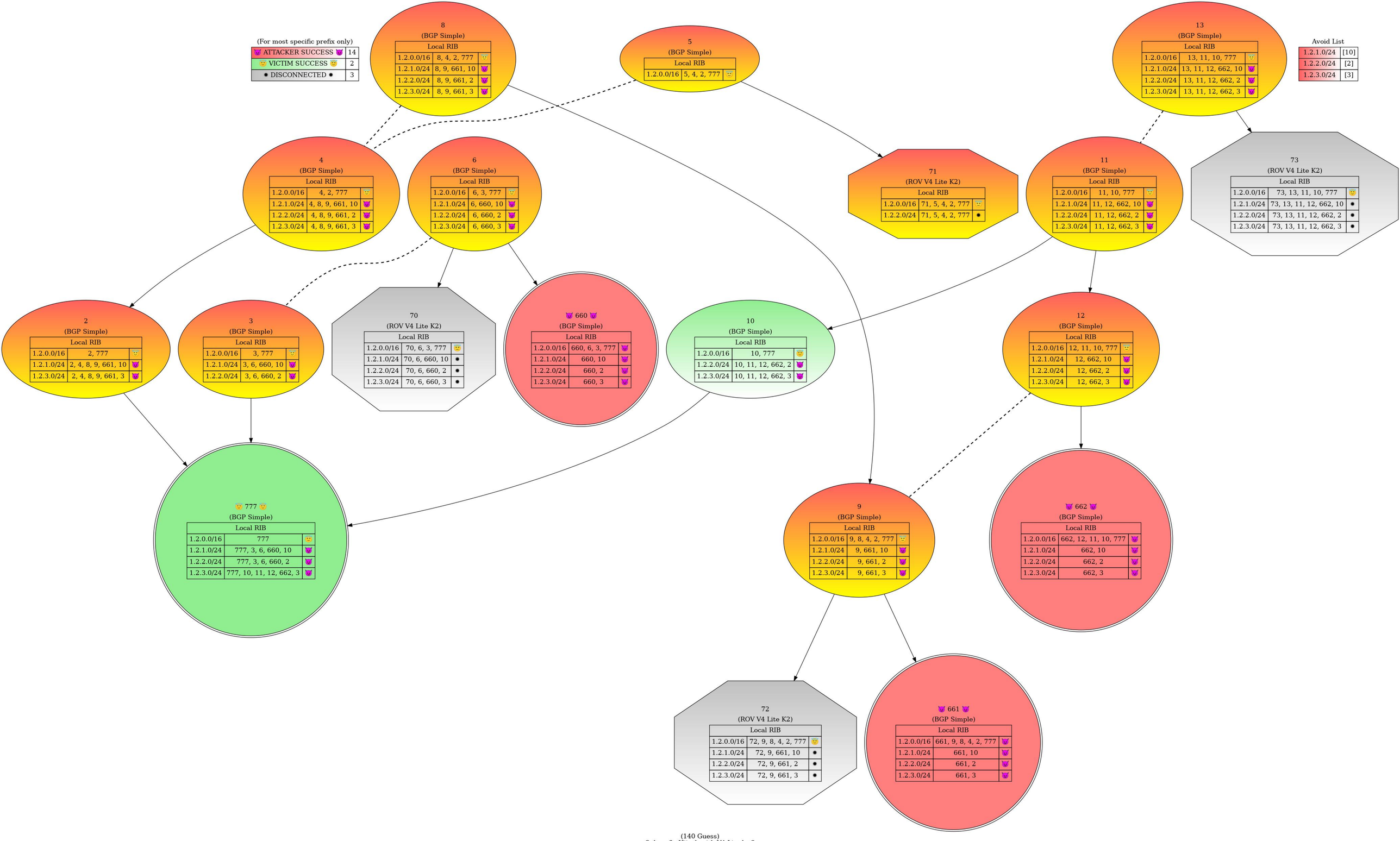
(140 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.1.0/24



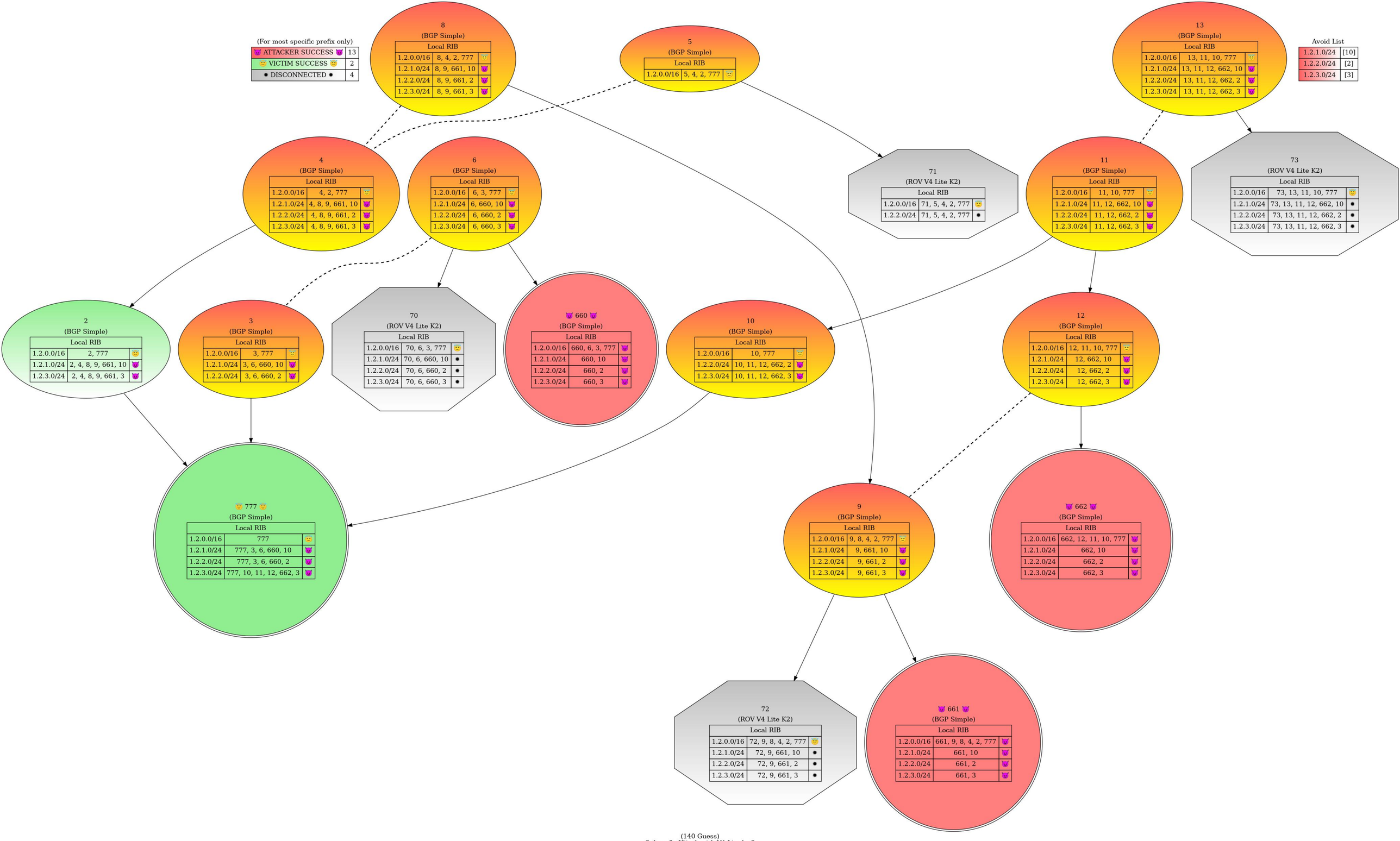
(140 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.2.0/24



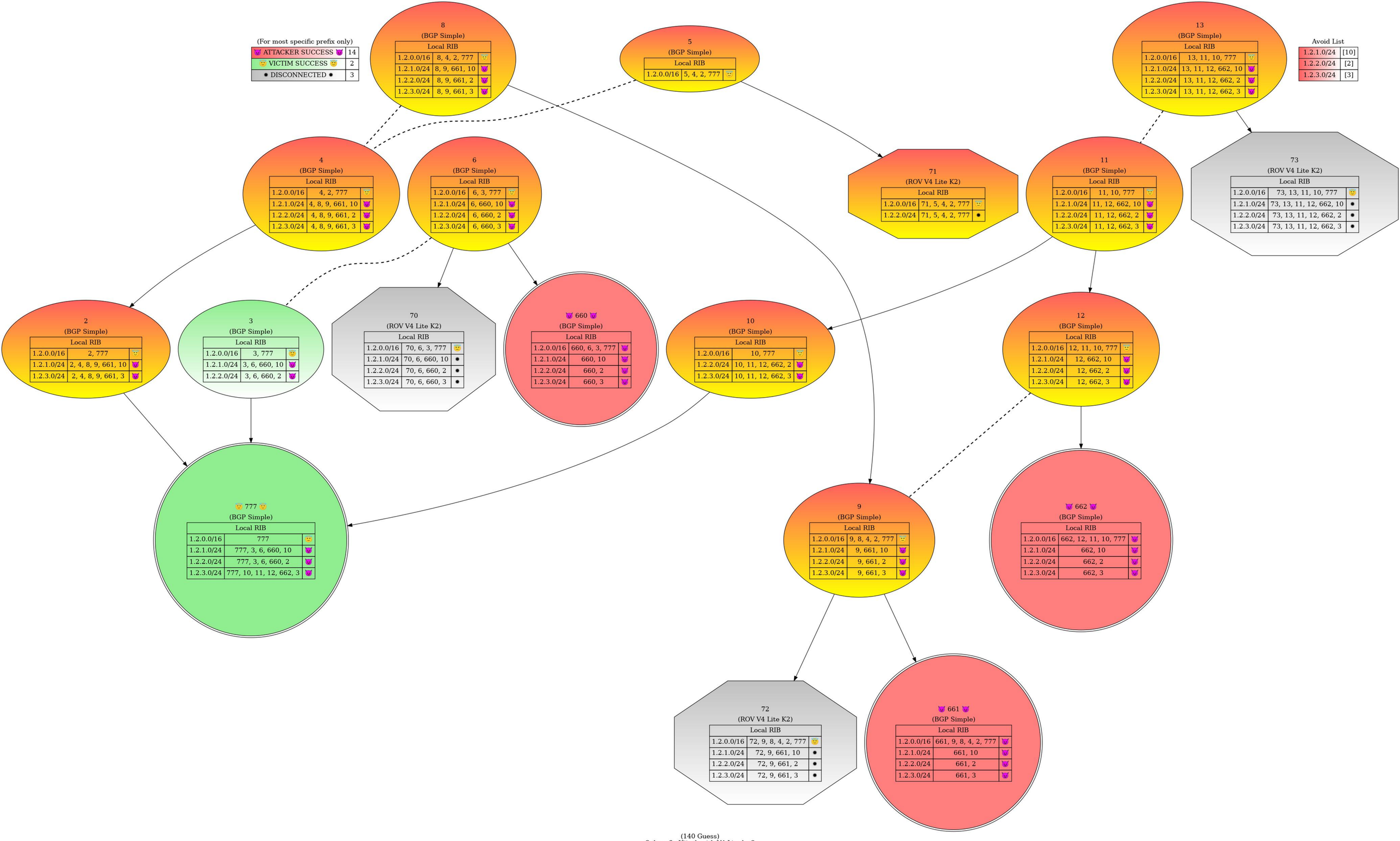
(140 Ground Truth)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



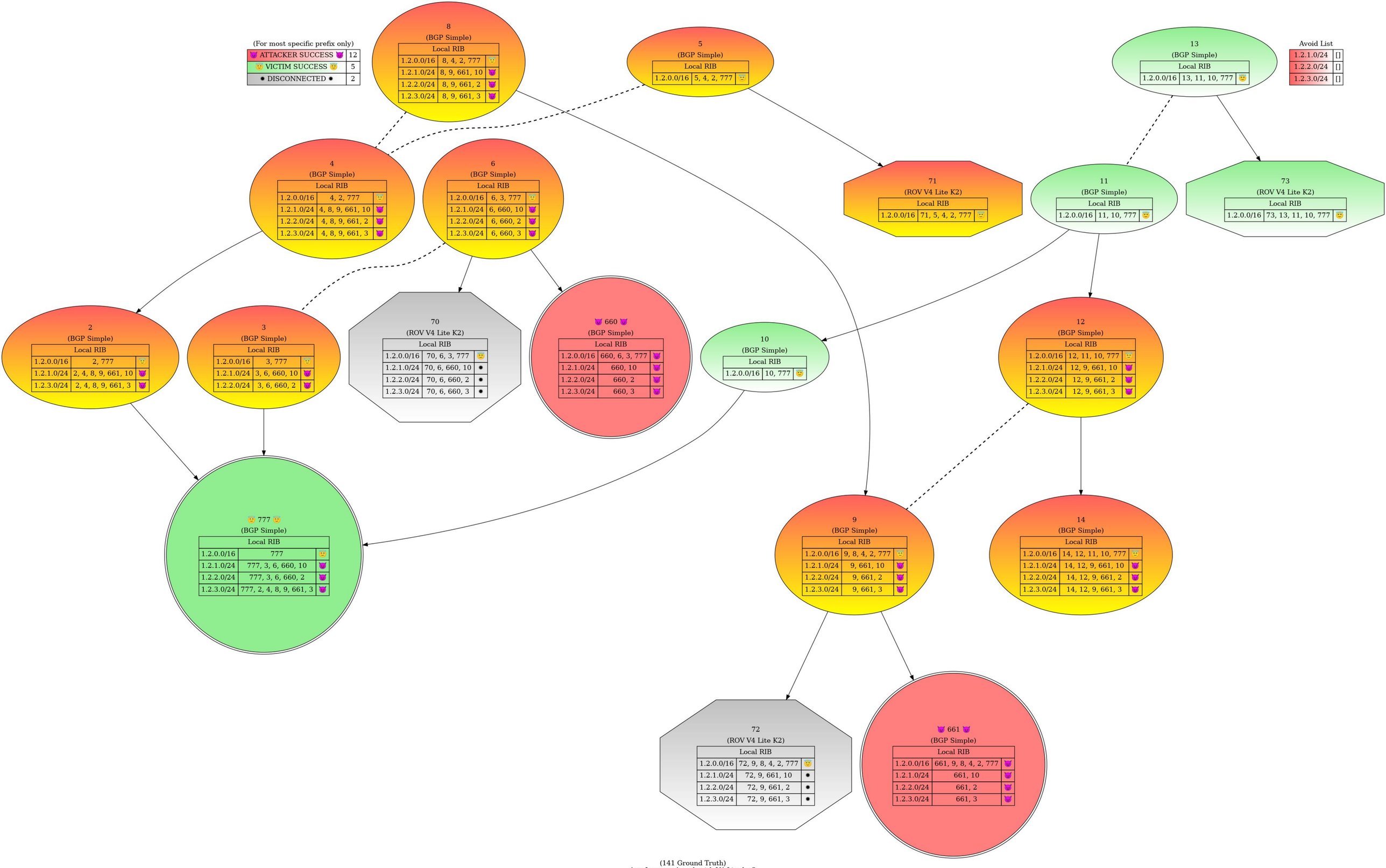
(140 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.1.0/24



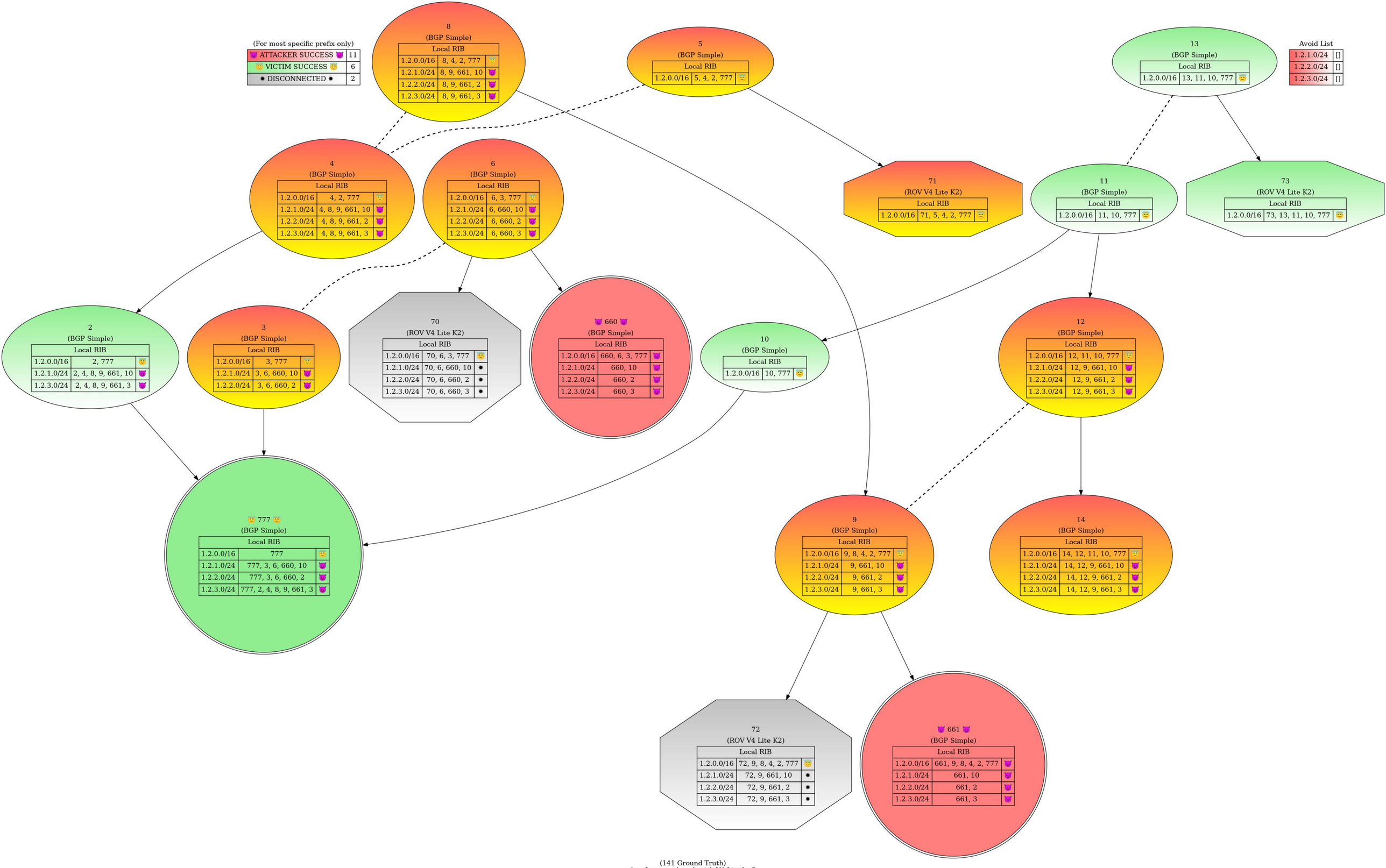
(140 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.2.0/24



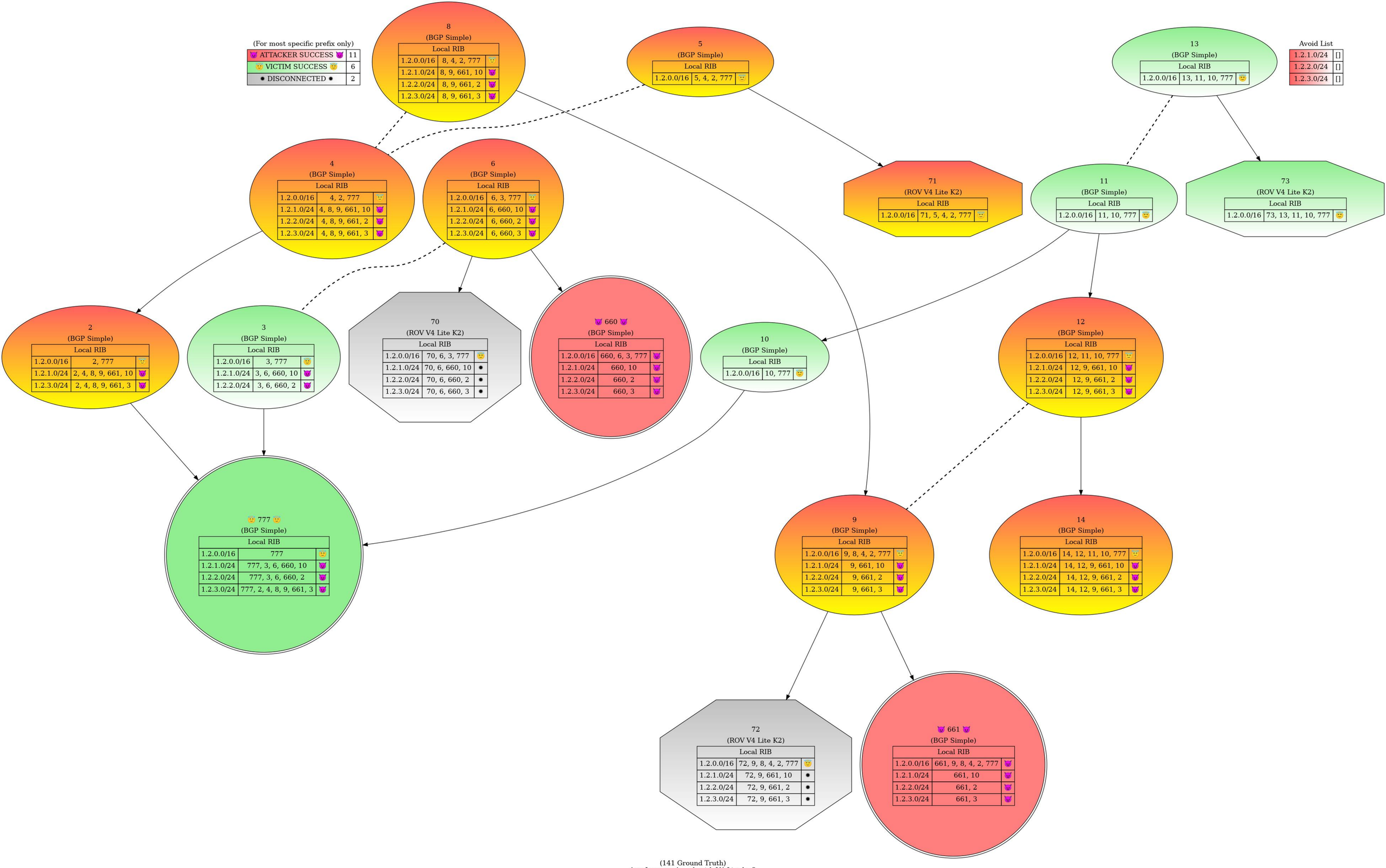
(140 Guess)
Subprefix Hijack with V4 Lite k=2
Traceback for 1.2.3.0/24



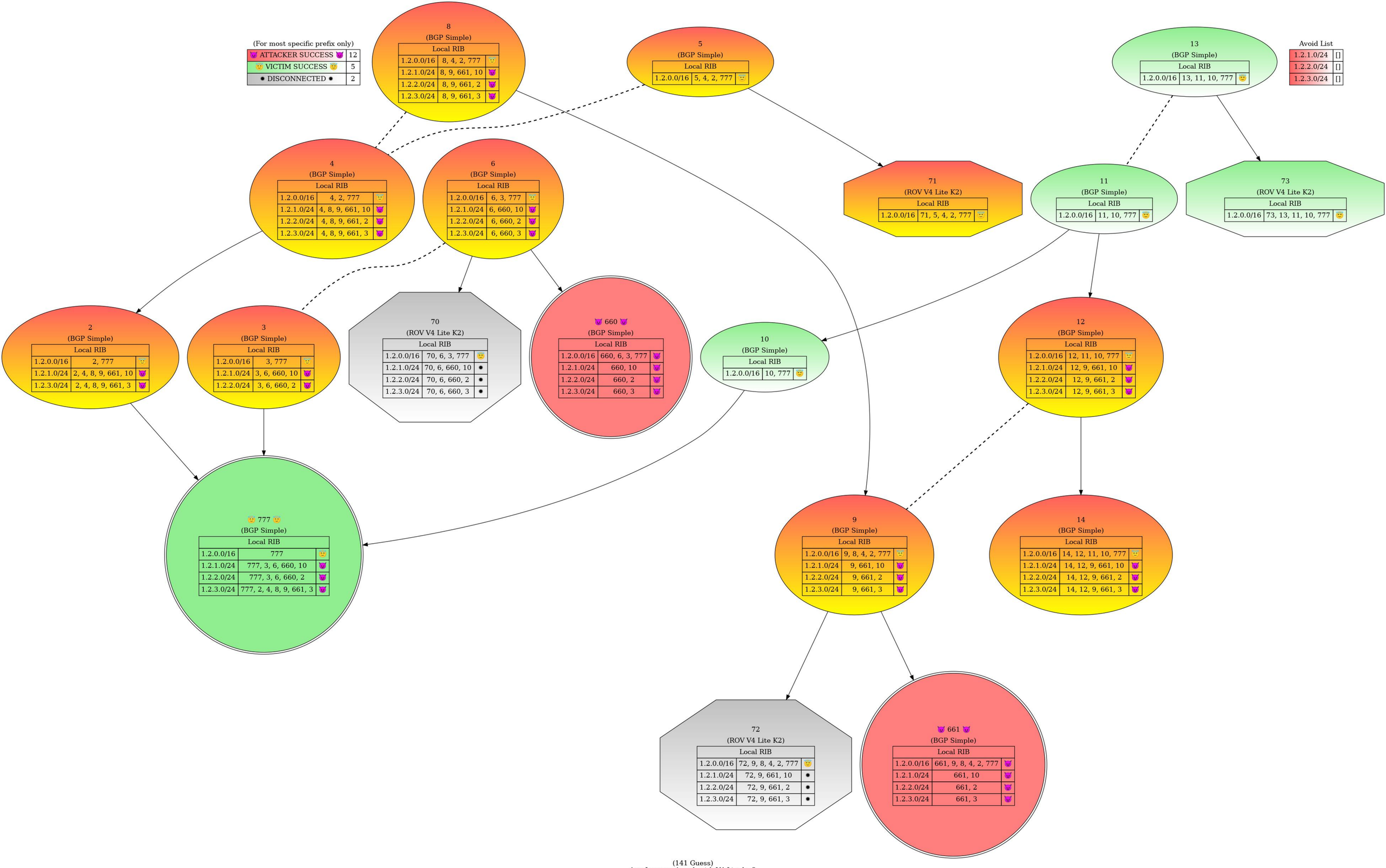
(141 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



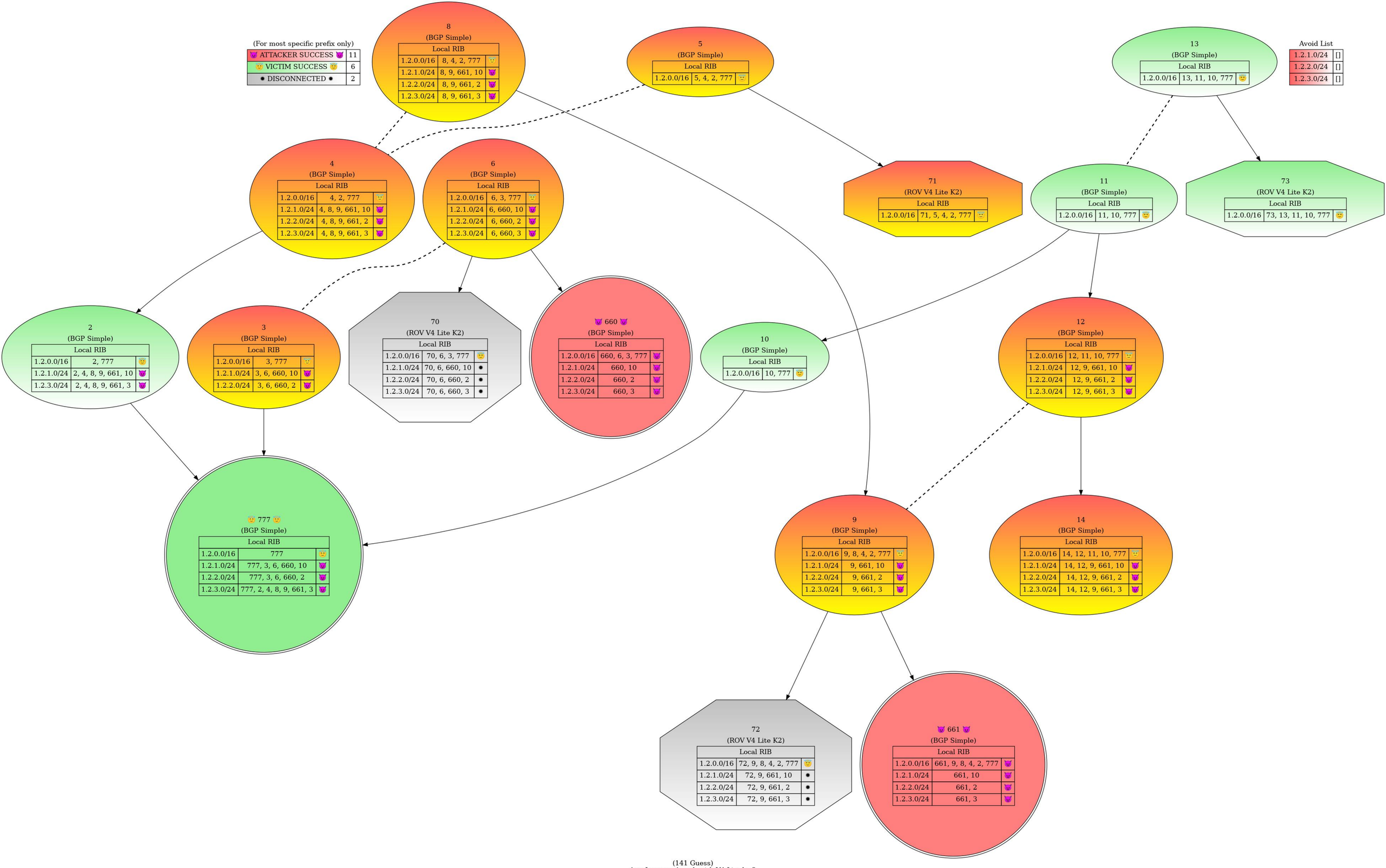
(141 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.2.0/24



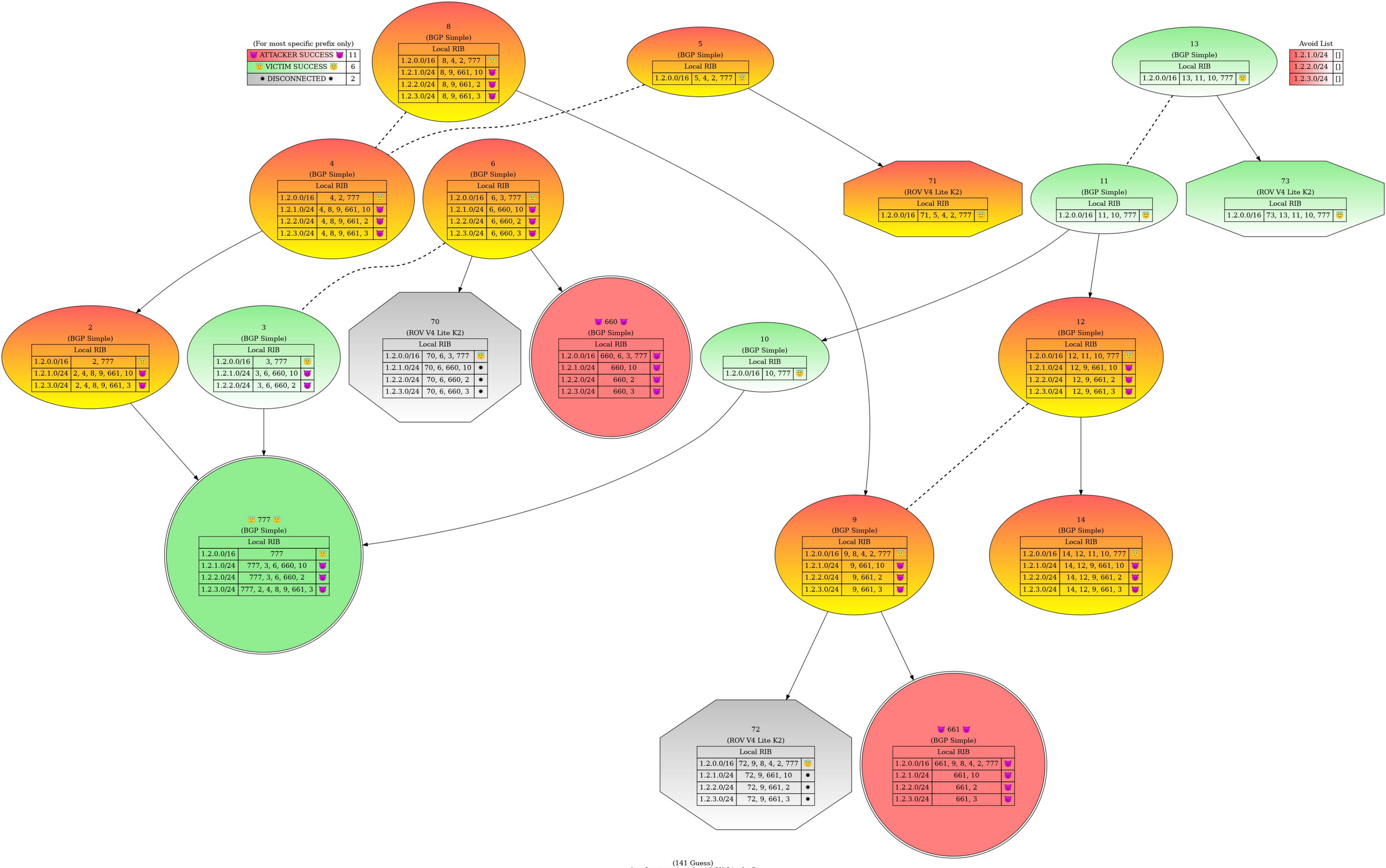
(141 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.3.0/24



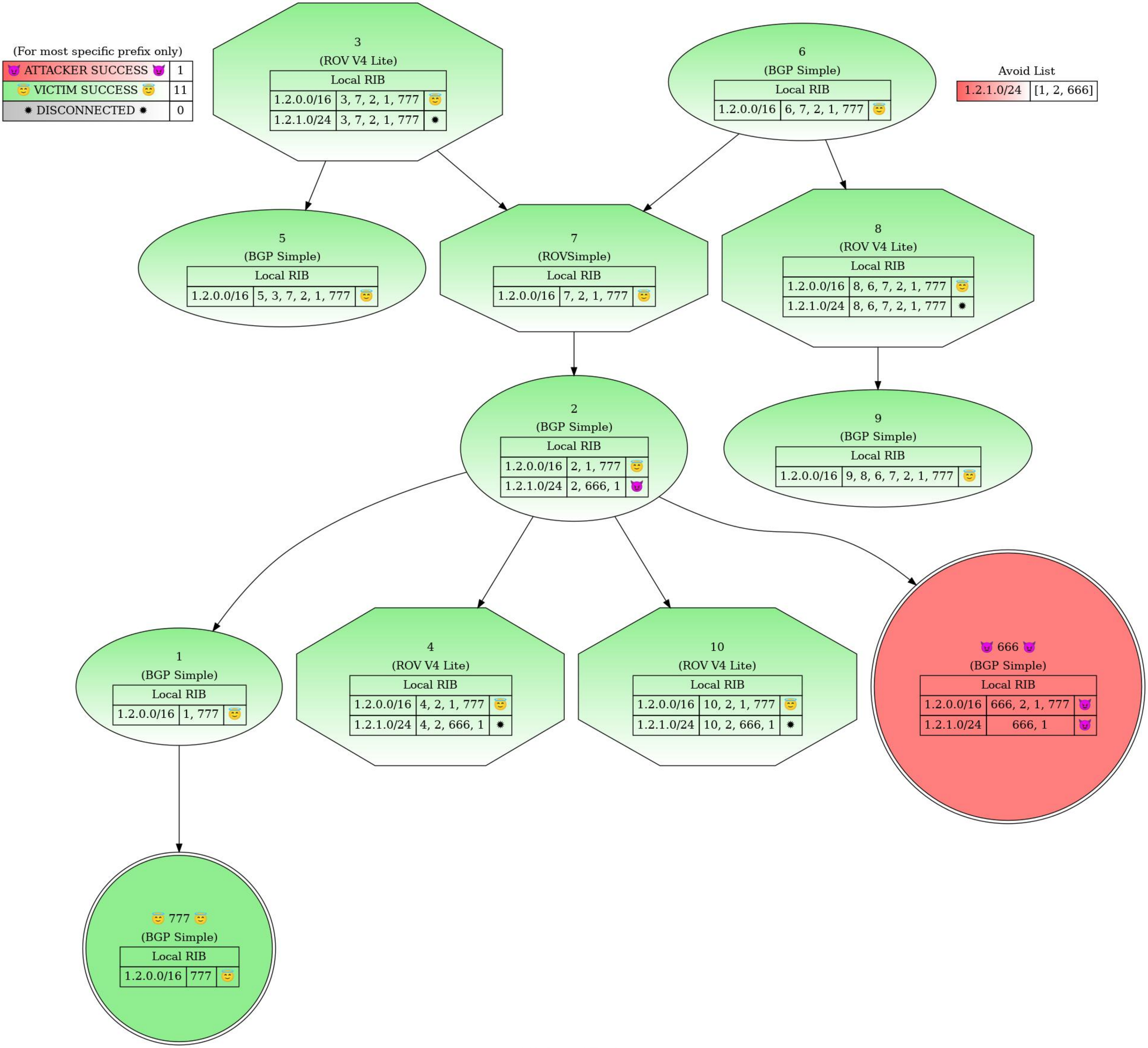
(141 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



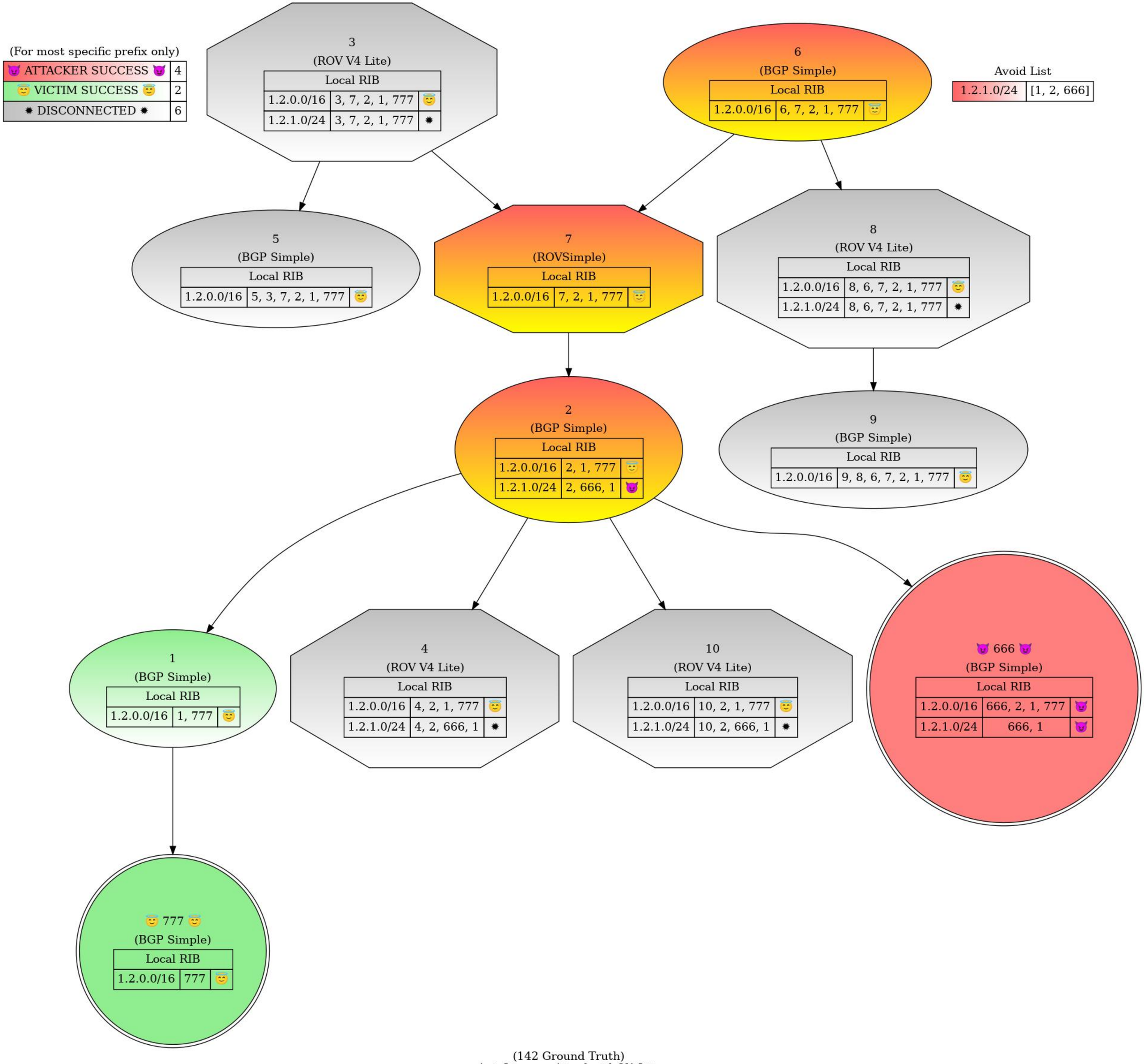
(141 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.2.0/24



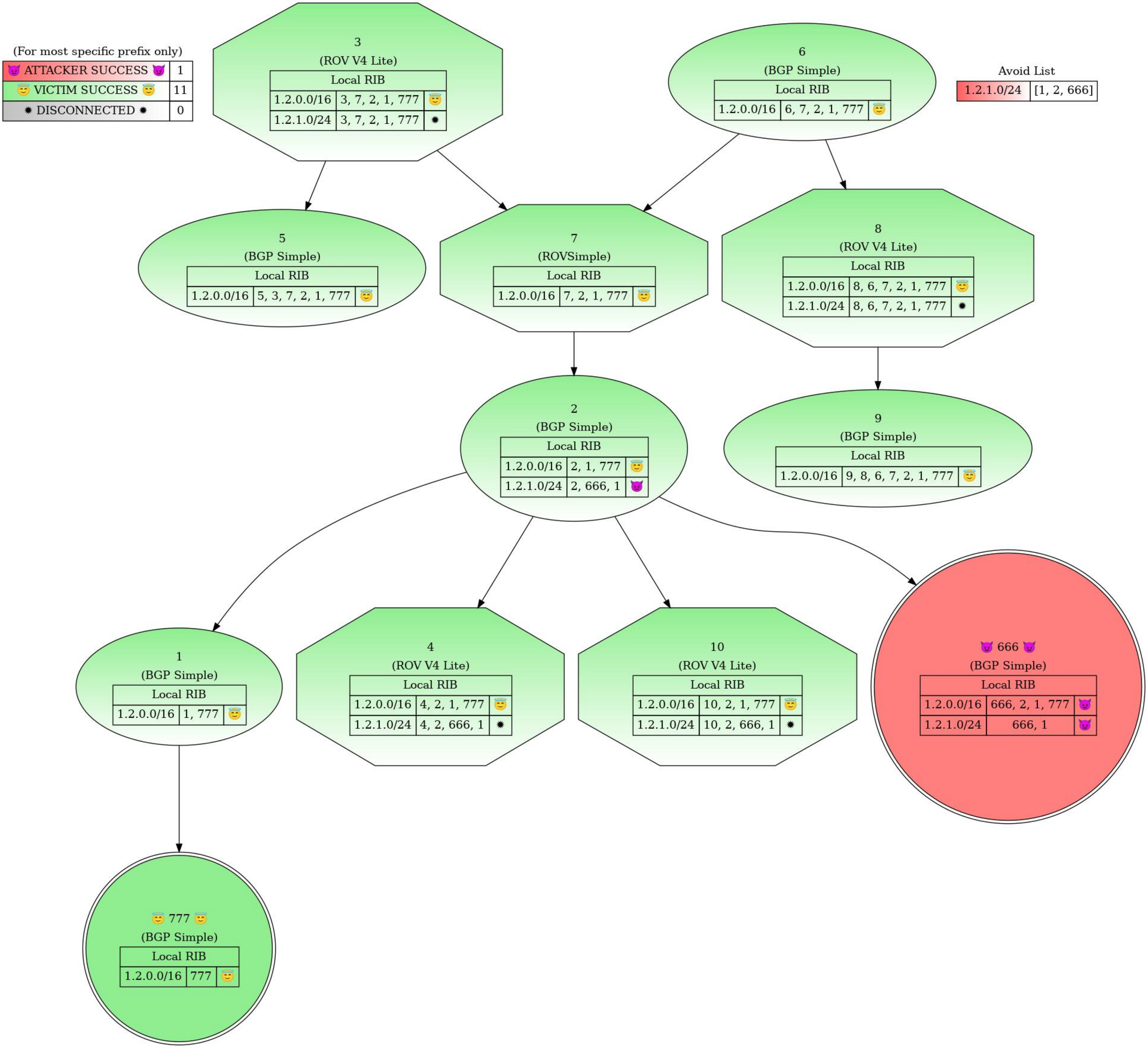
(141 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.3.0/24



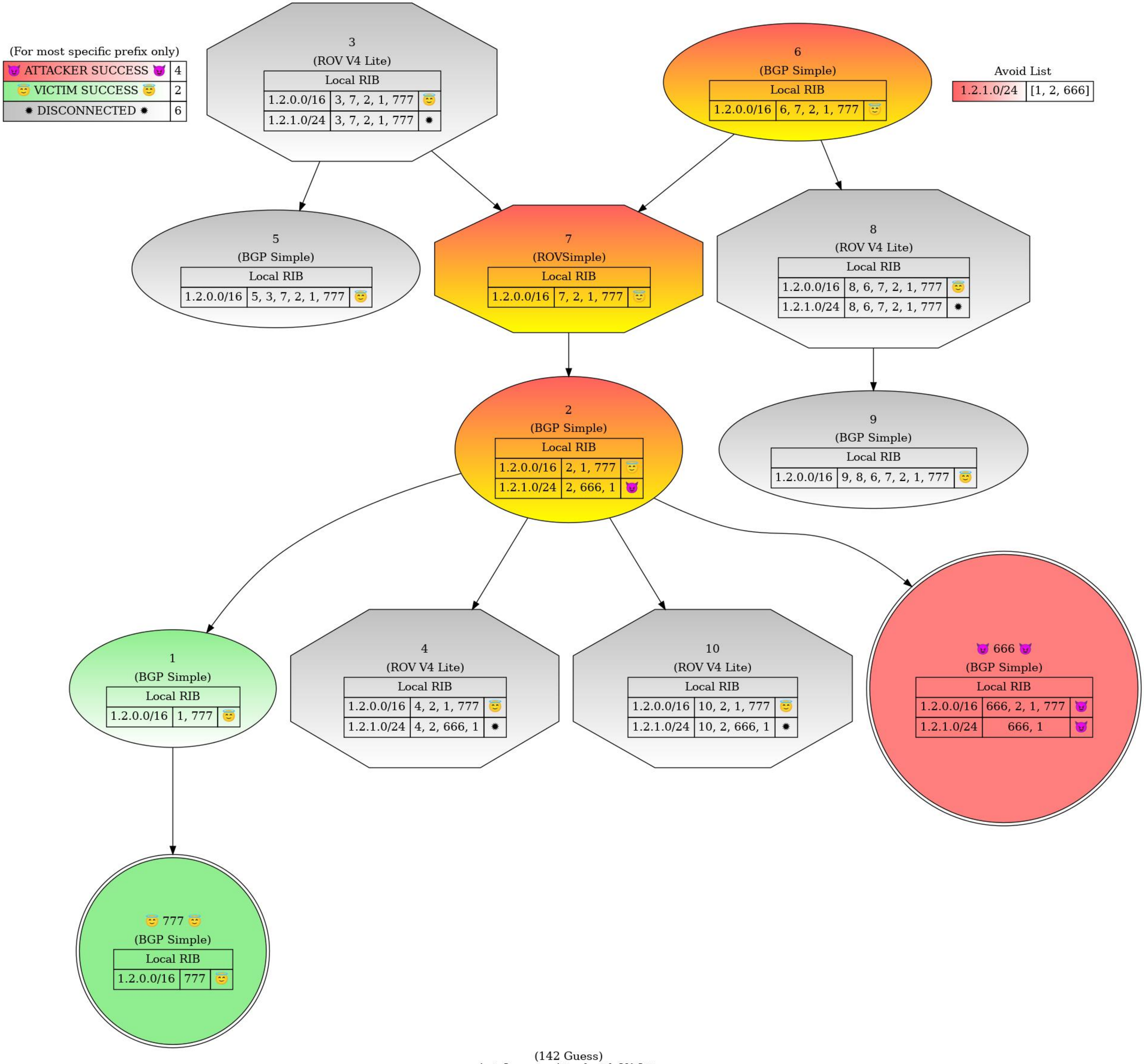
(142 Ground Truth)
AutoImmune Attackwith V4 Lite
Traceback for 1.2.0.0/16



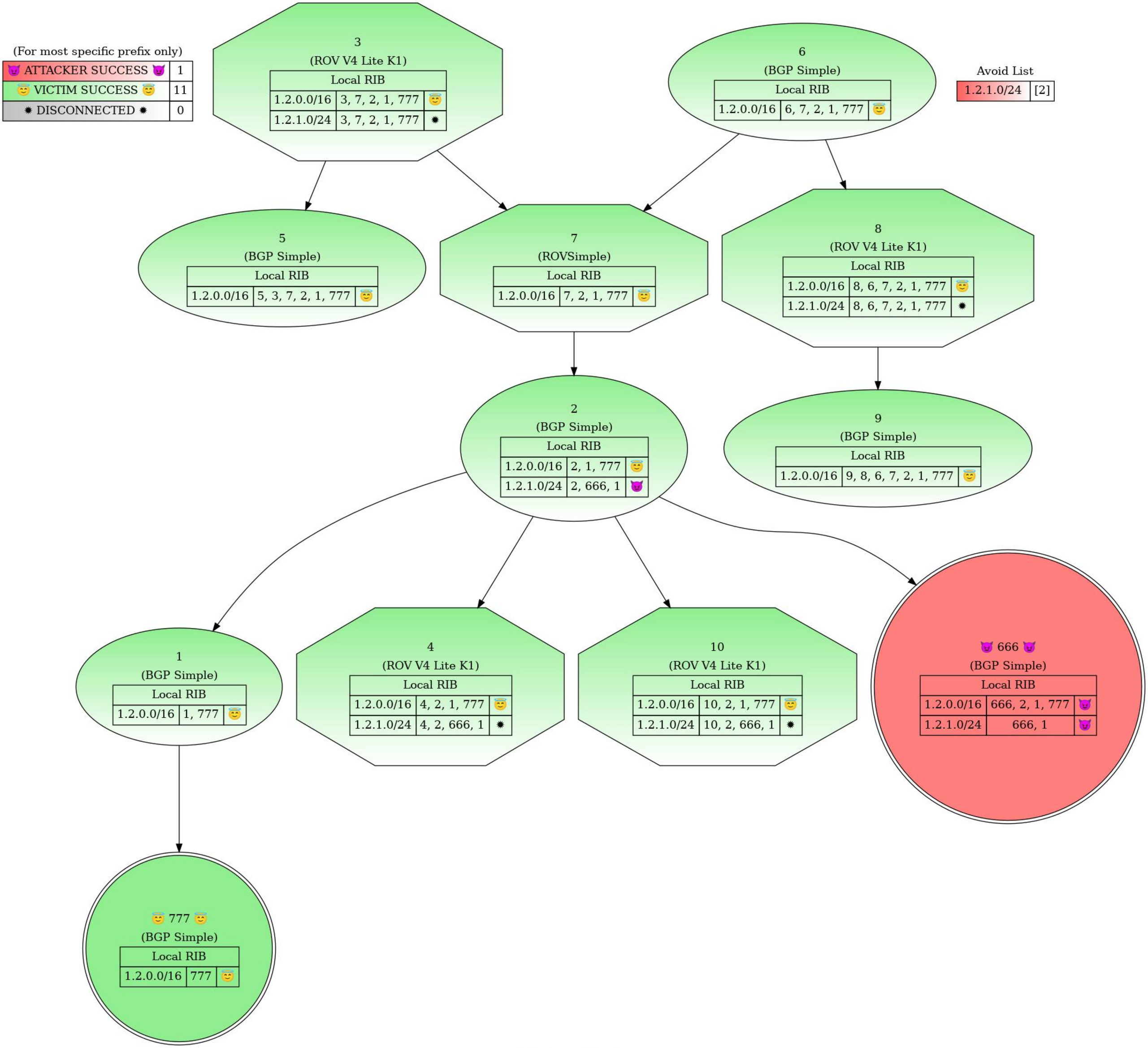
(142 Ground Truth)
AutoImmune Attackwith V4 Lite
Traceback for 1.2.1.0/24



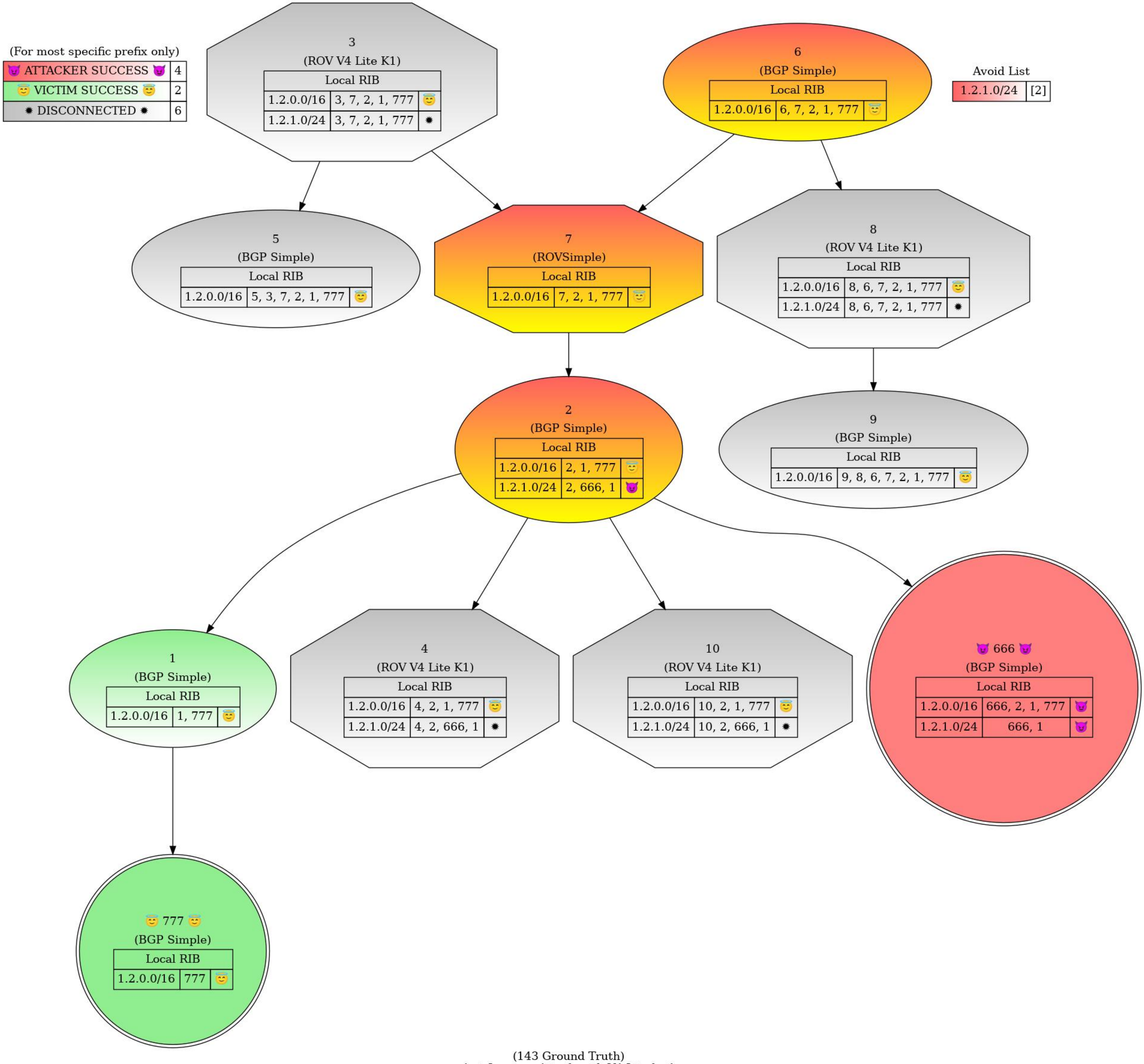
(142 Guess)
AutoImmune Attackwith V4 Lite
Traceback for 1.2.0.0/16



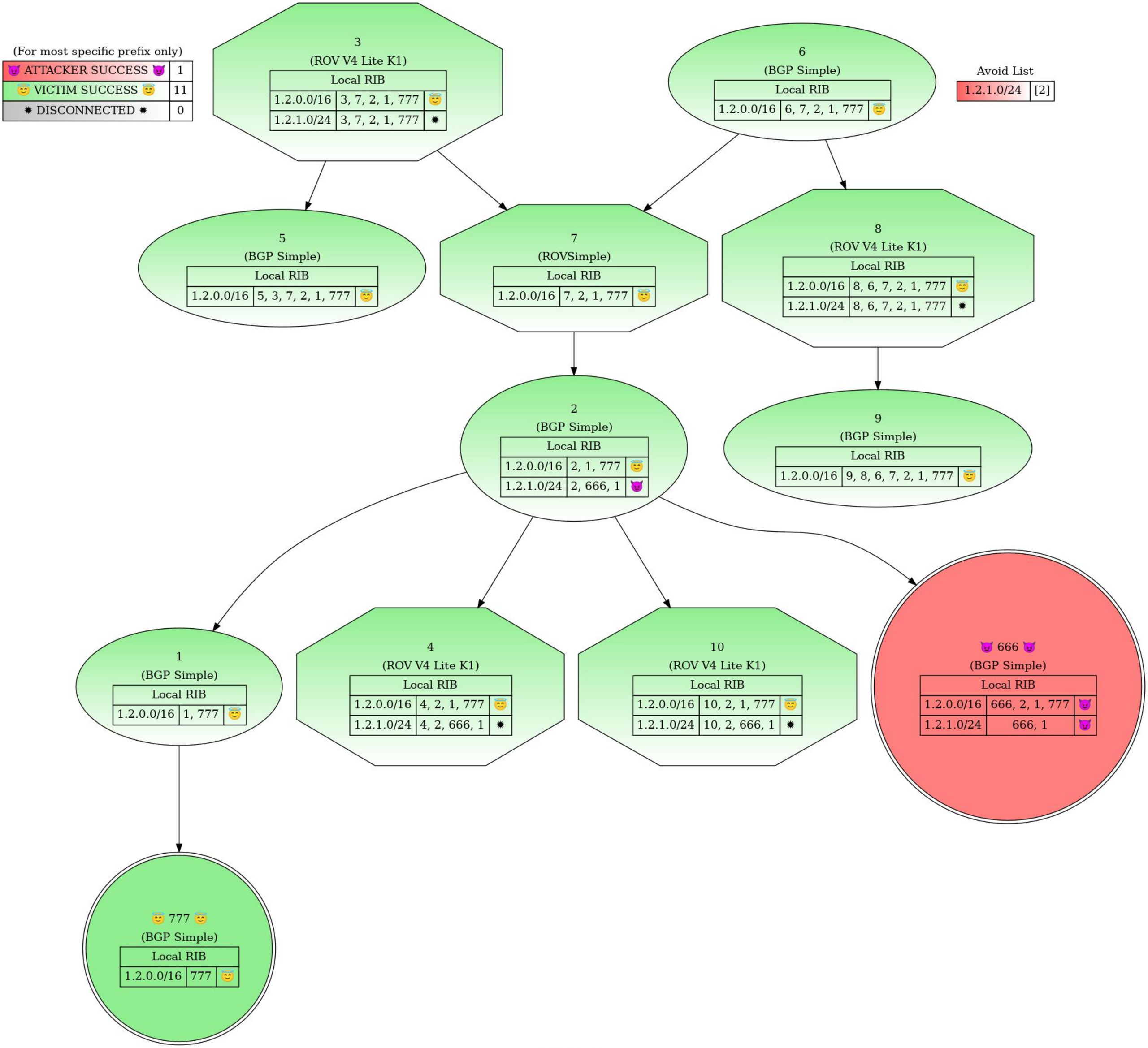
(142 Guess)
AutoImmune Attackwith V4 Lite
Traceback for 1.2.1.0/24



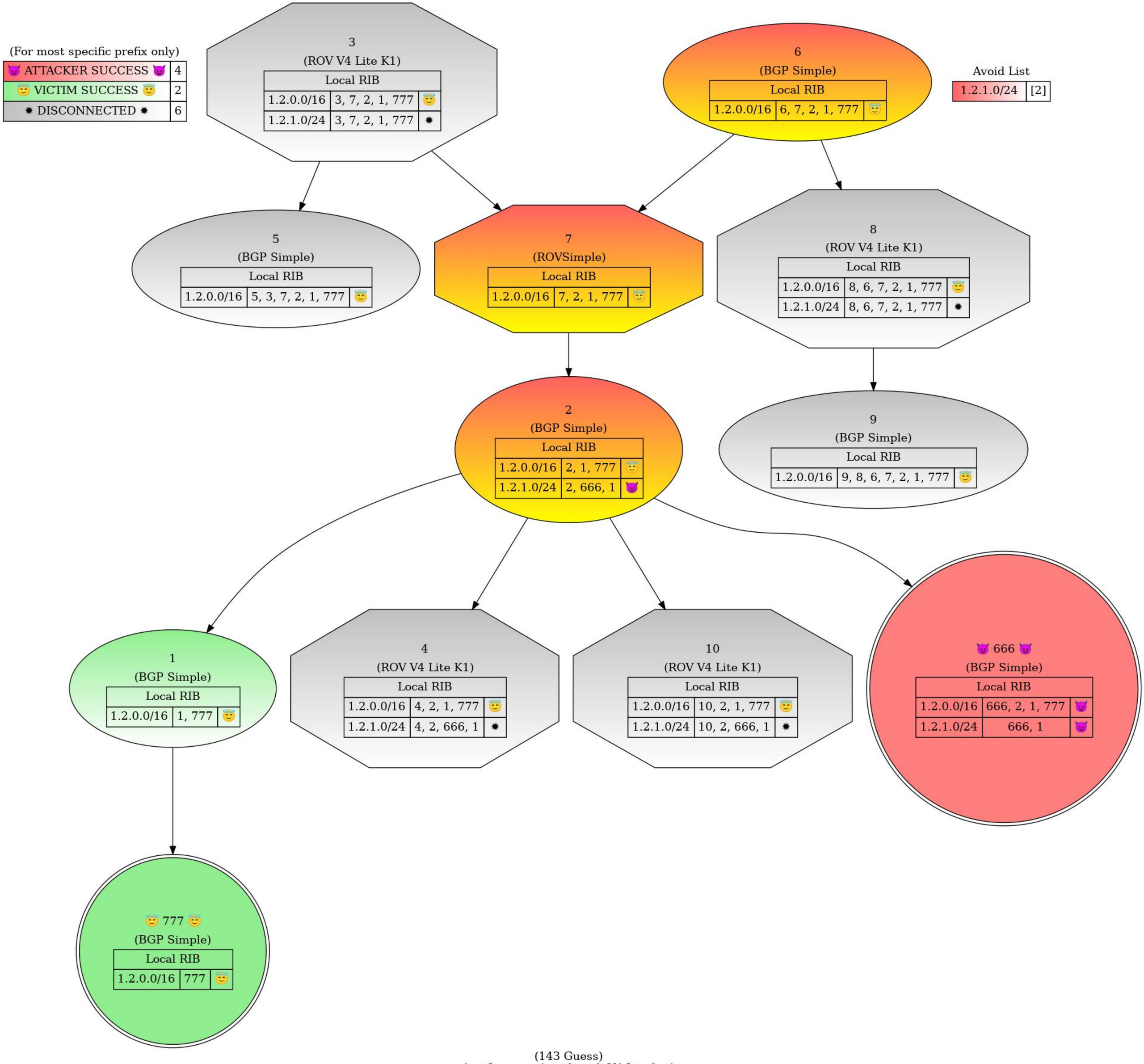
(143 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



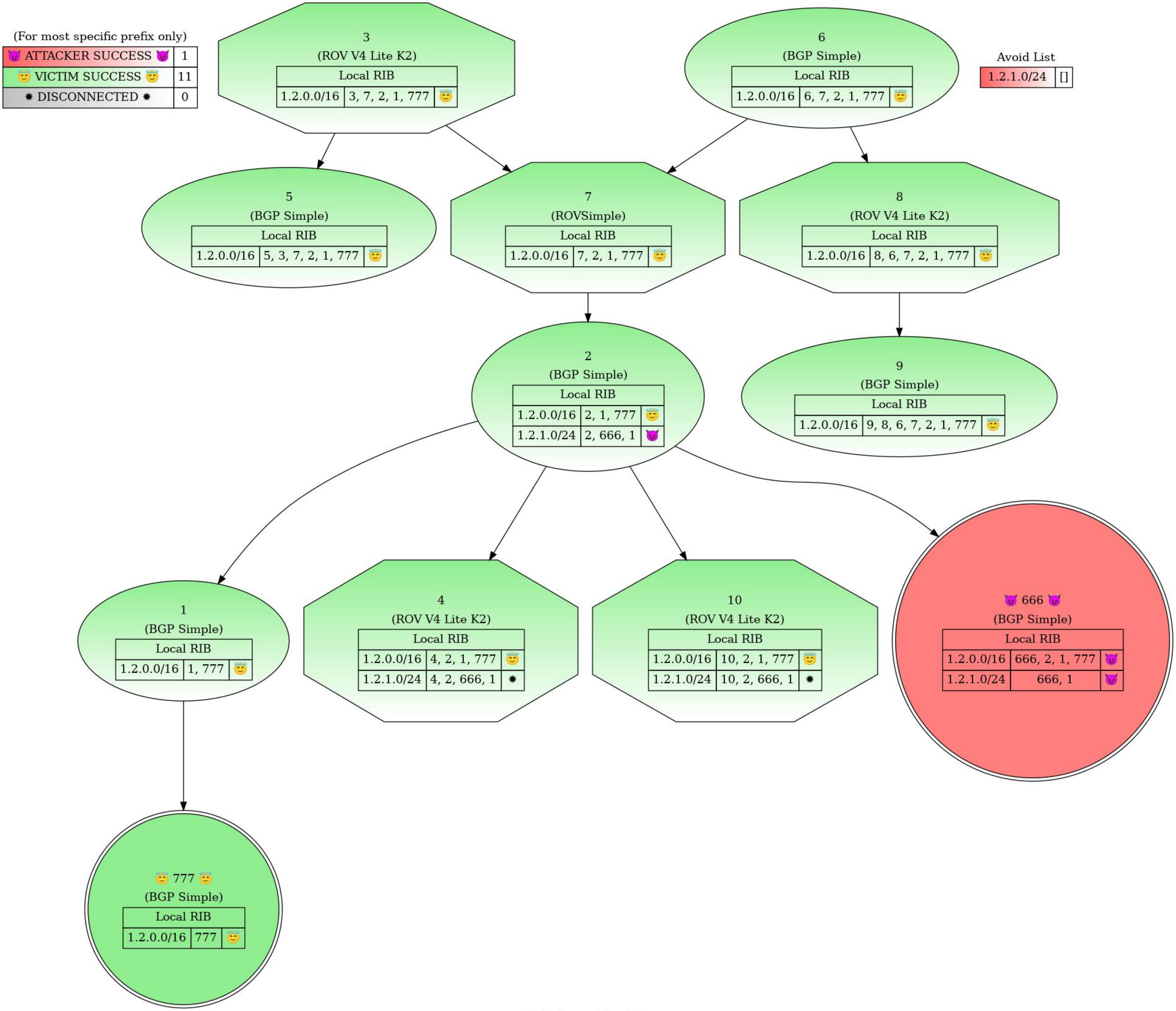
(143 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



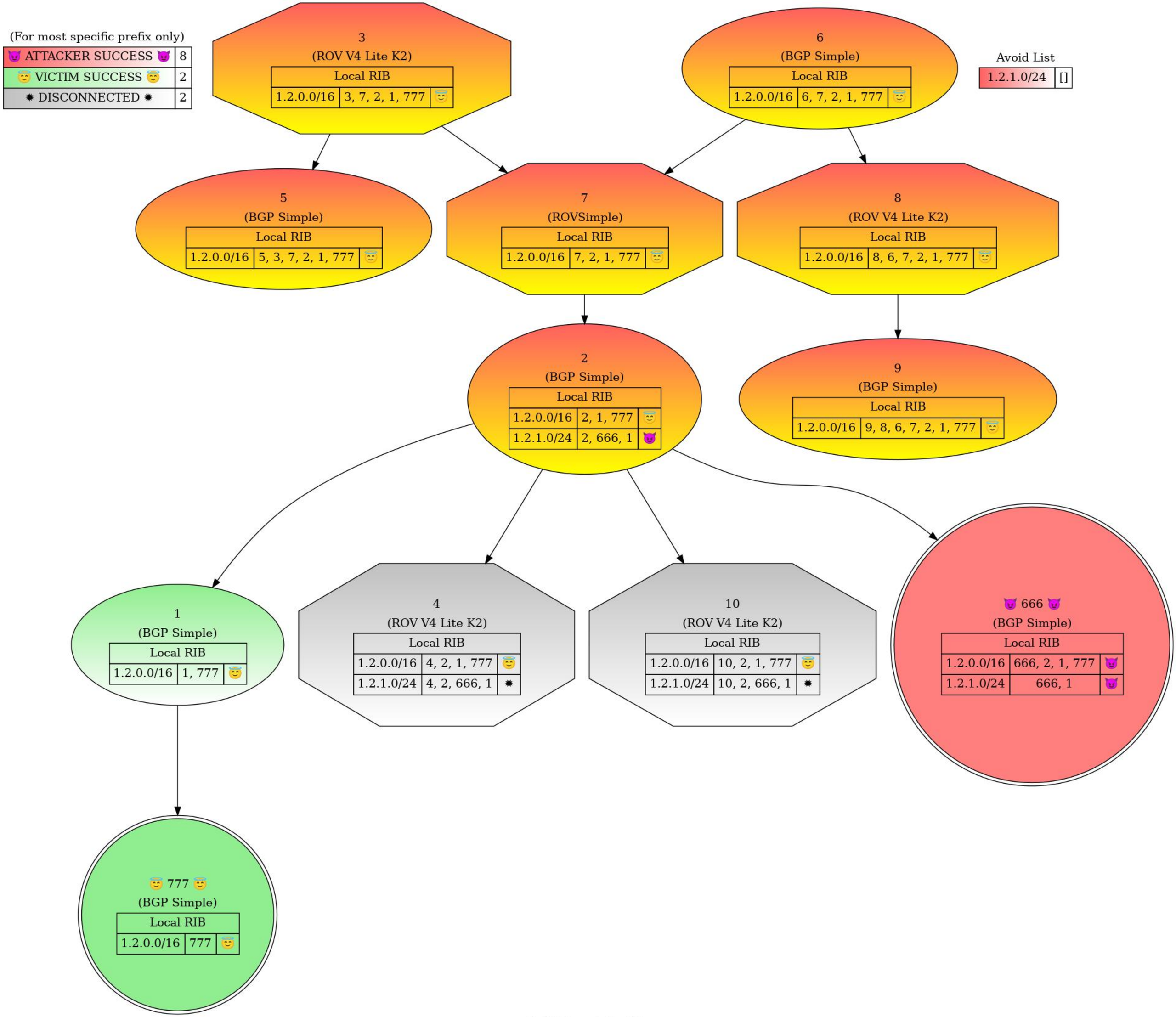
(143 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



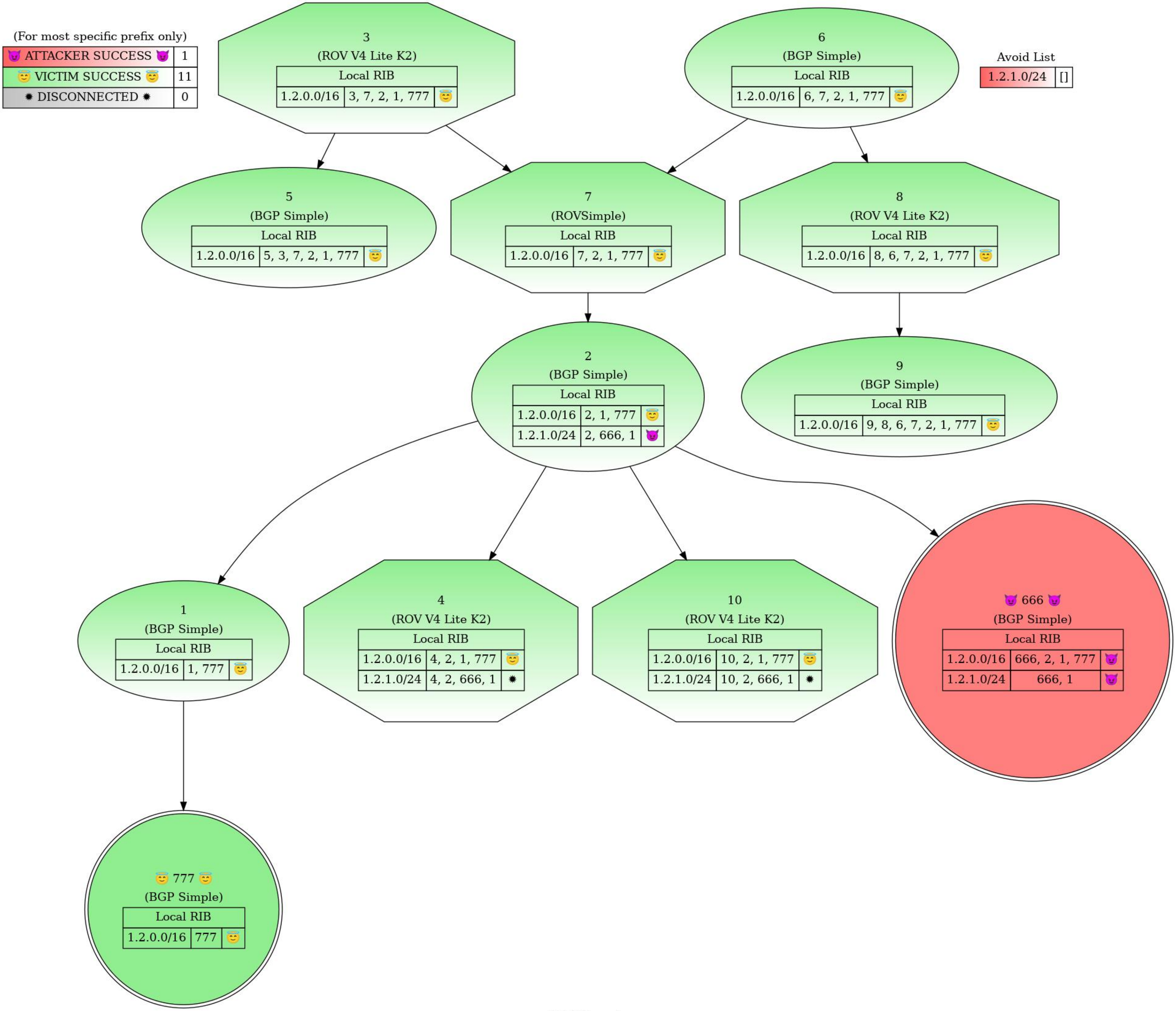
(143 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



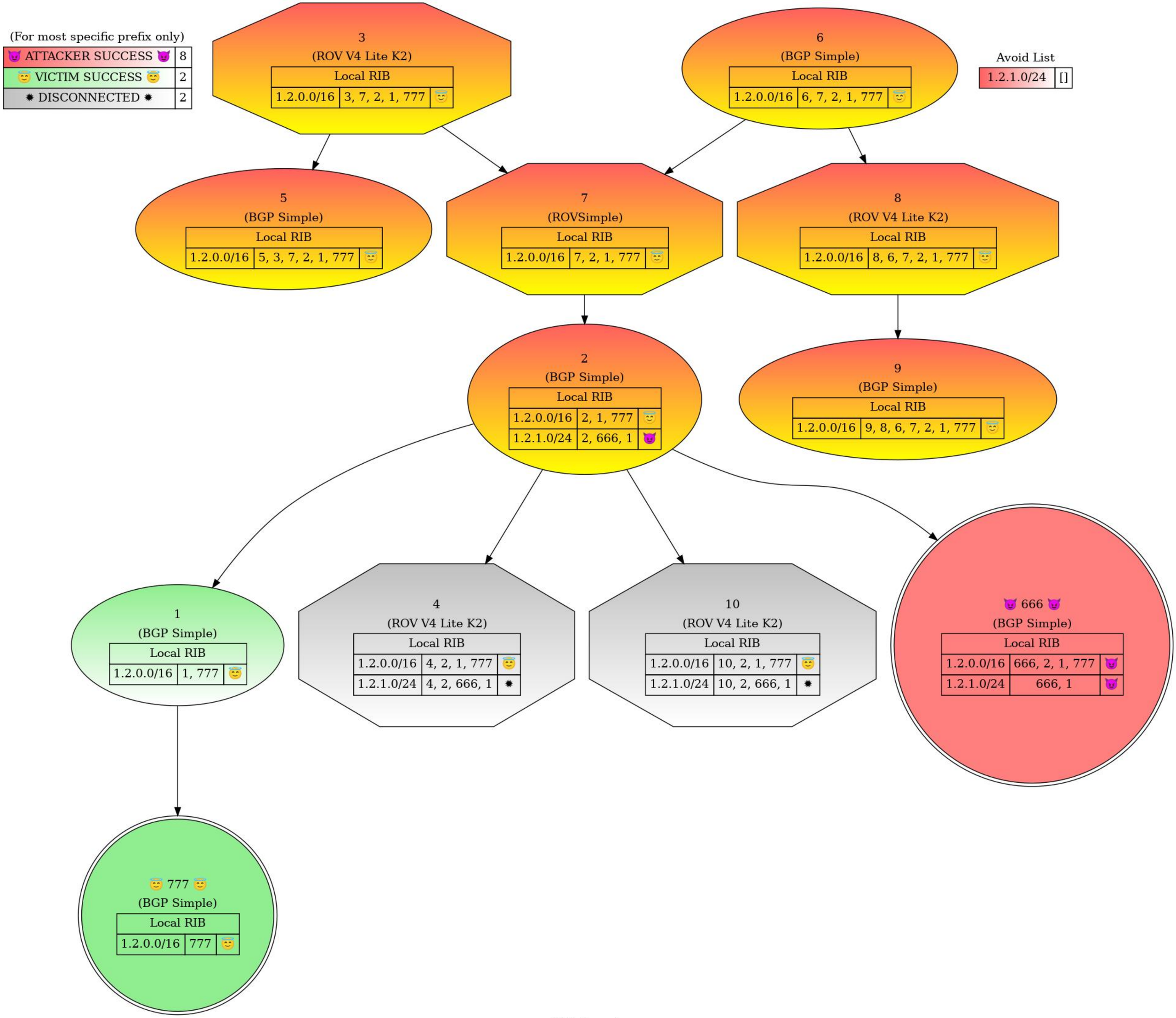
(144 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.0.0/16



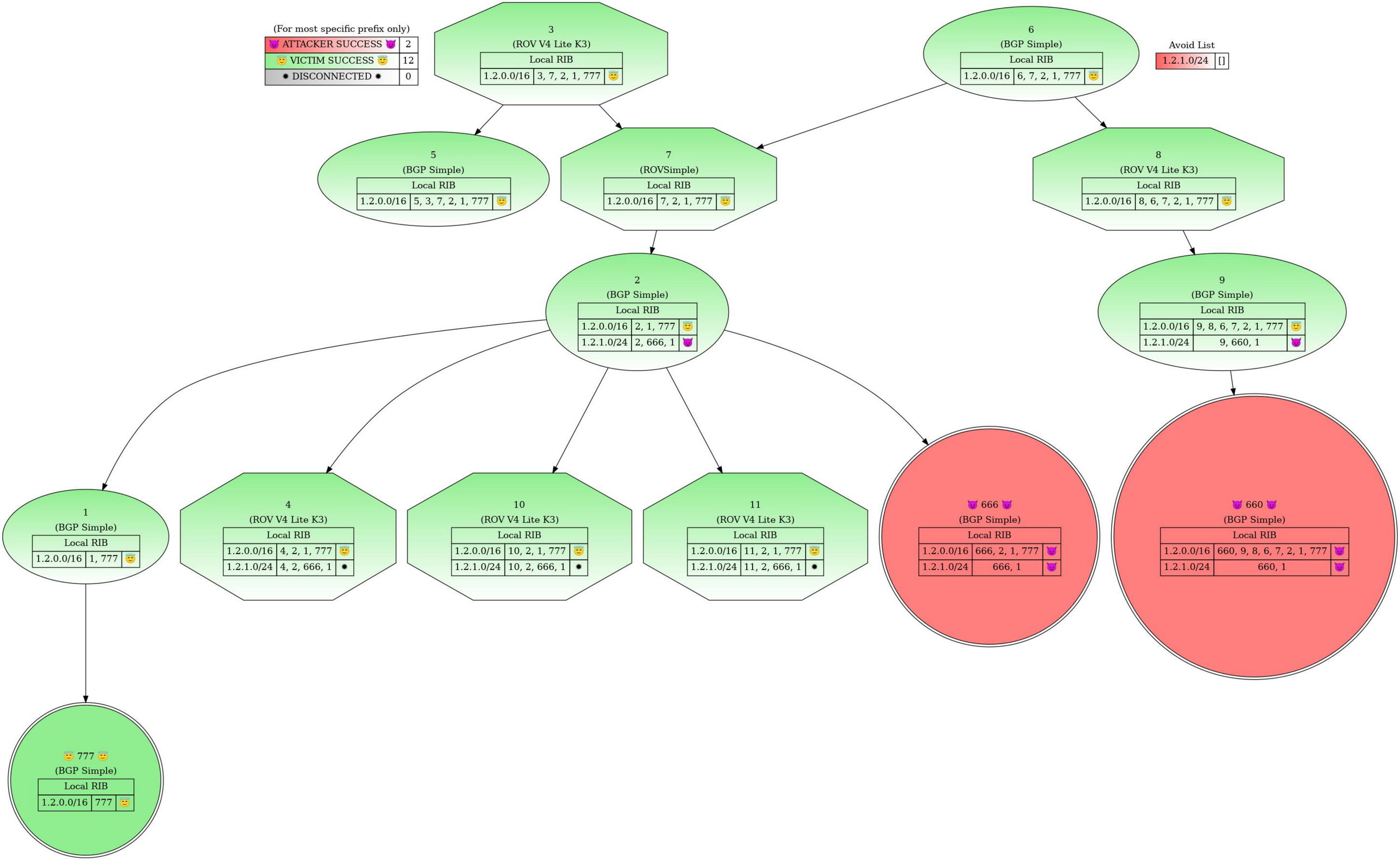
(144 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



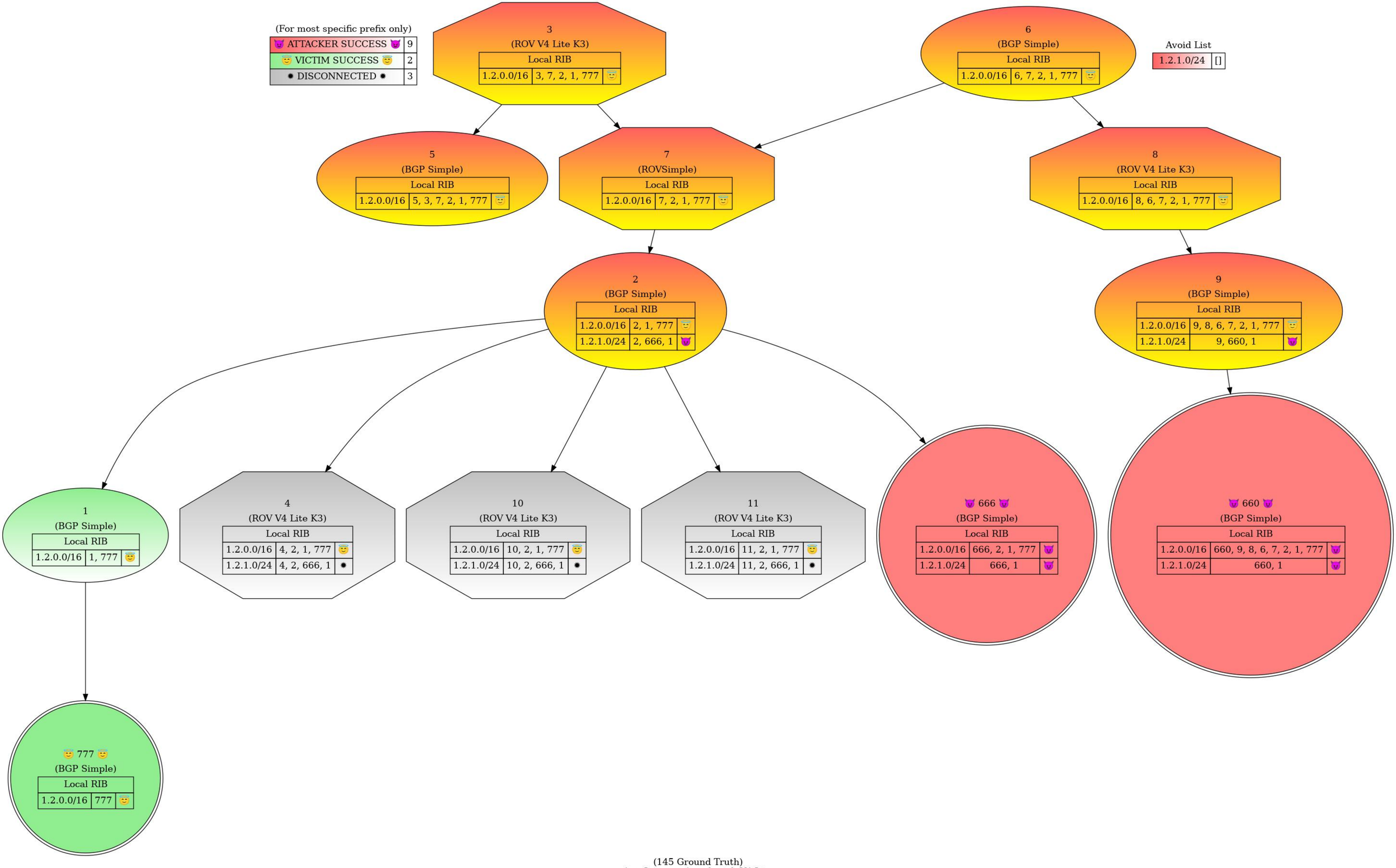
(144 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.0.0/16



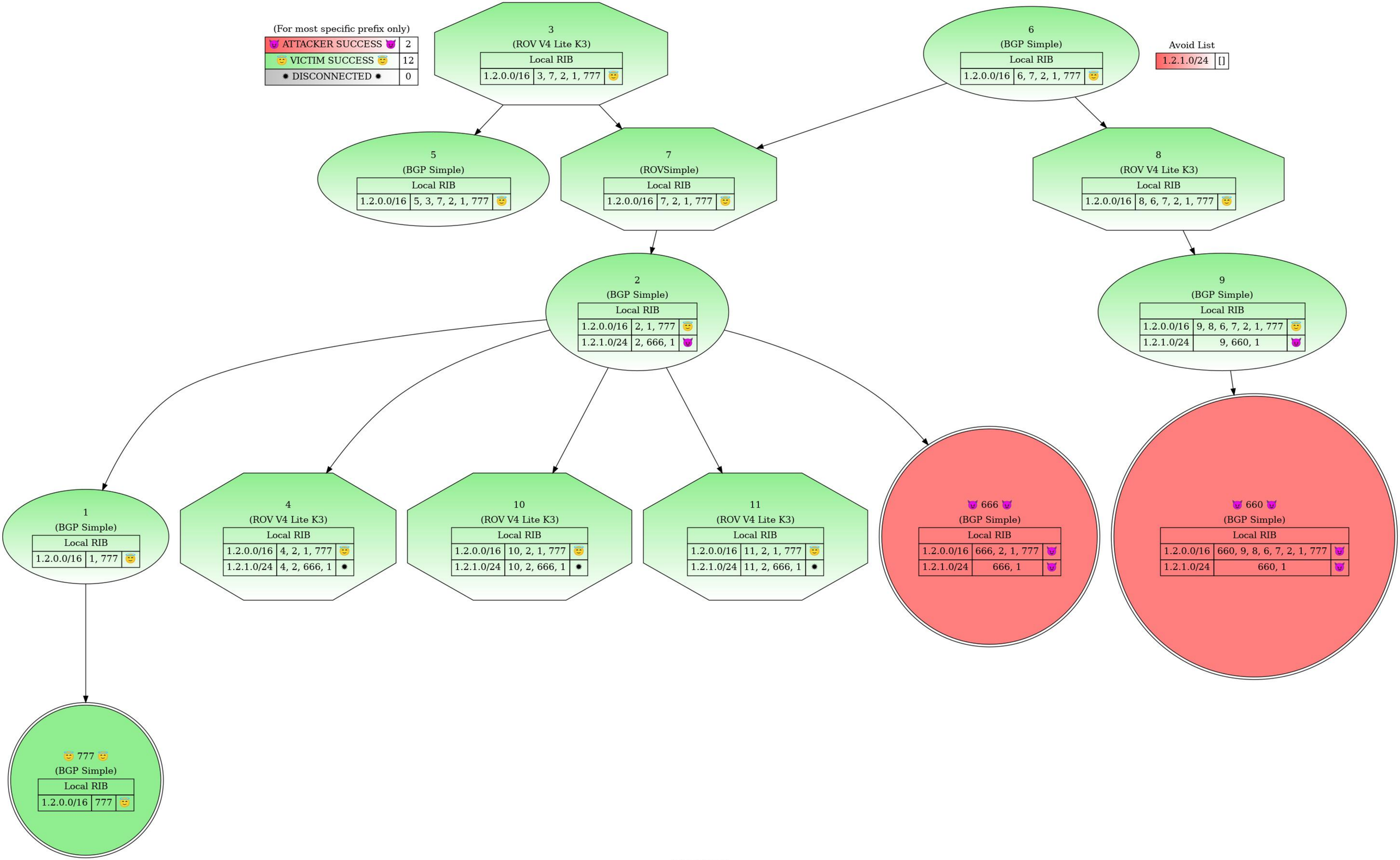
(144 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



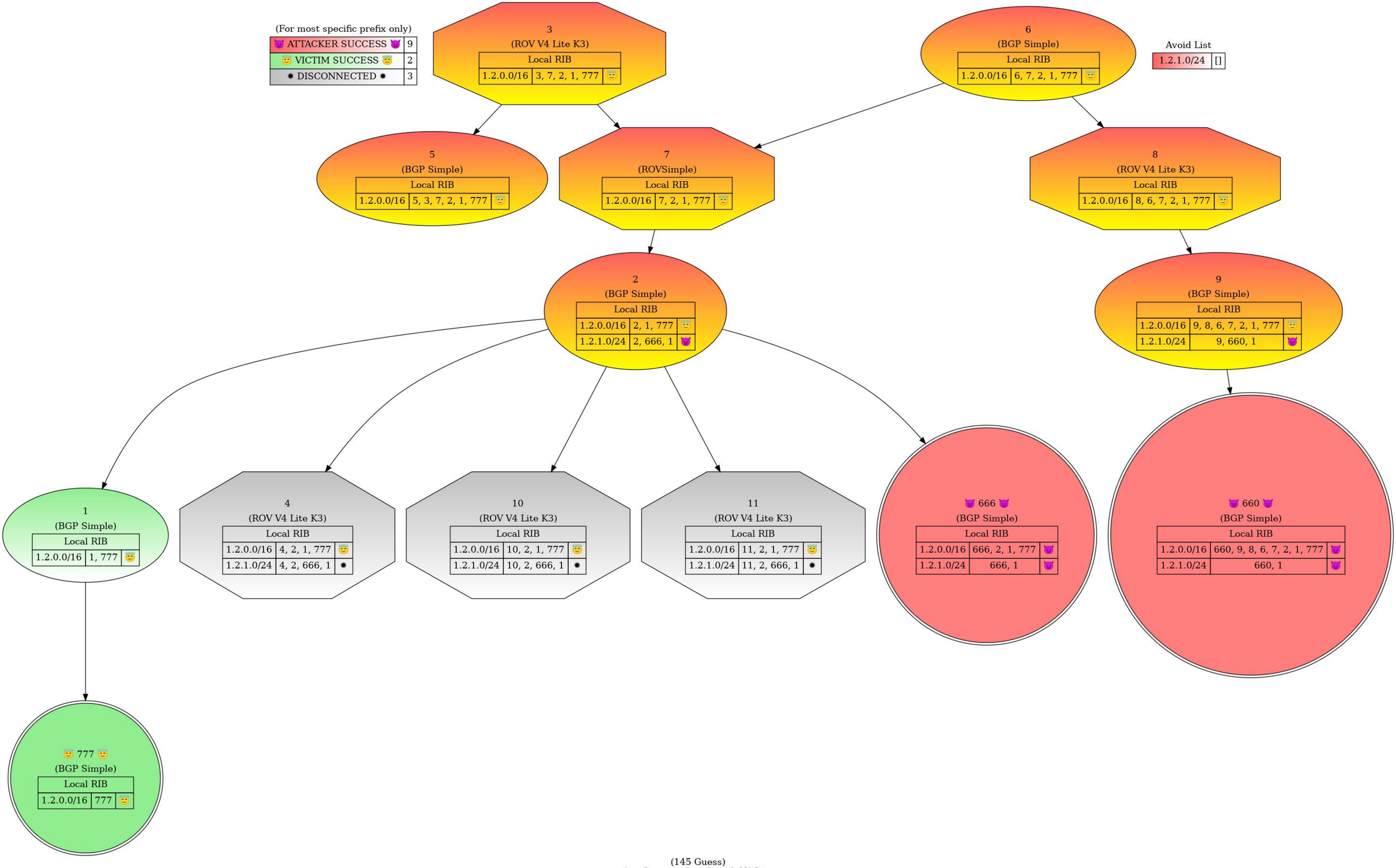
(145 Ground Truth)
AutoImmune Attack with V4 Lite
Traceback for 1.2.0.0/16



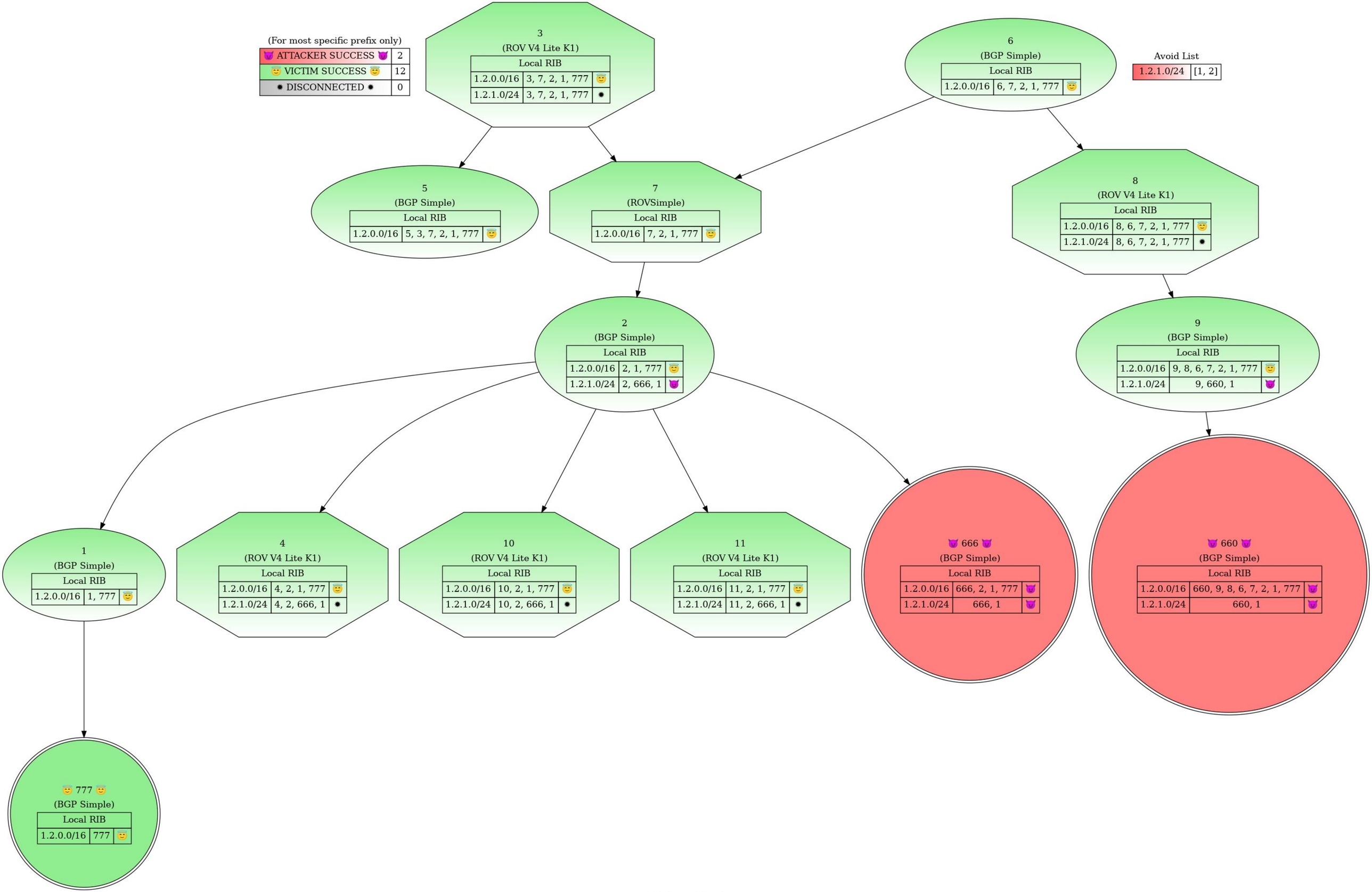
(145 Ground Truth)
AutoImmune Attack with V4 Lite
Traceback for 1.2.1.0/24



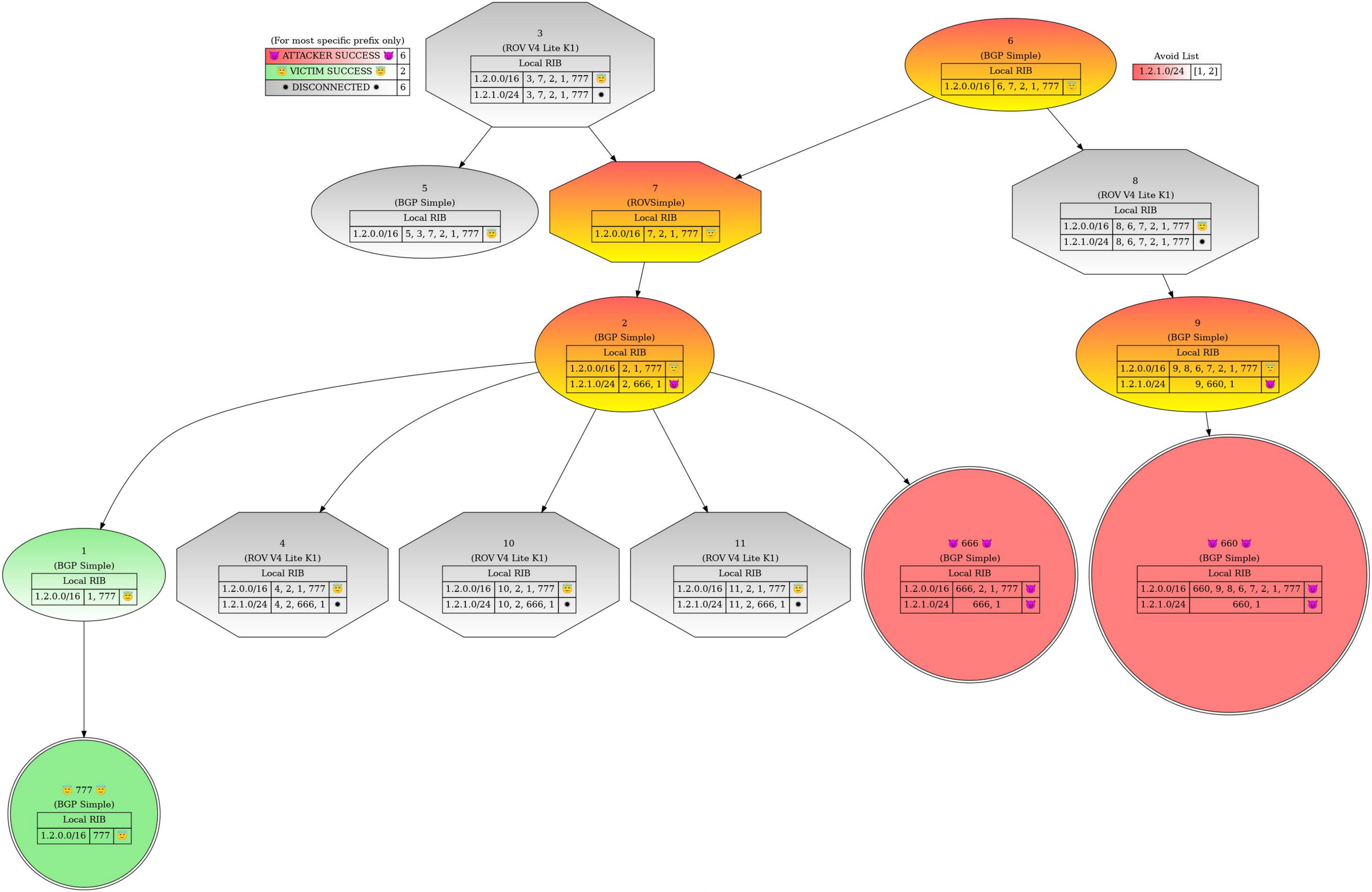
(145 Guess)
AutoImmune Attack with V4 Lite
Traceback for 1.2.0.0/16



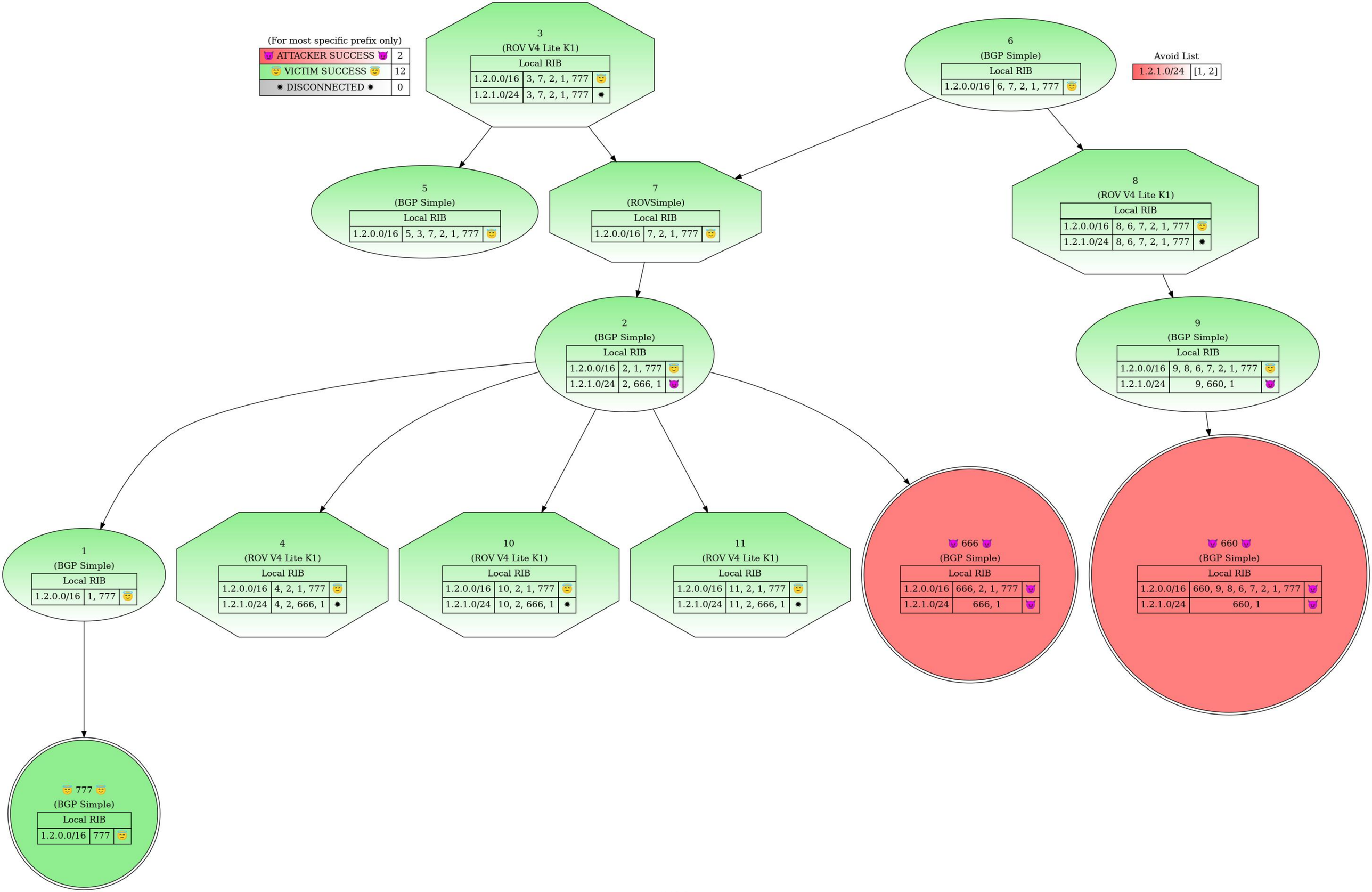
(145 Guess)
AutoImmune Attack with V4 Lite
Traceback for 1.2.1.0/24



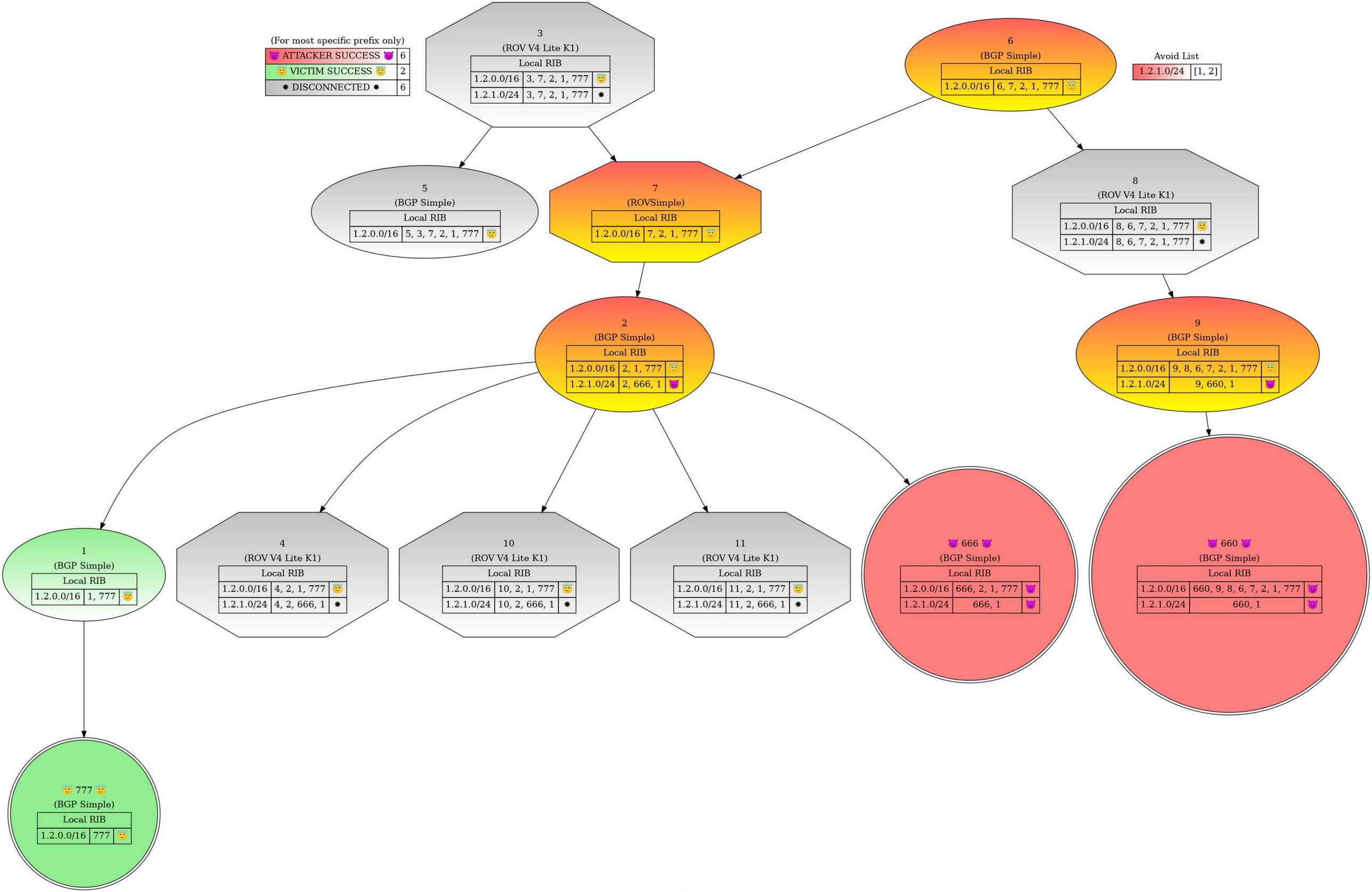
(146 Ground Truth)
AutoImmune Attack with V4 Lite K=1
Traceback for 1.2.0.0/16



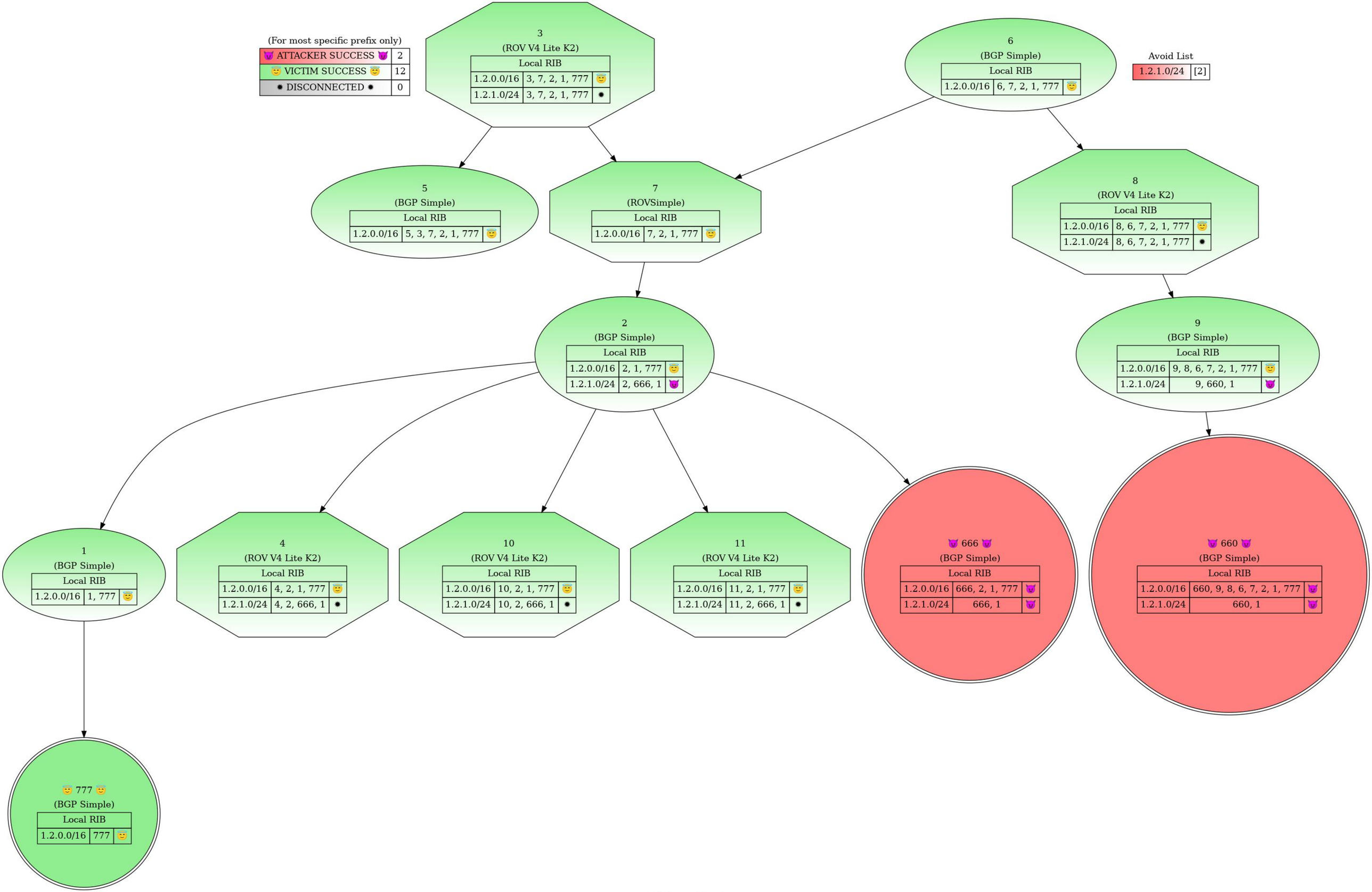
(146 Ground Truth)
AutoImmune Attack with V4 Lite K=1
Traceback for 1.2.1.0/24



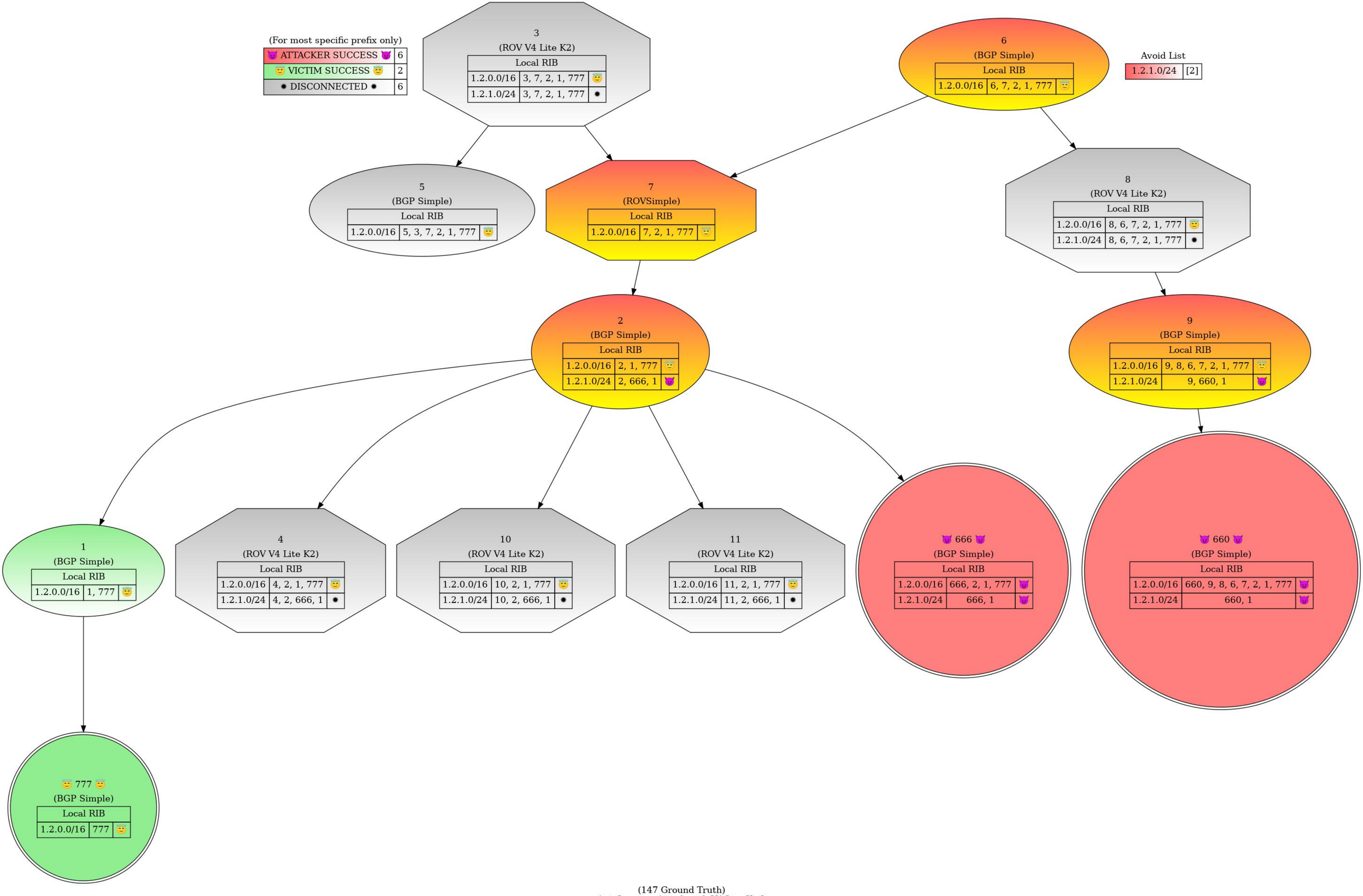
(146 Guess)
AutoImmune Attack with V4 Lite K=1
Traceback for 1.2.0.0/16



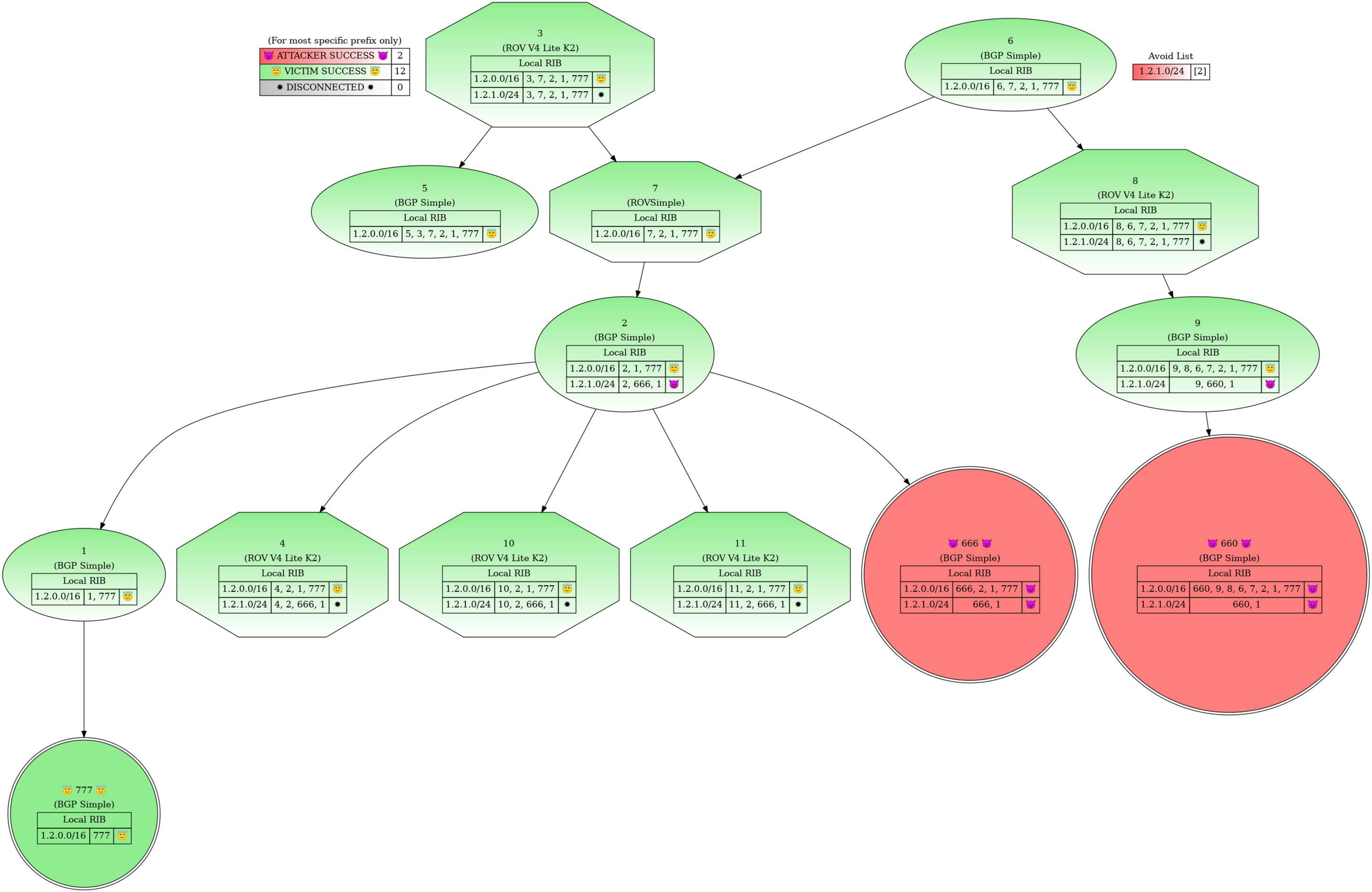
(146 Guess)
AutoImmune Attack with V4 Lite K=1
Traceback for 1.2.1.0/24



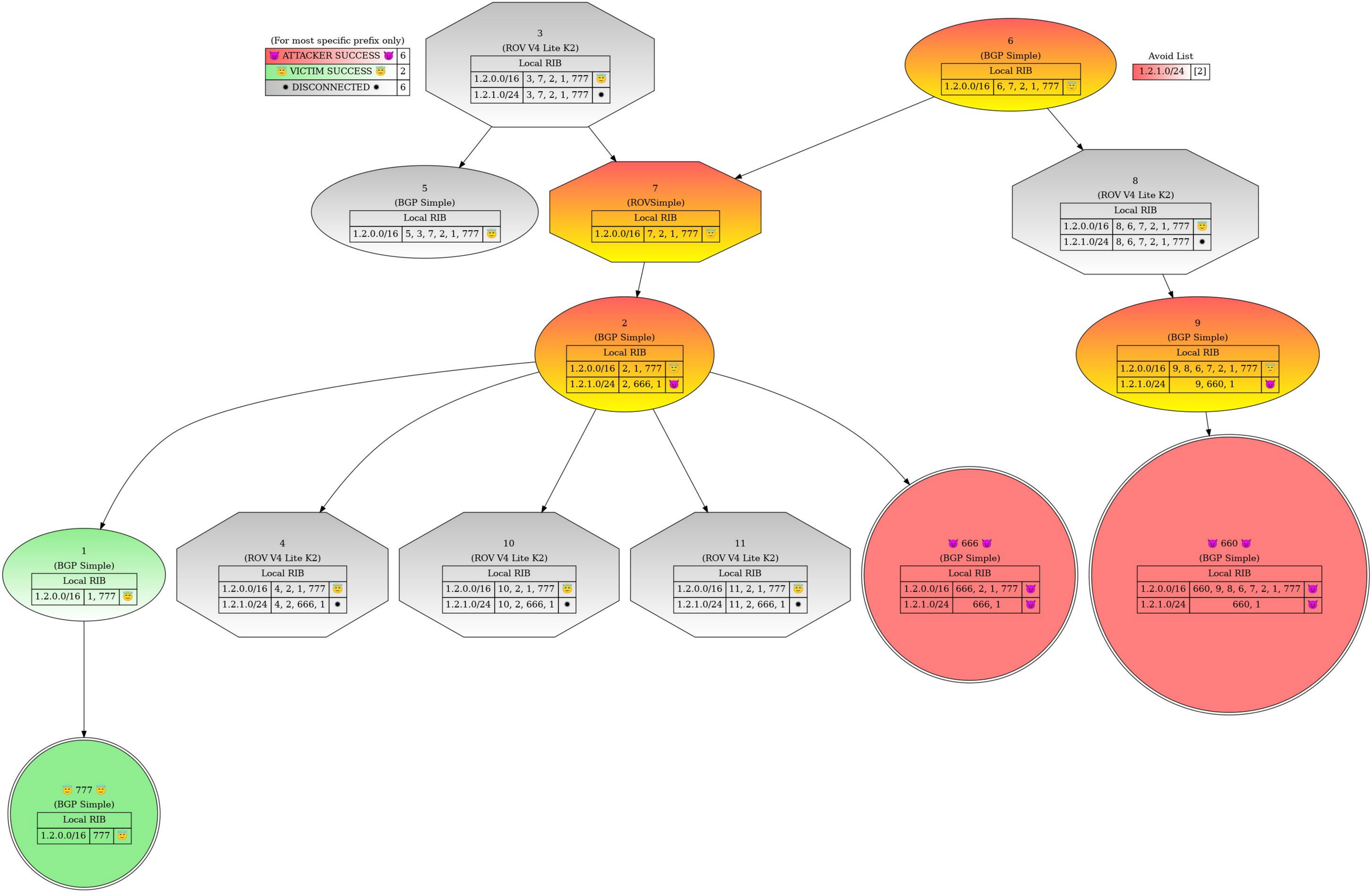
(147 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



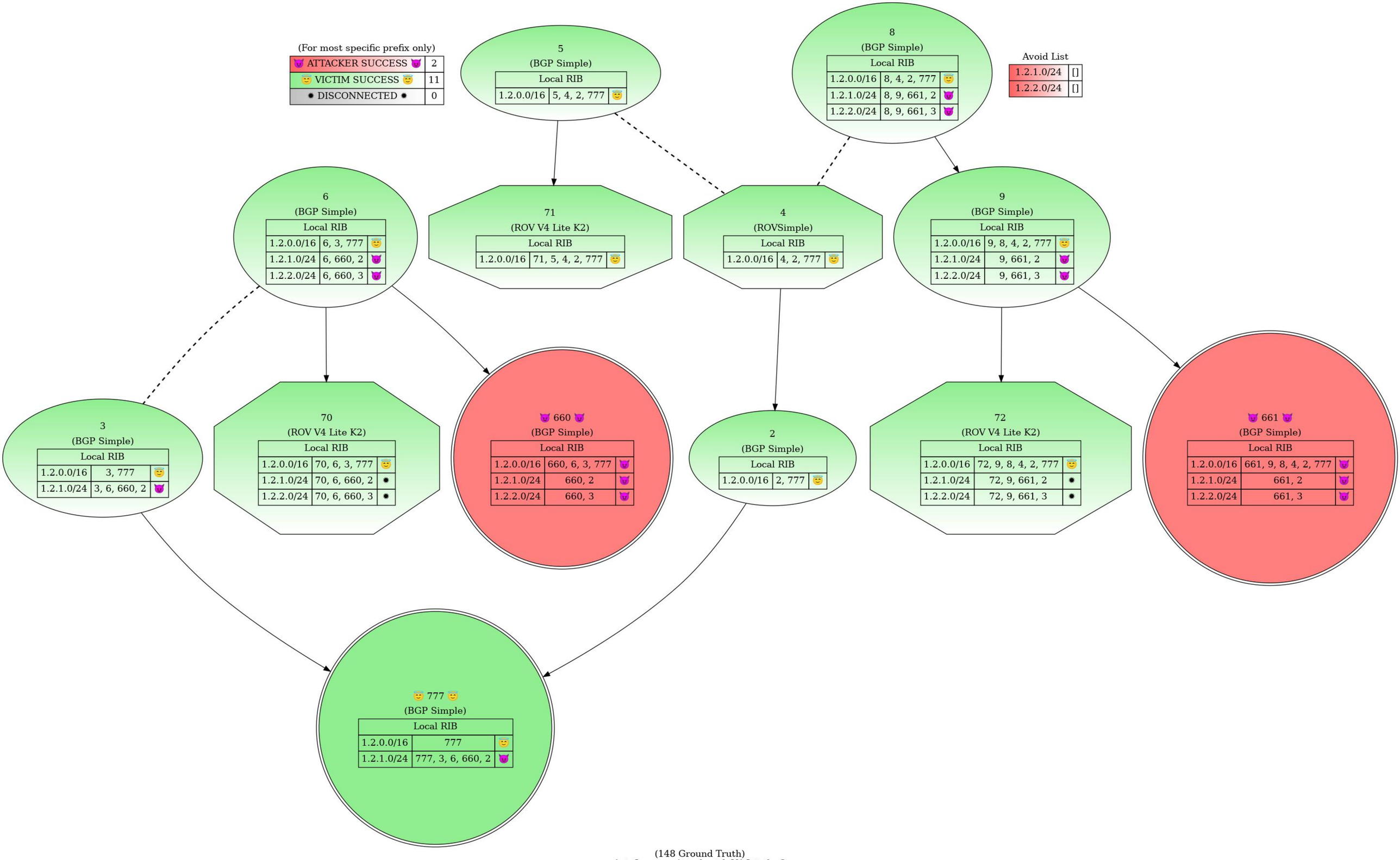
(147 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



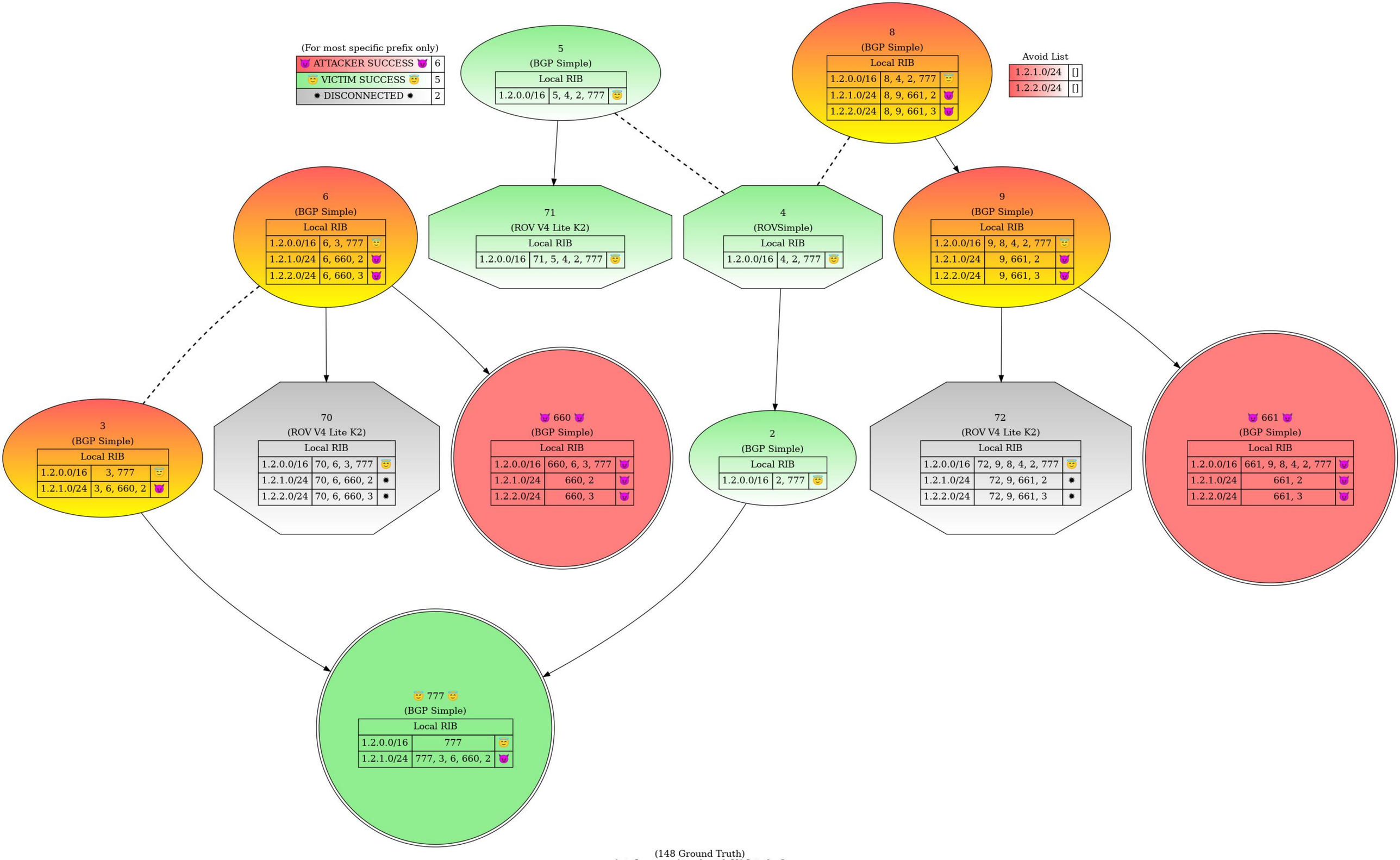
(147 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



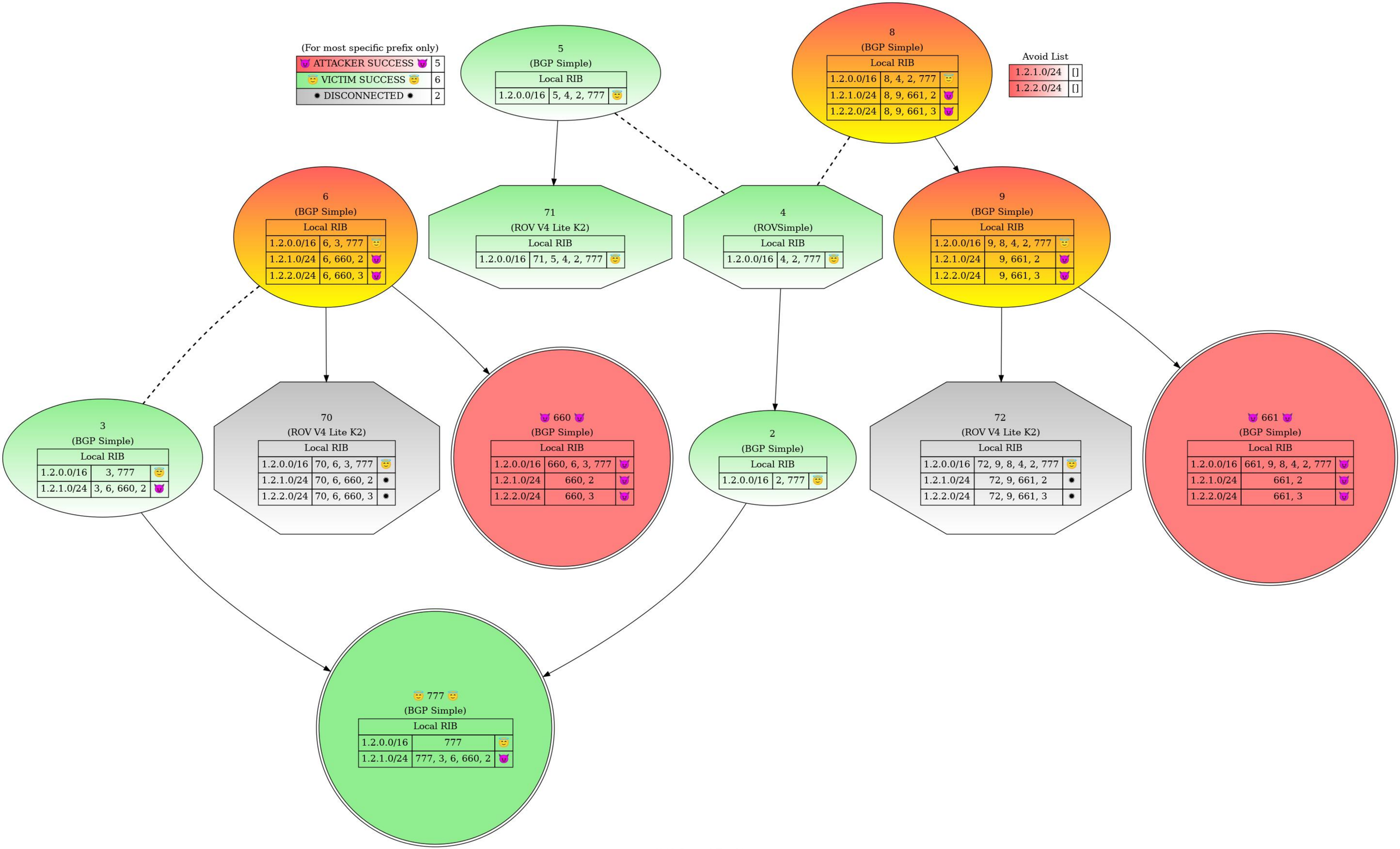
(147 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



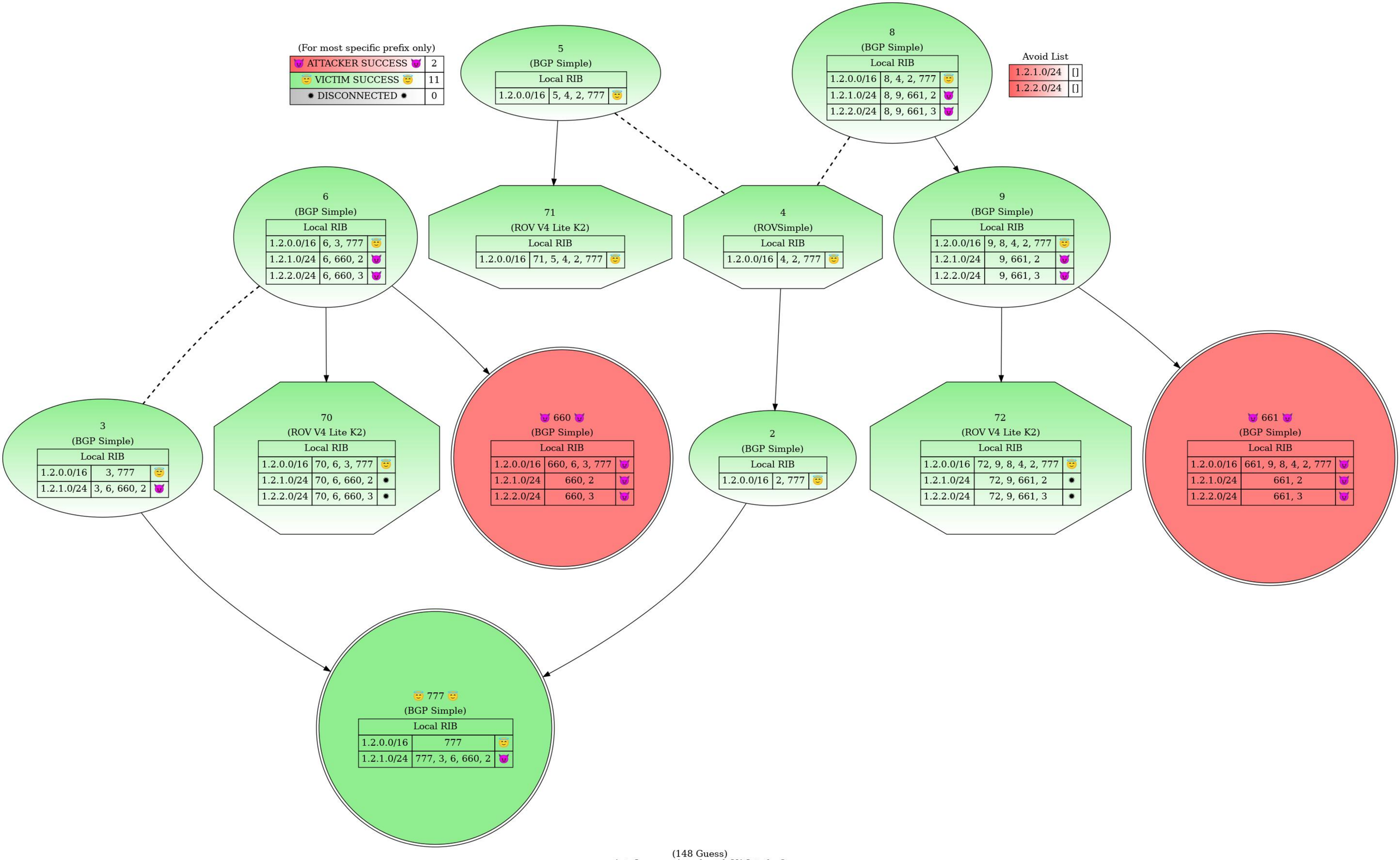
(148 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.0.0/16



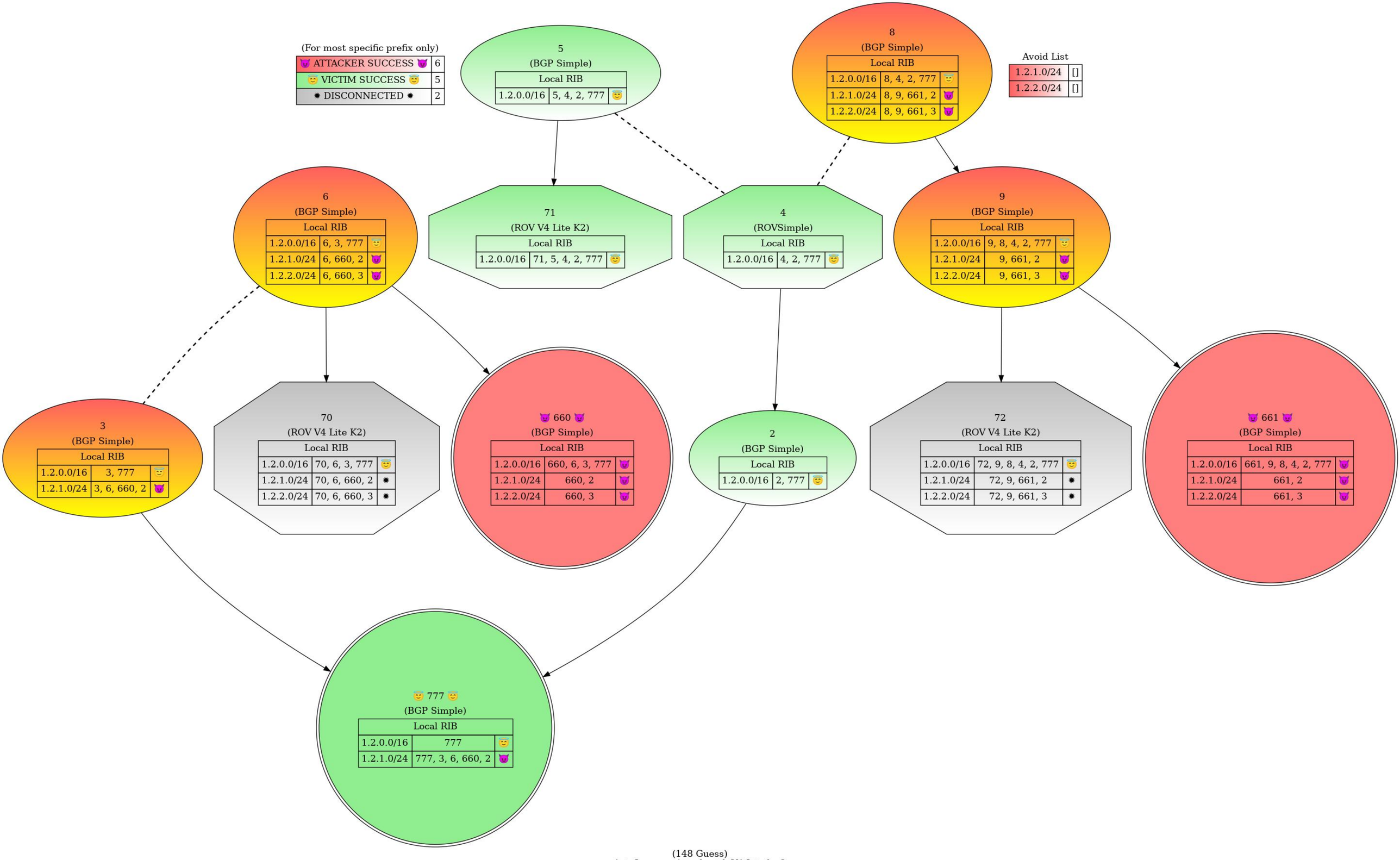
(148 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



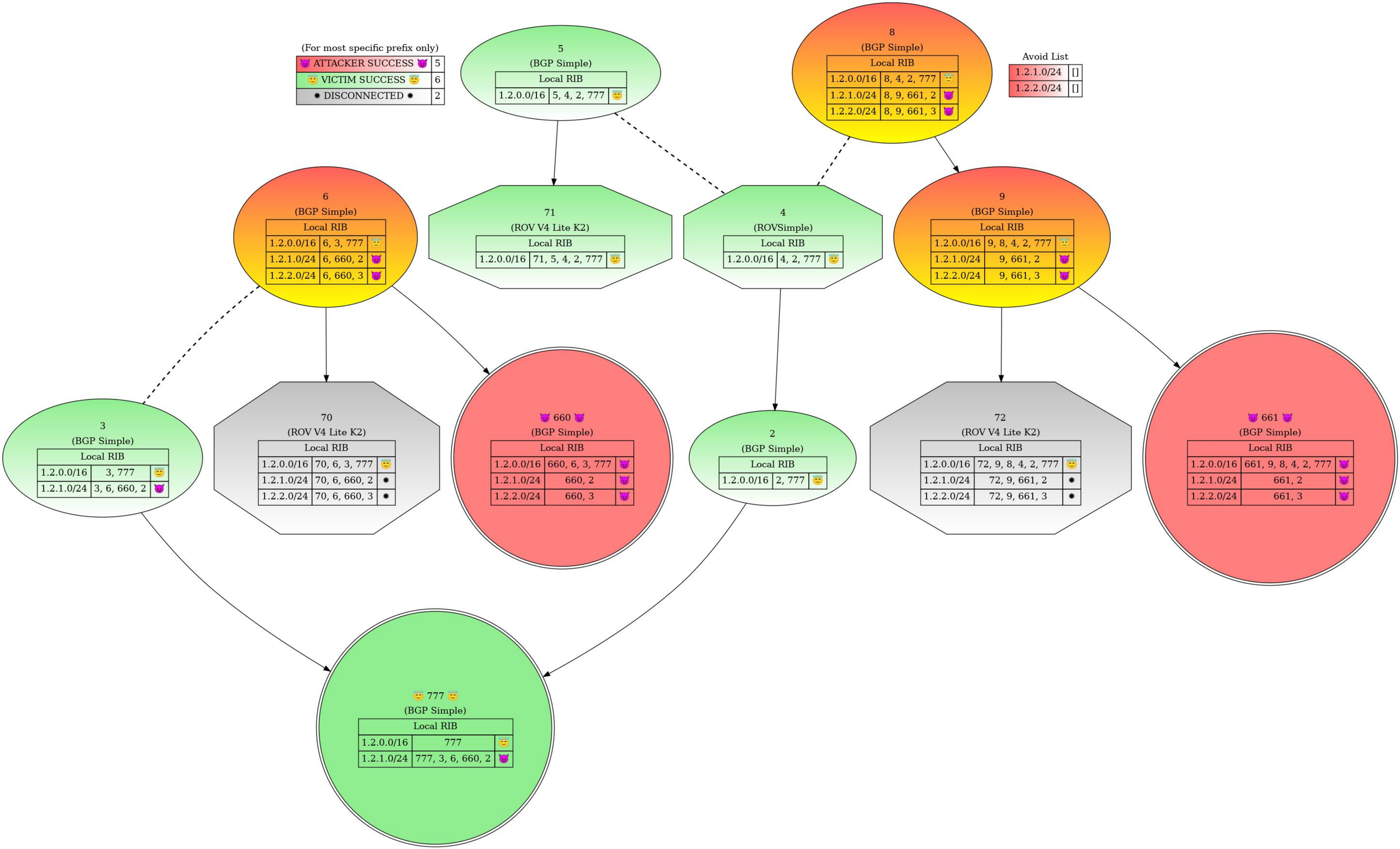
(148 Ground Truth)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.2.0/24



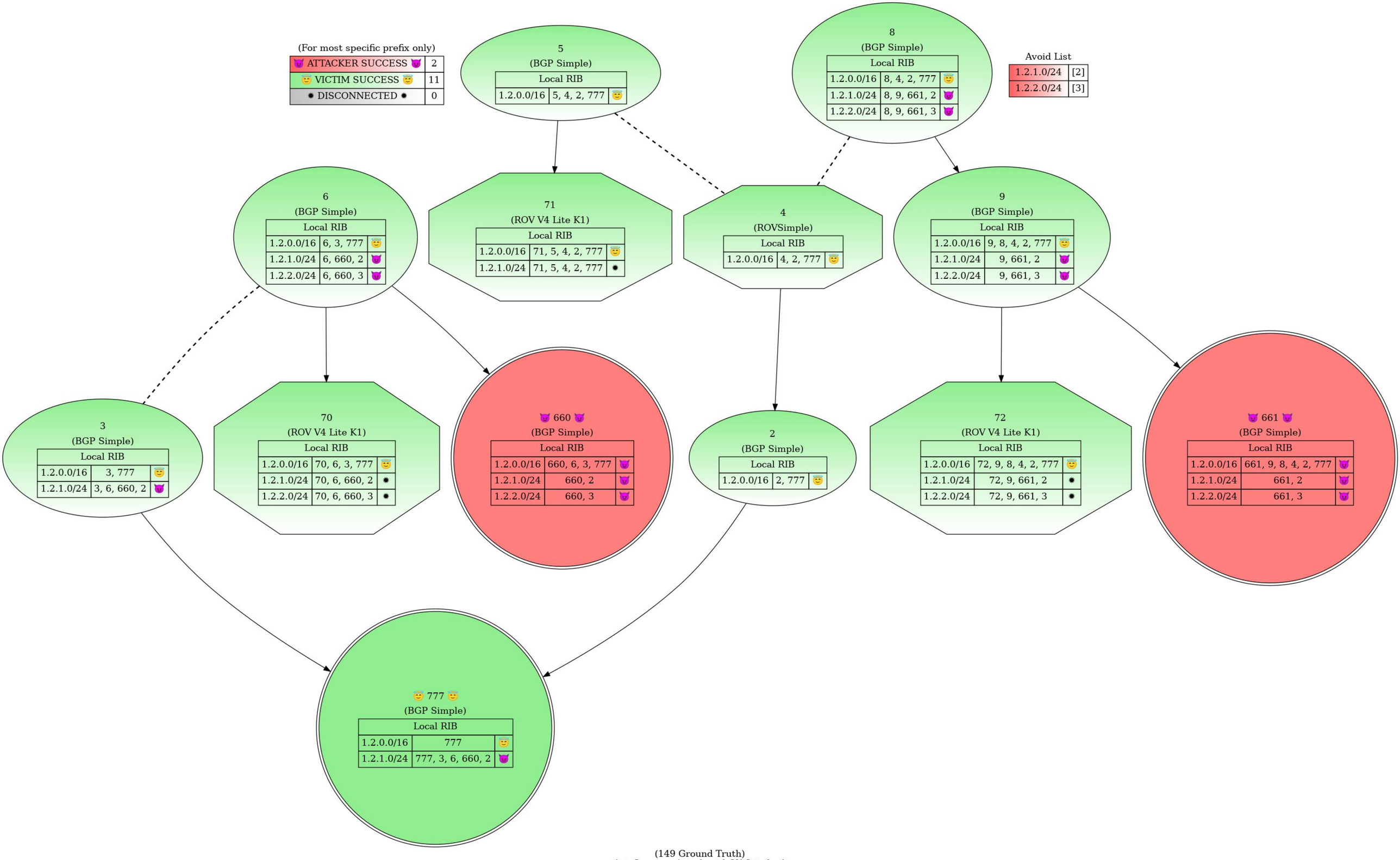
(148 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.0.0/16



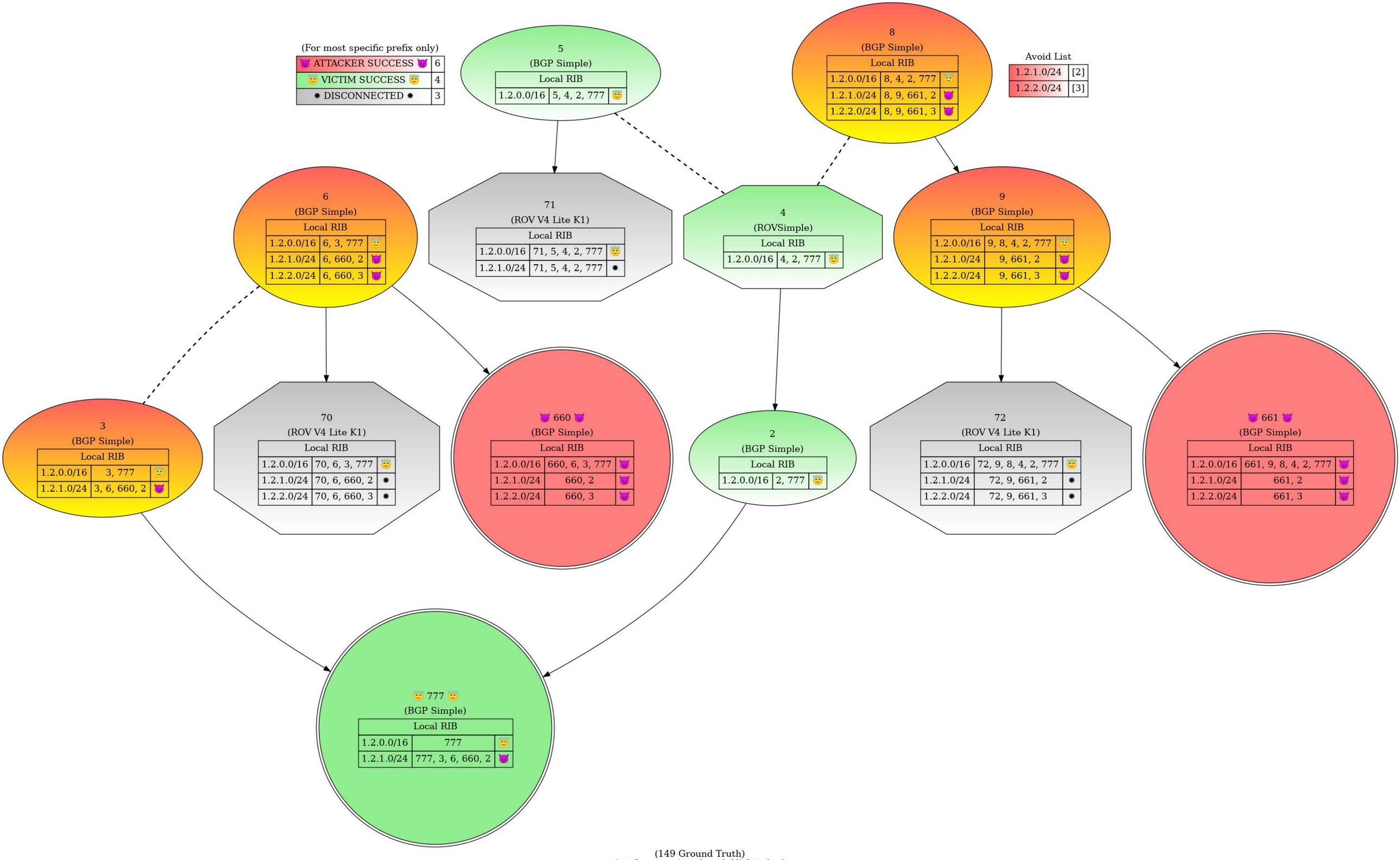
(148 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.1.0/24



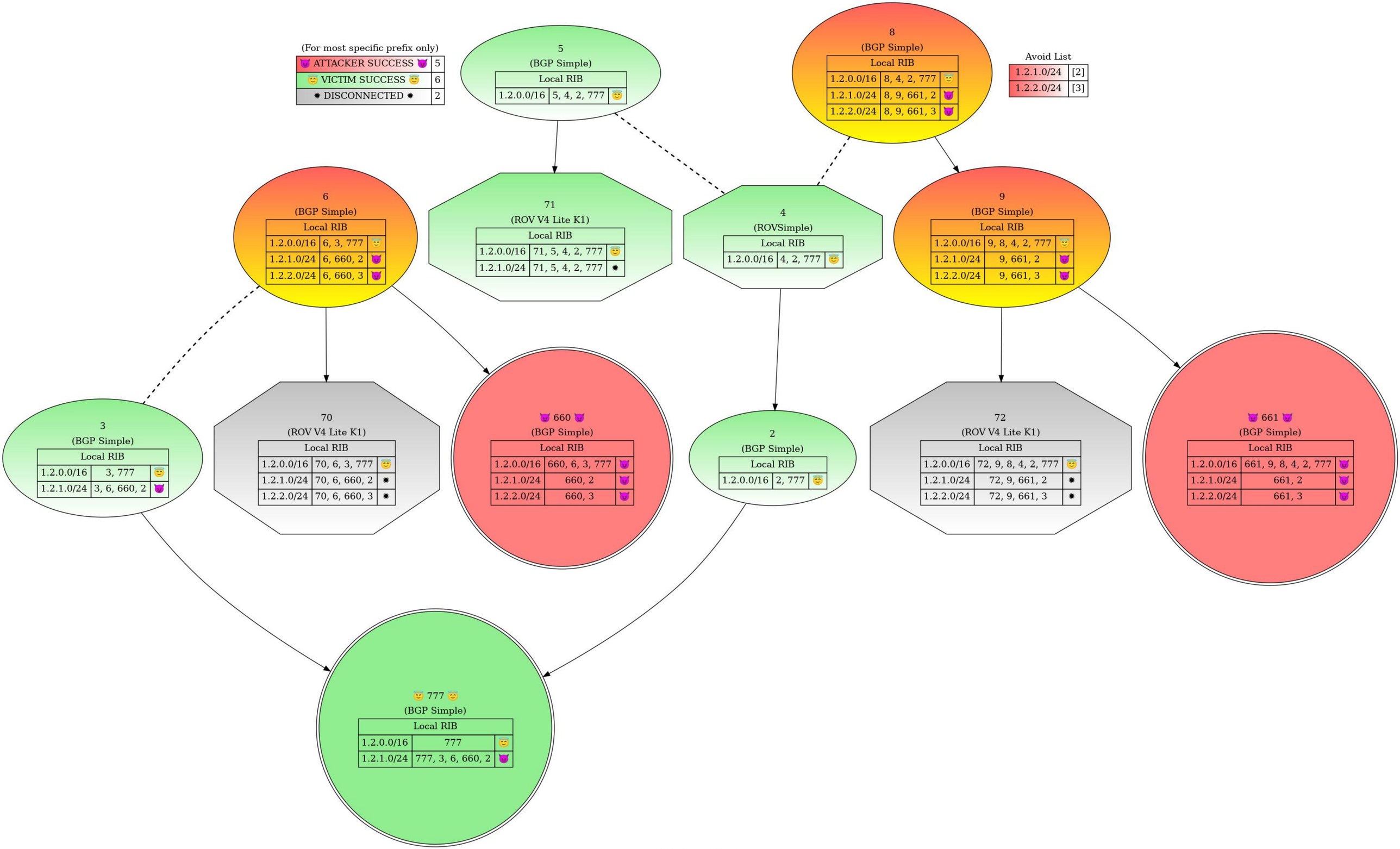
(148 Guess)
AutoImmune Attack with V4 Lite k=2
Traceback for 1.2.2.0/24



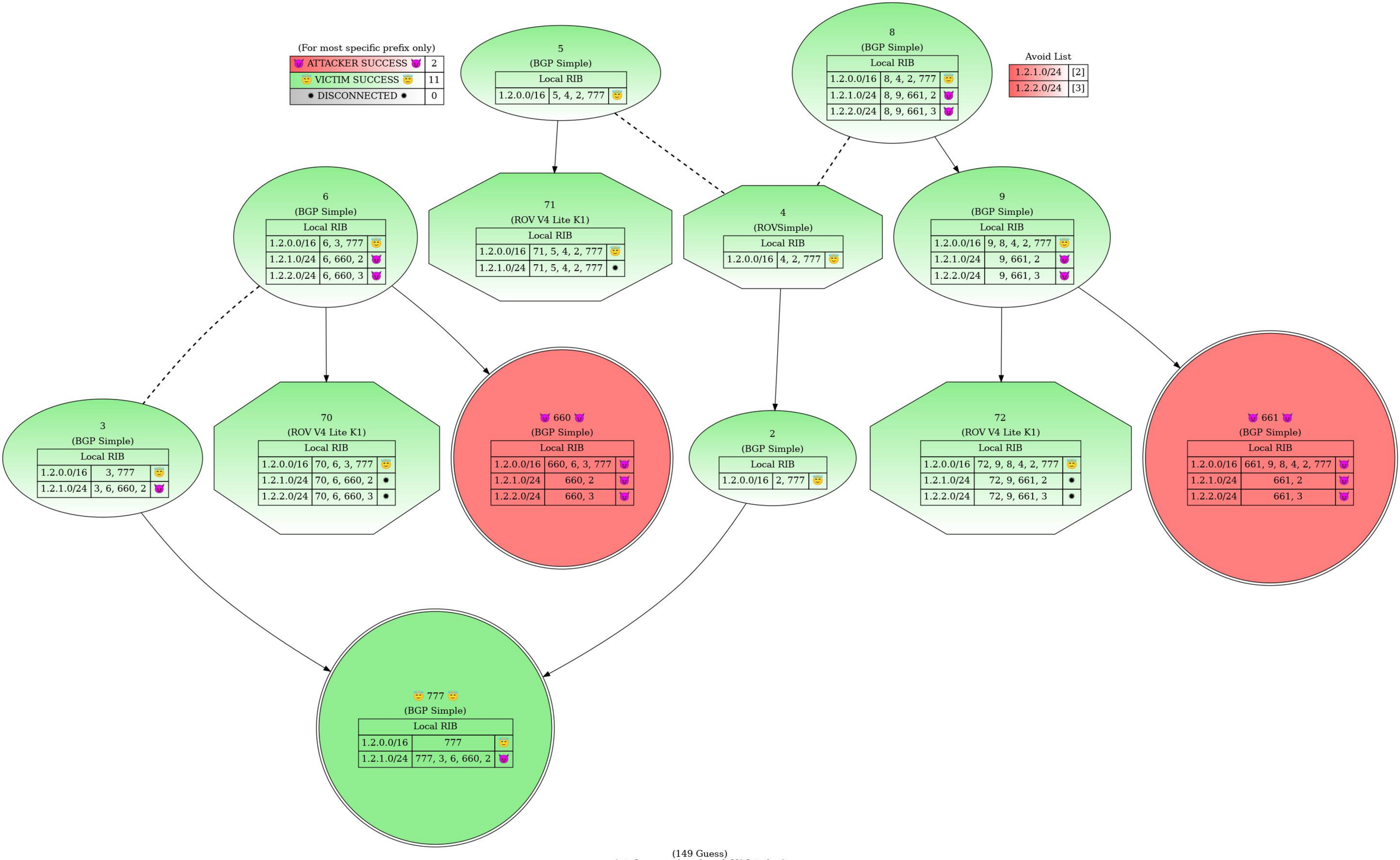
(149 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



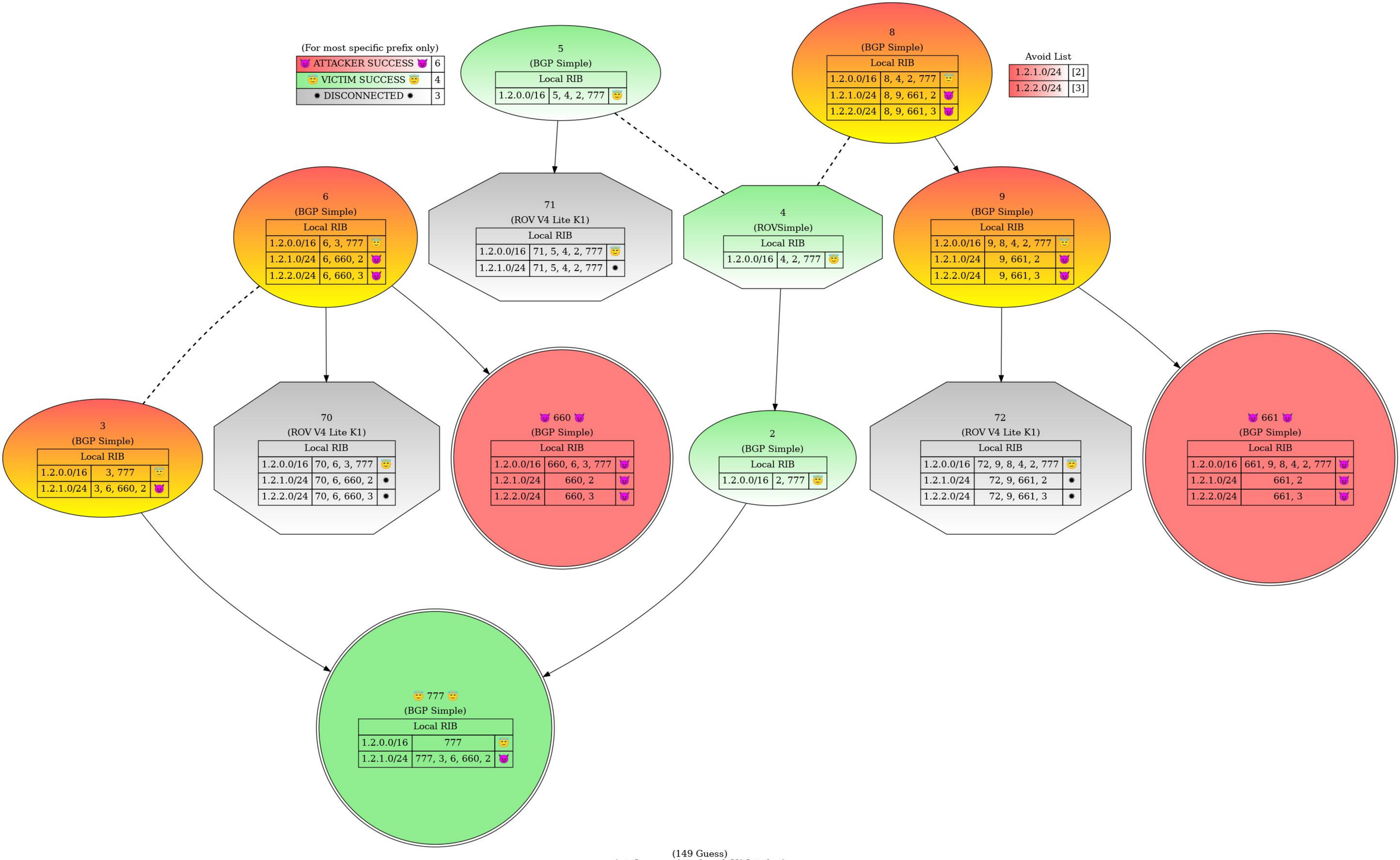
(149 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



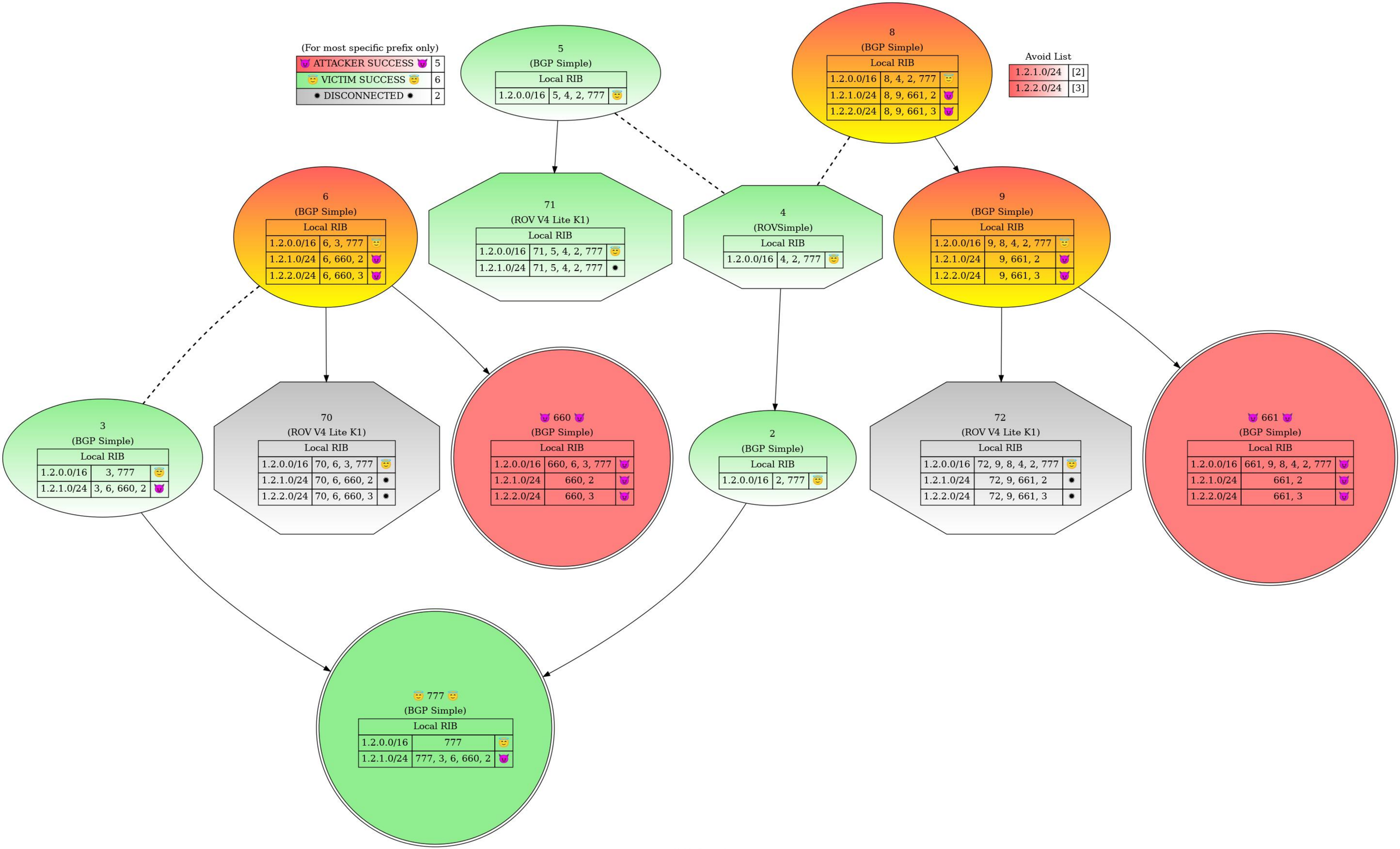
(149 Ground Truth)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



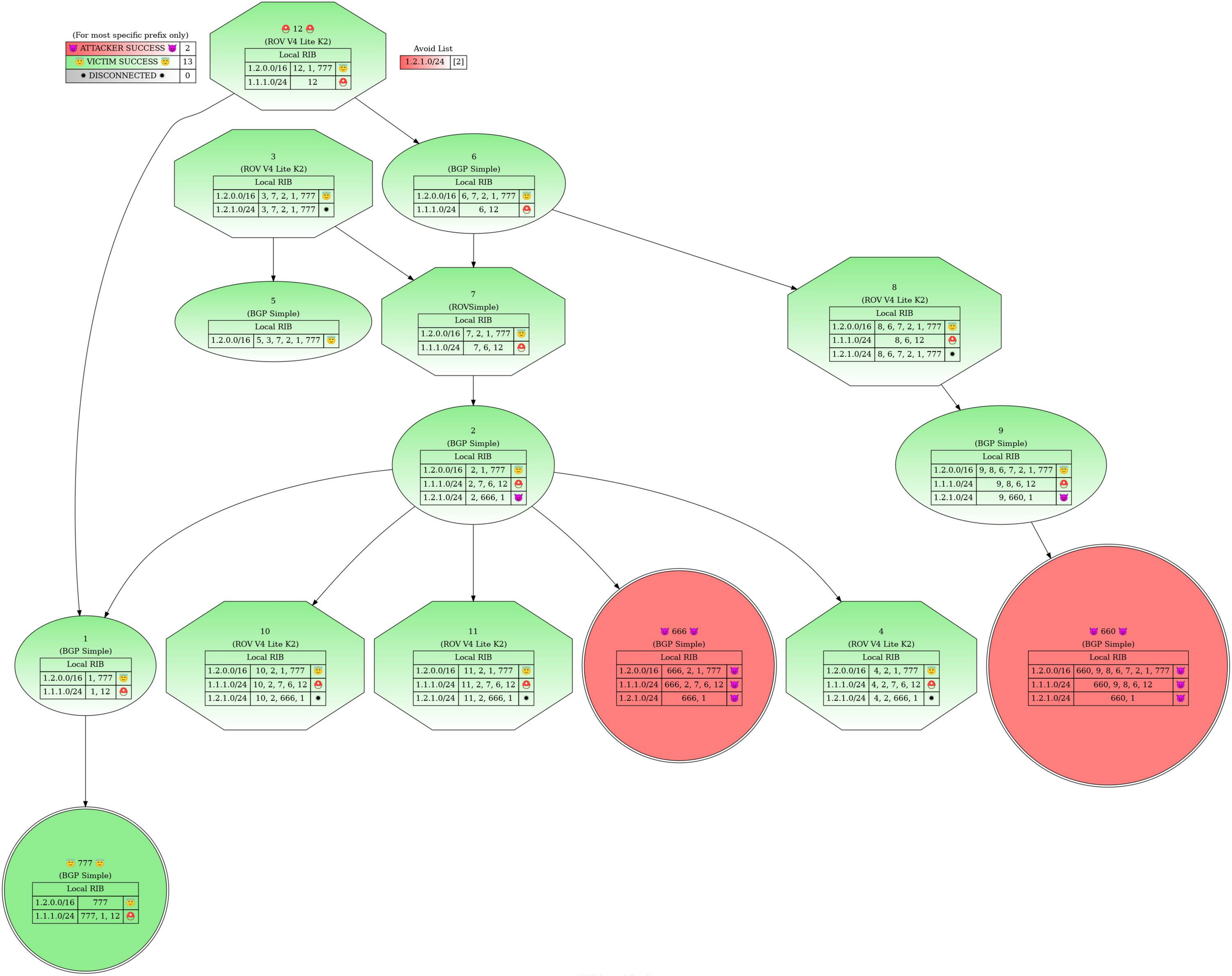
(149 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.0.0/16



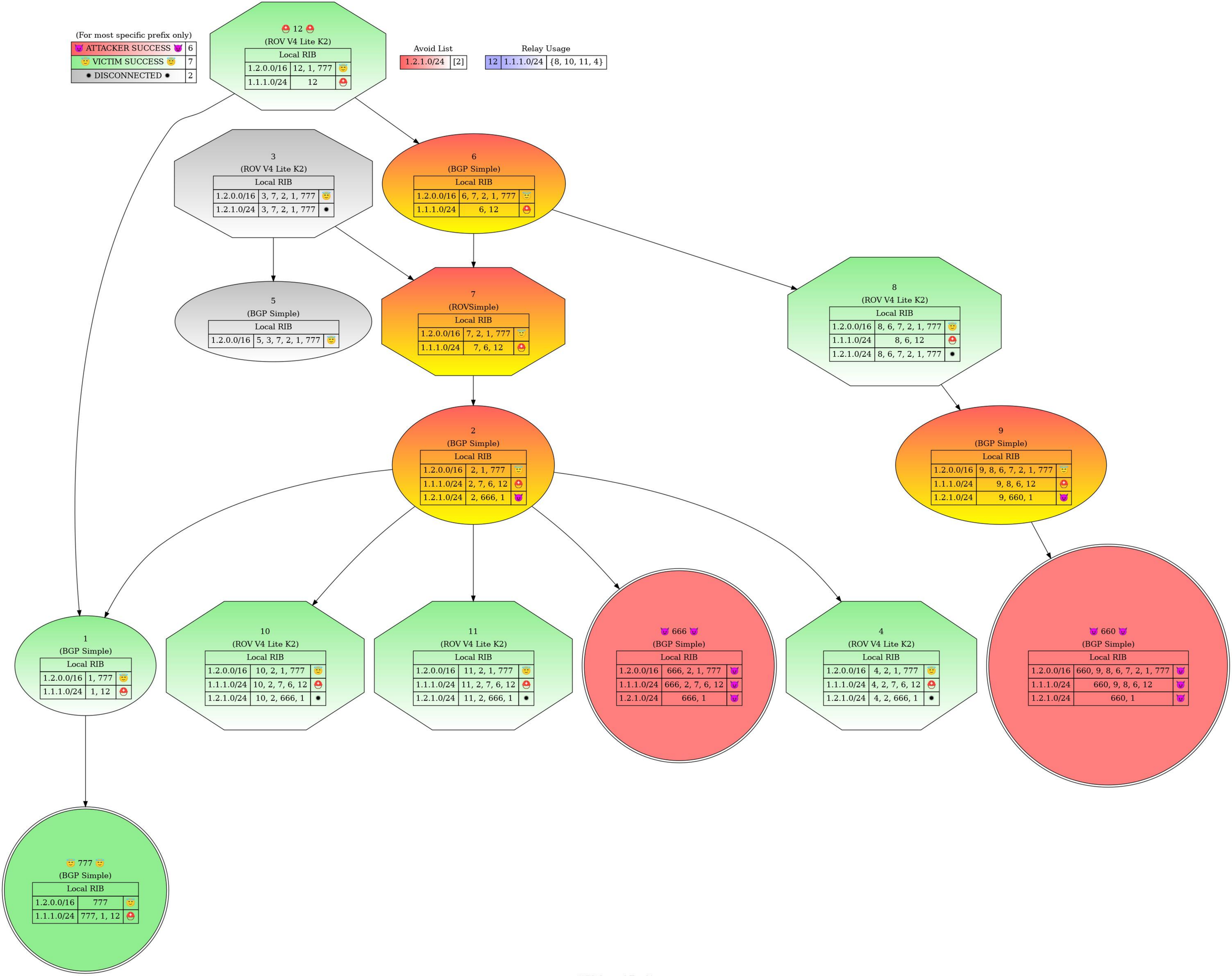
(149 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.1.0/24



(149 Guess)
AutoImmune Attack with V4 Lite k=1
Traceback for 1.2.2.0/24



(150 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



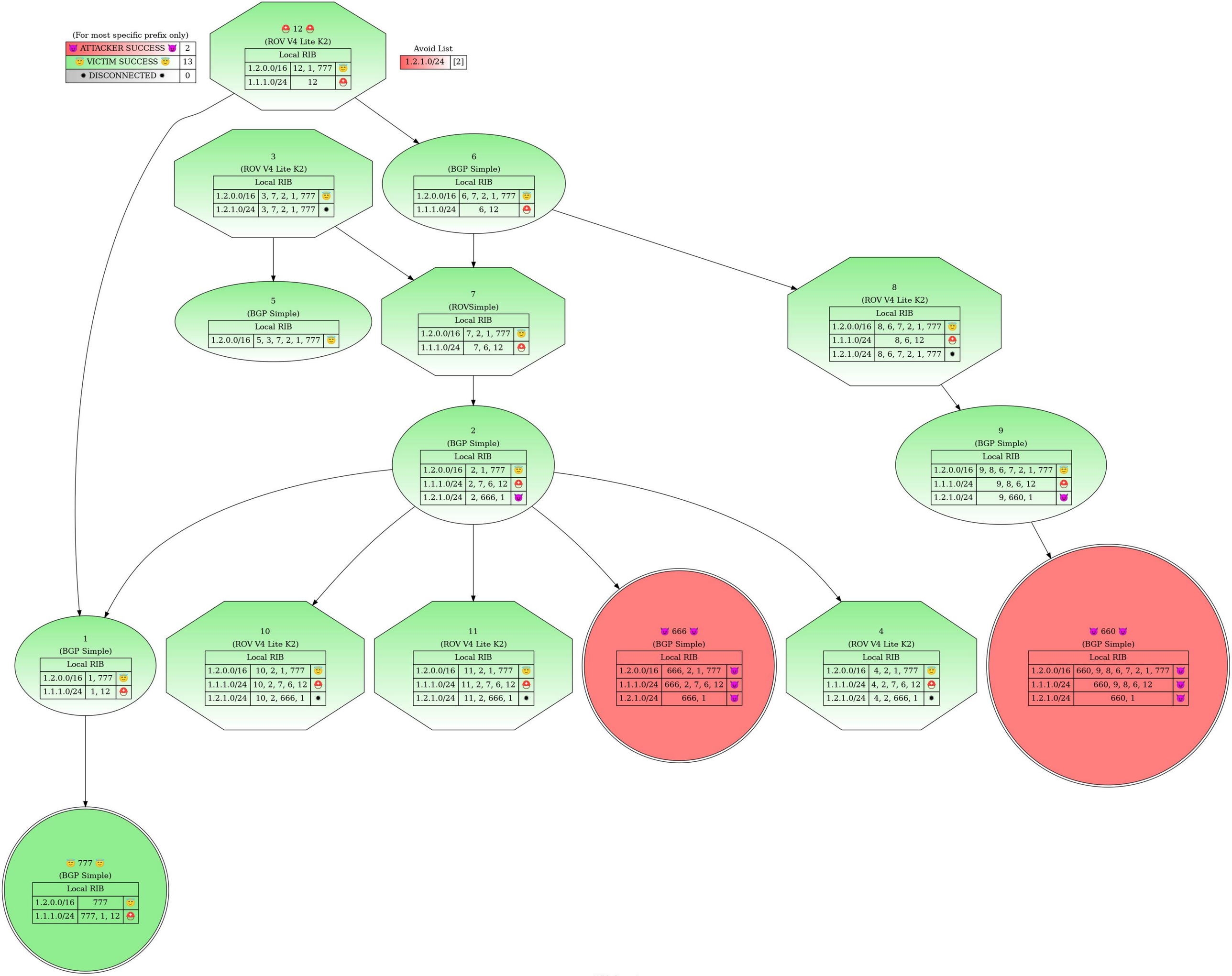
(150 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24

(For most specific prefix only)

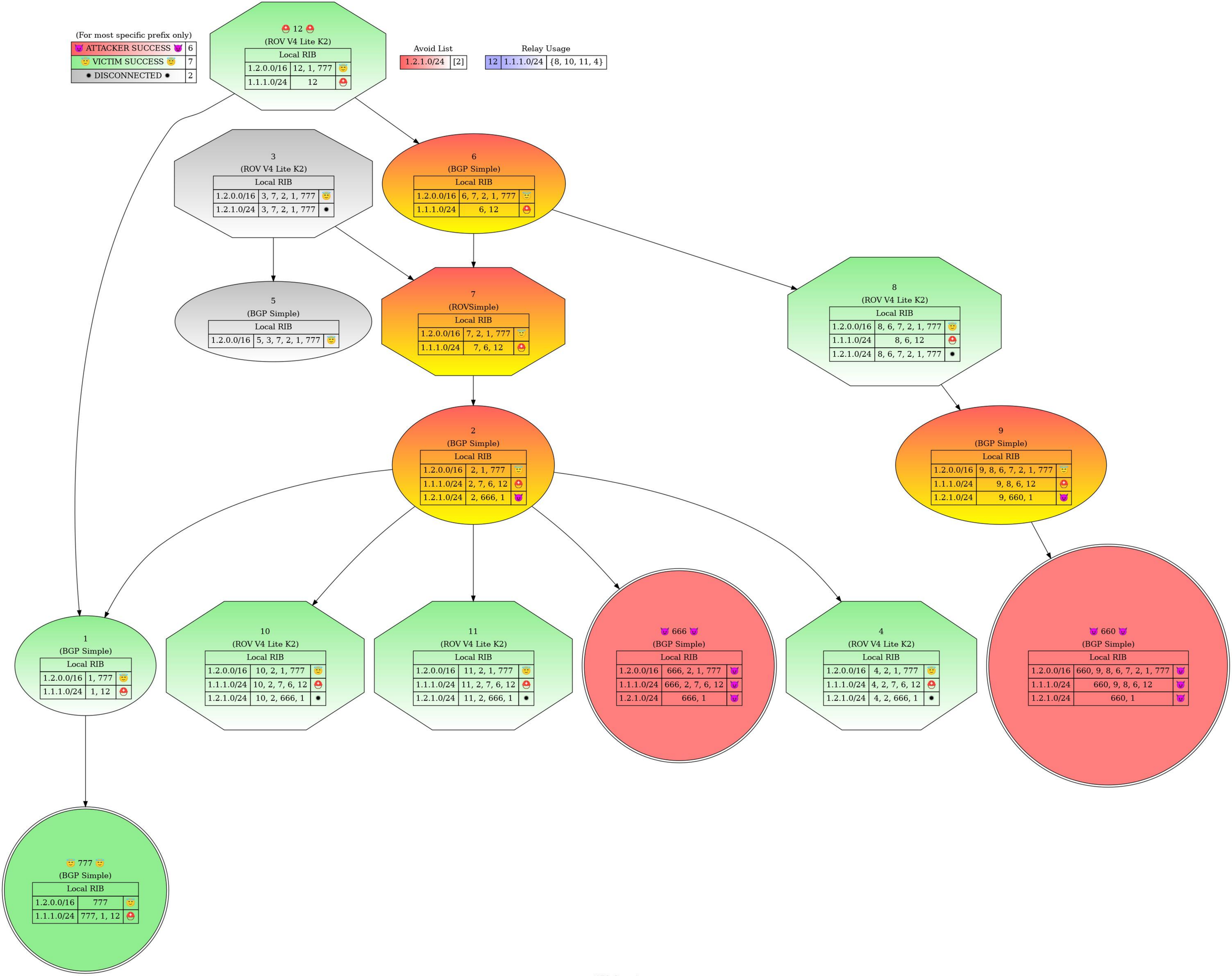
😈 ATTACKER SUCCESS 😈	2
😇 VICTIM SUCCESS 😇	13
✹ DISCONNECTED ✹	0

Avoid List

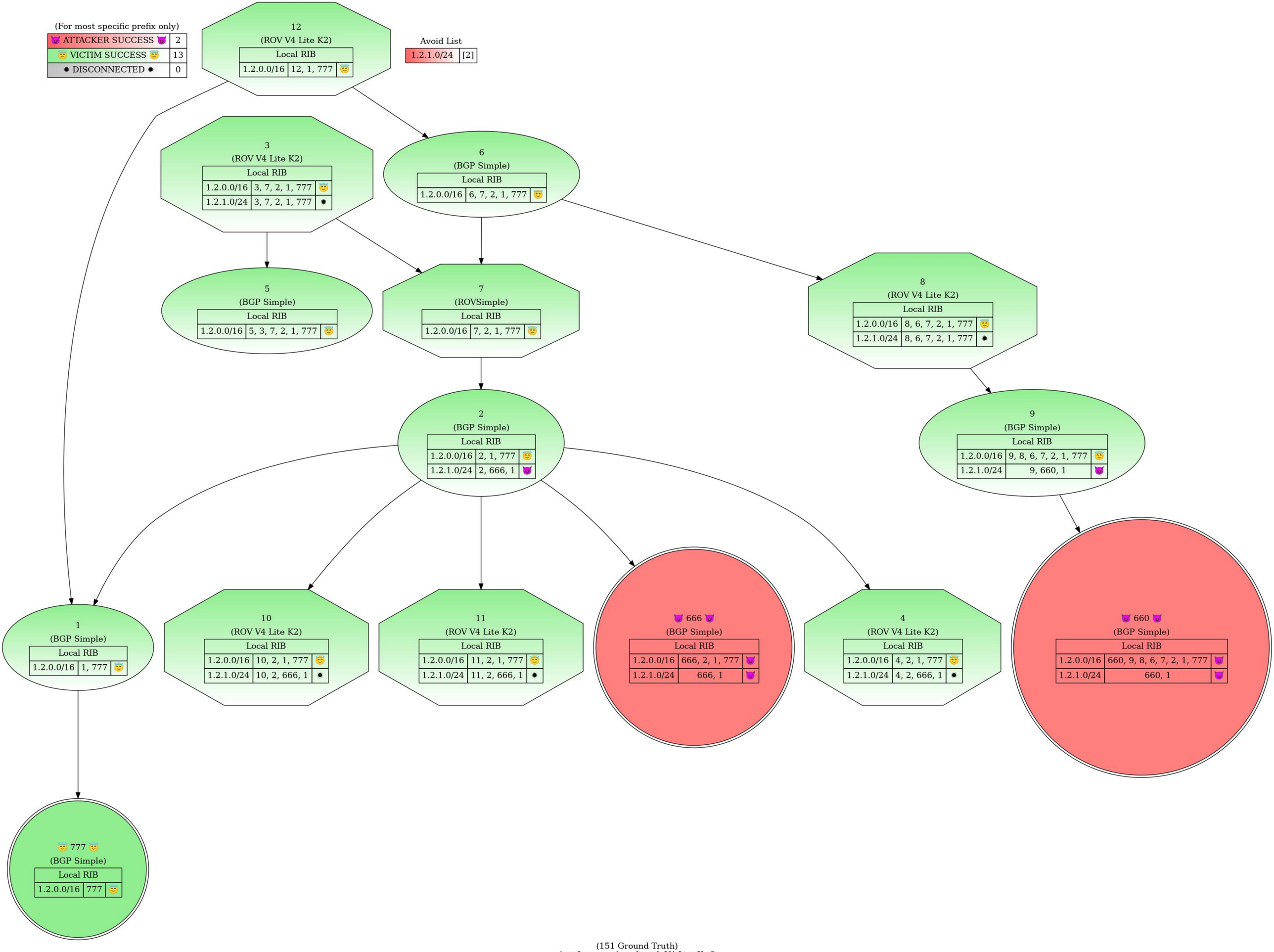
1.2.1.0/24	[2]



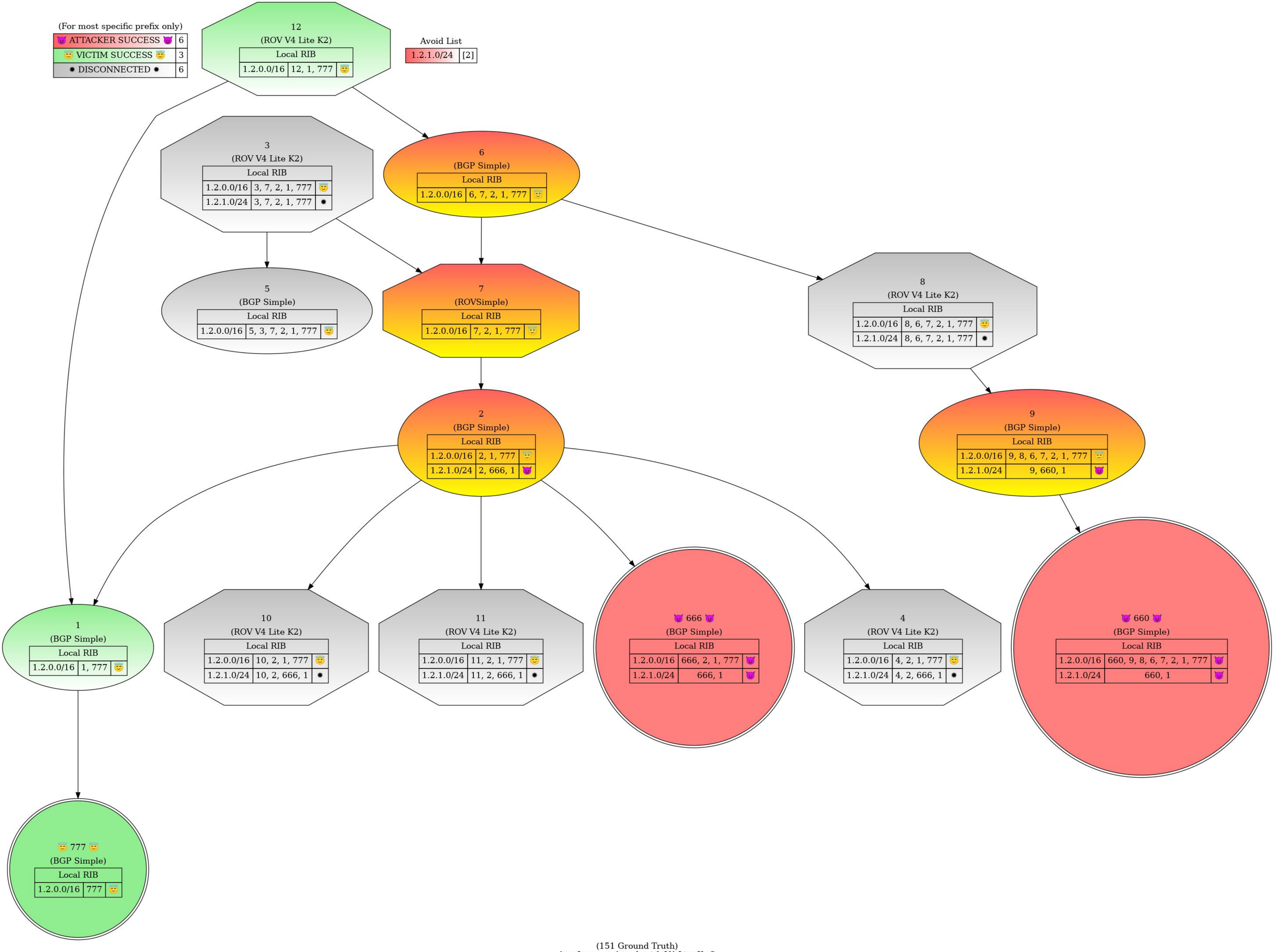
(150 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



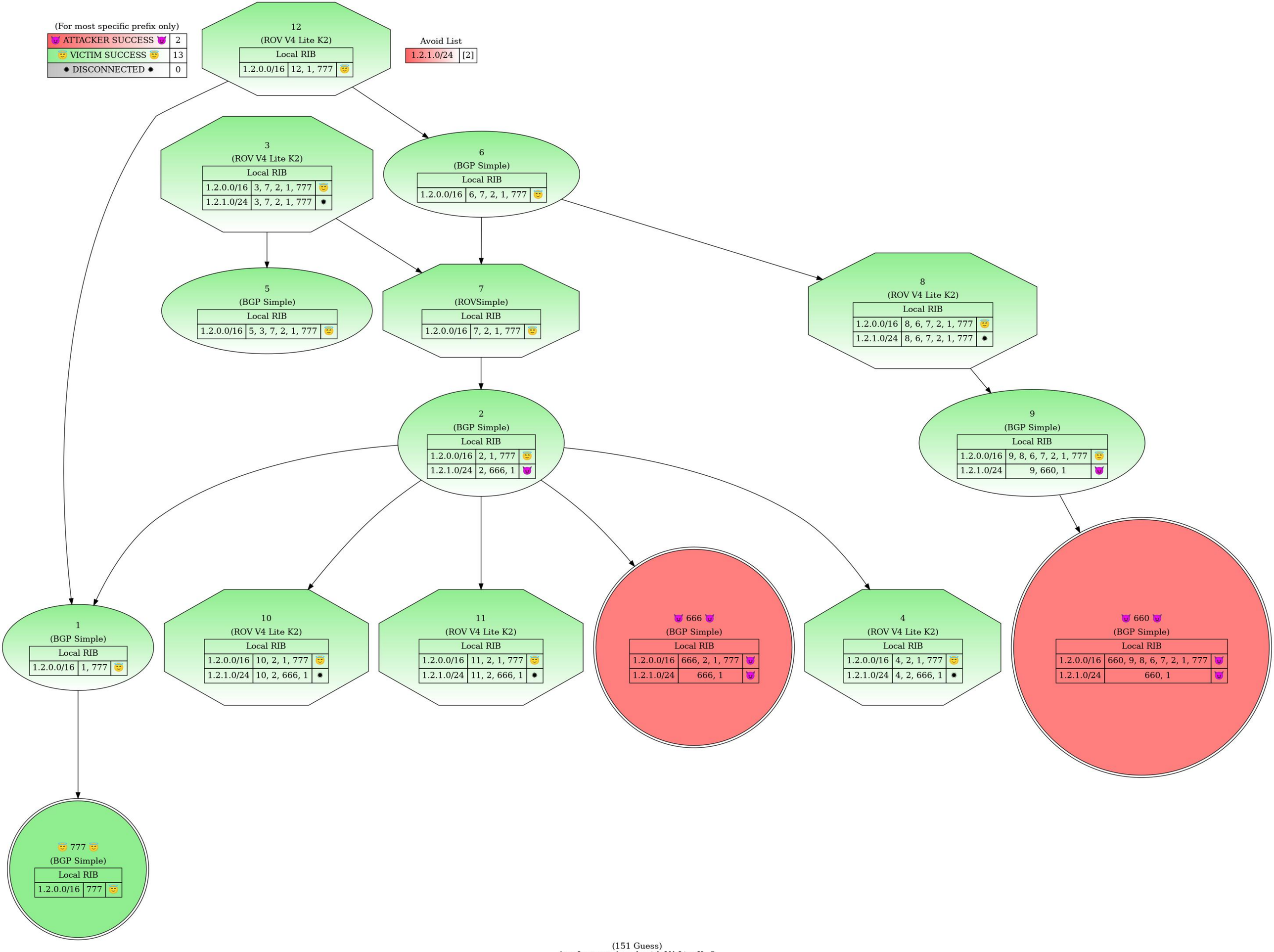
(150 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



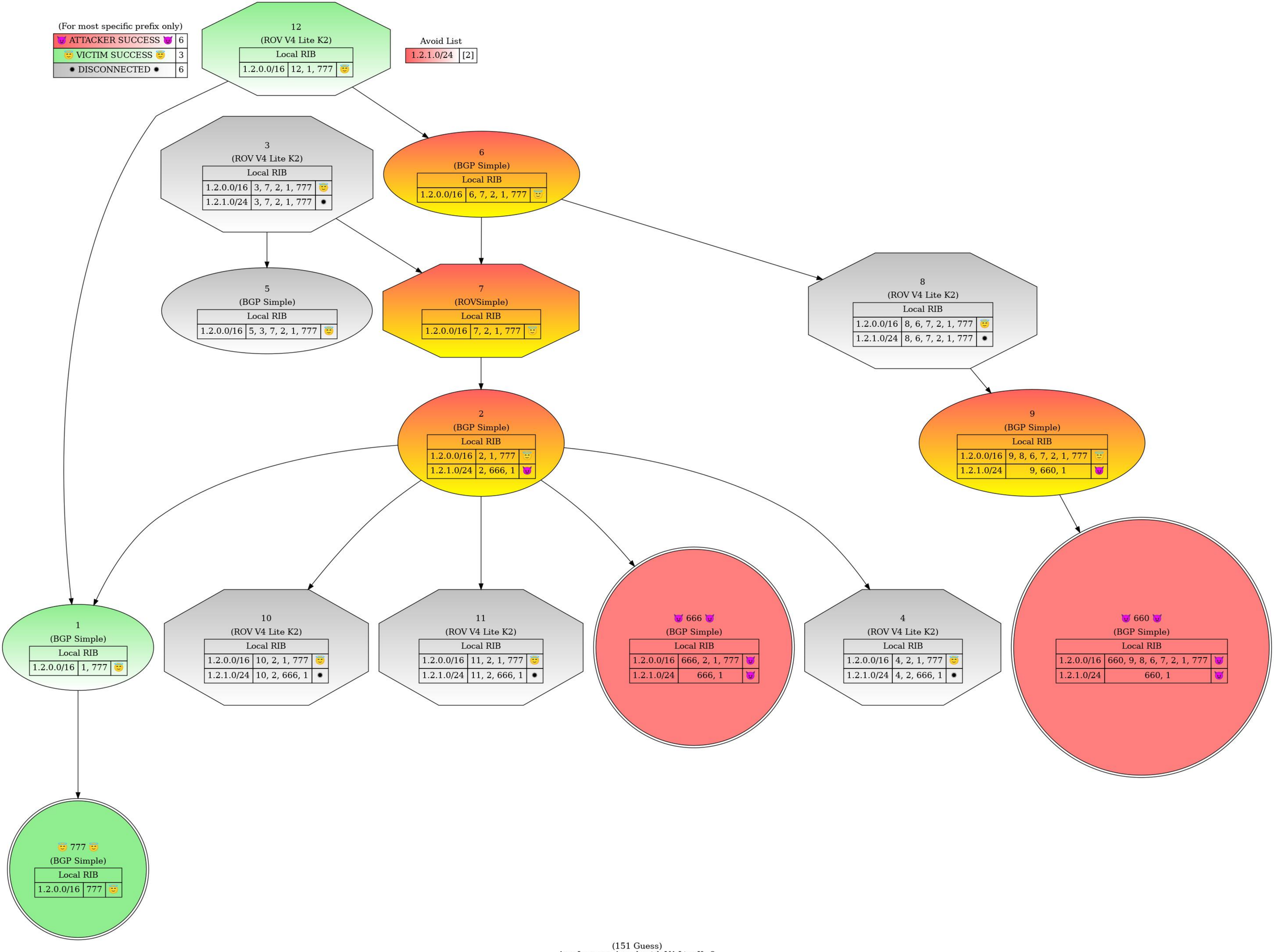
(151 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



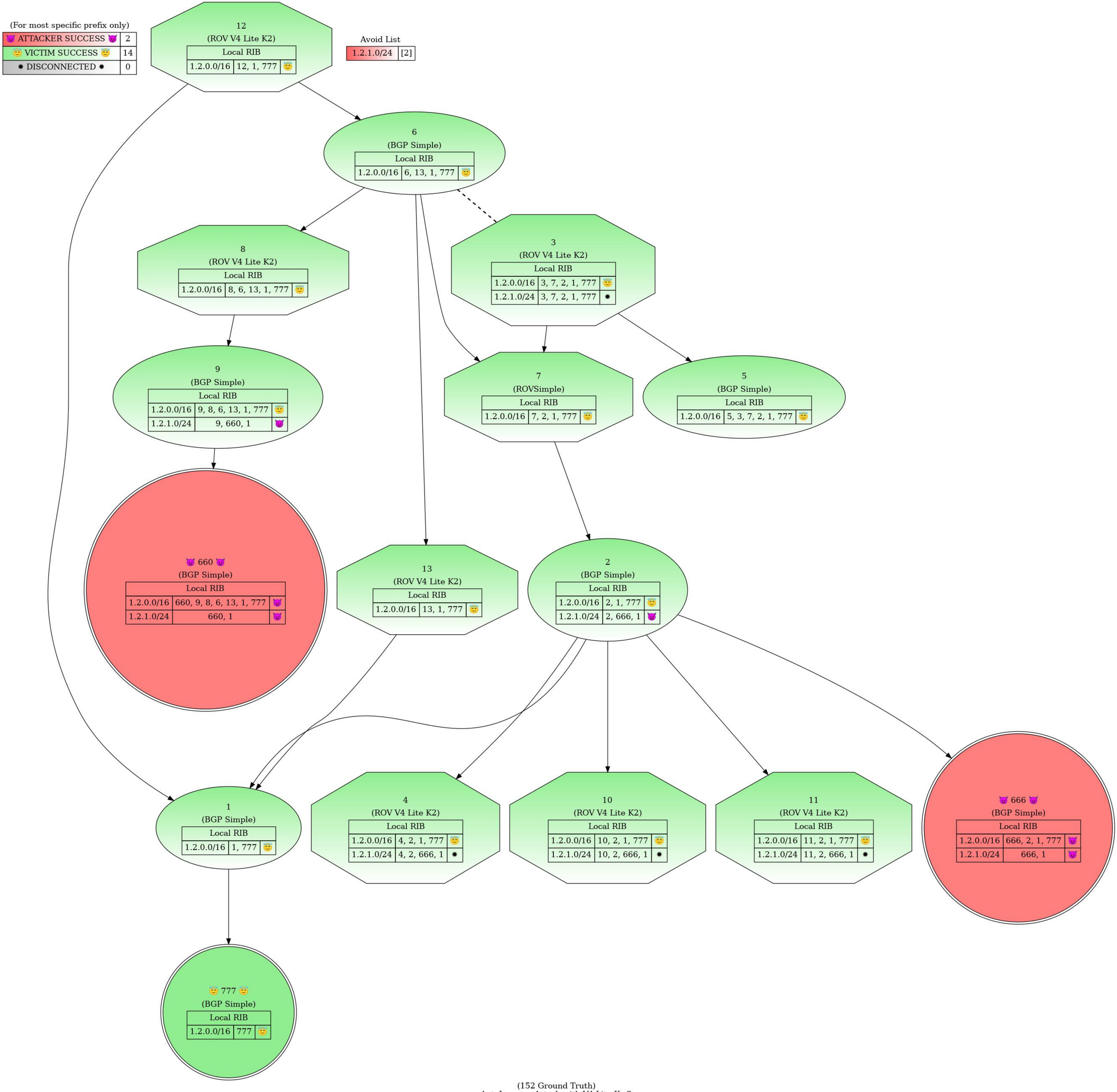
(151 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



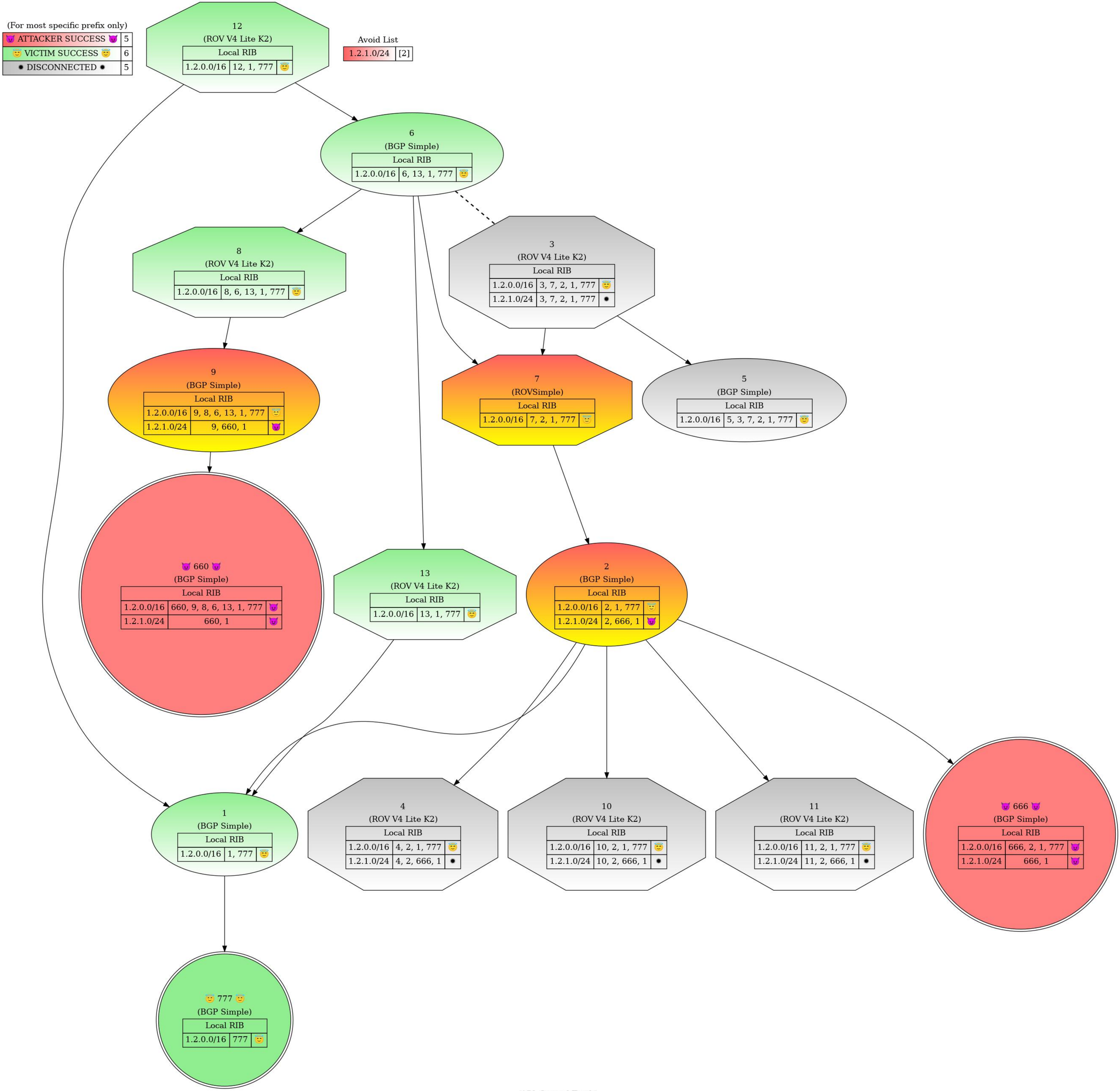
(151 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



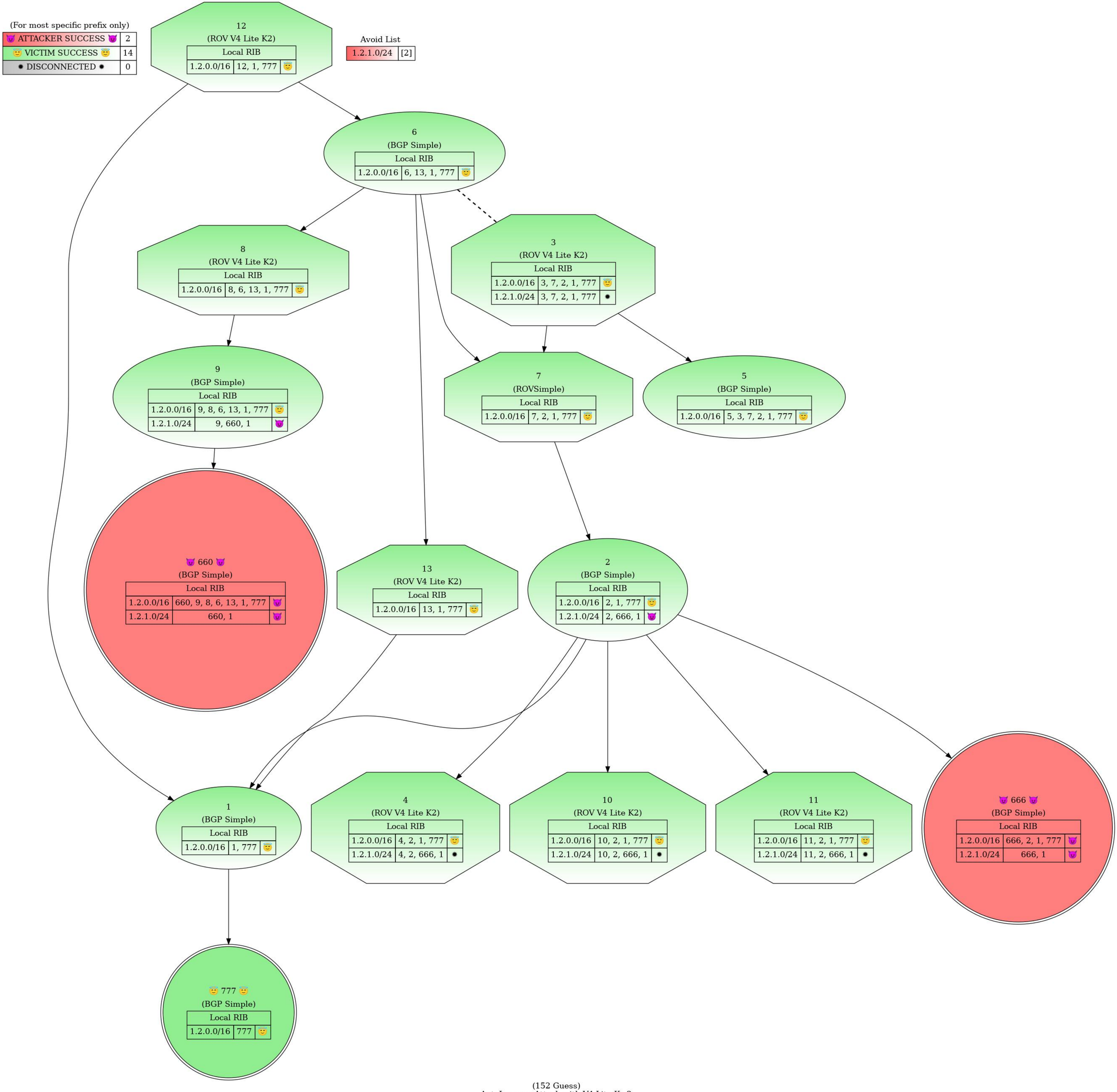
(151 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



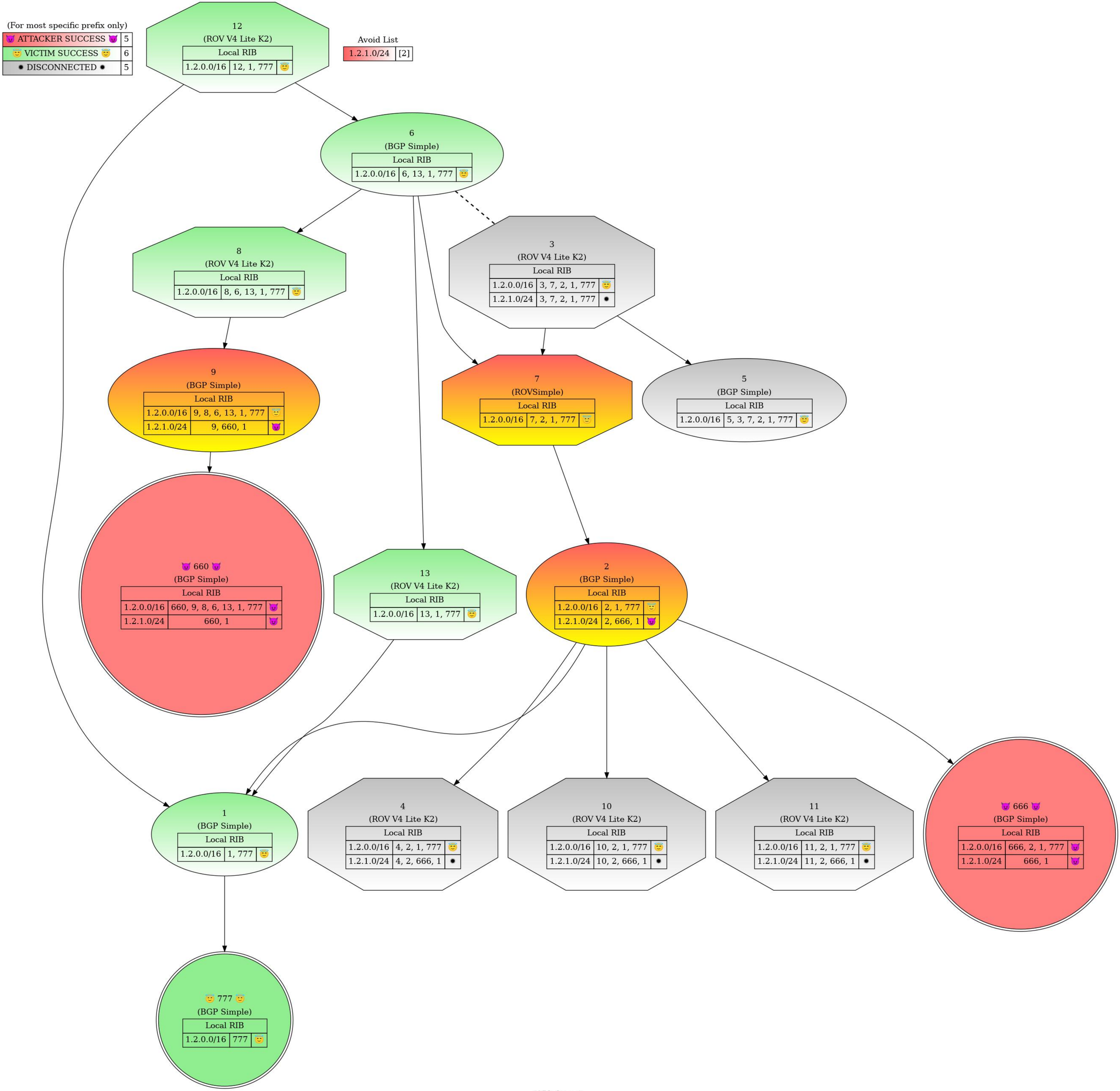
(152 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



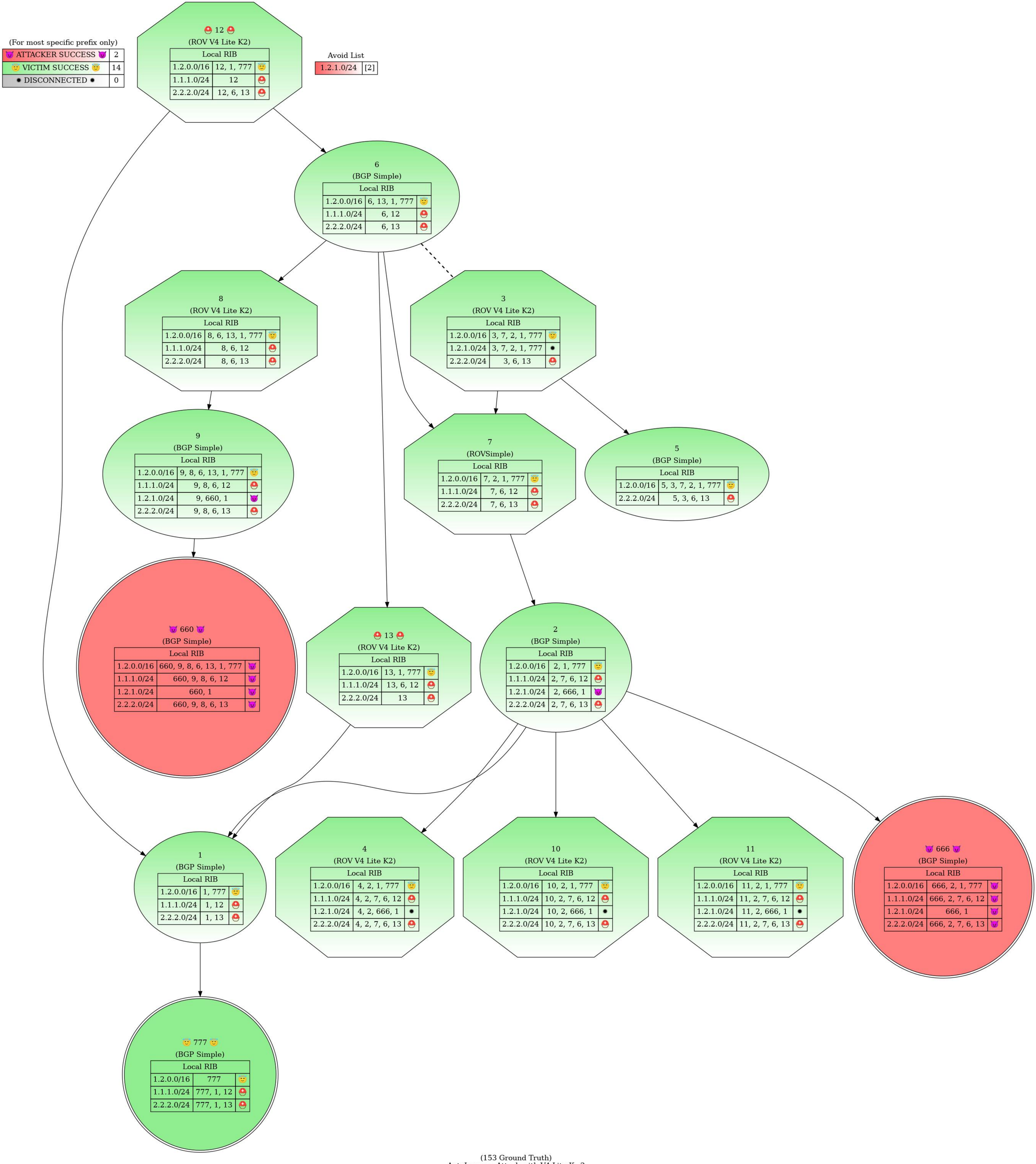
(152 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



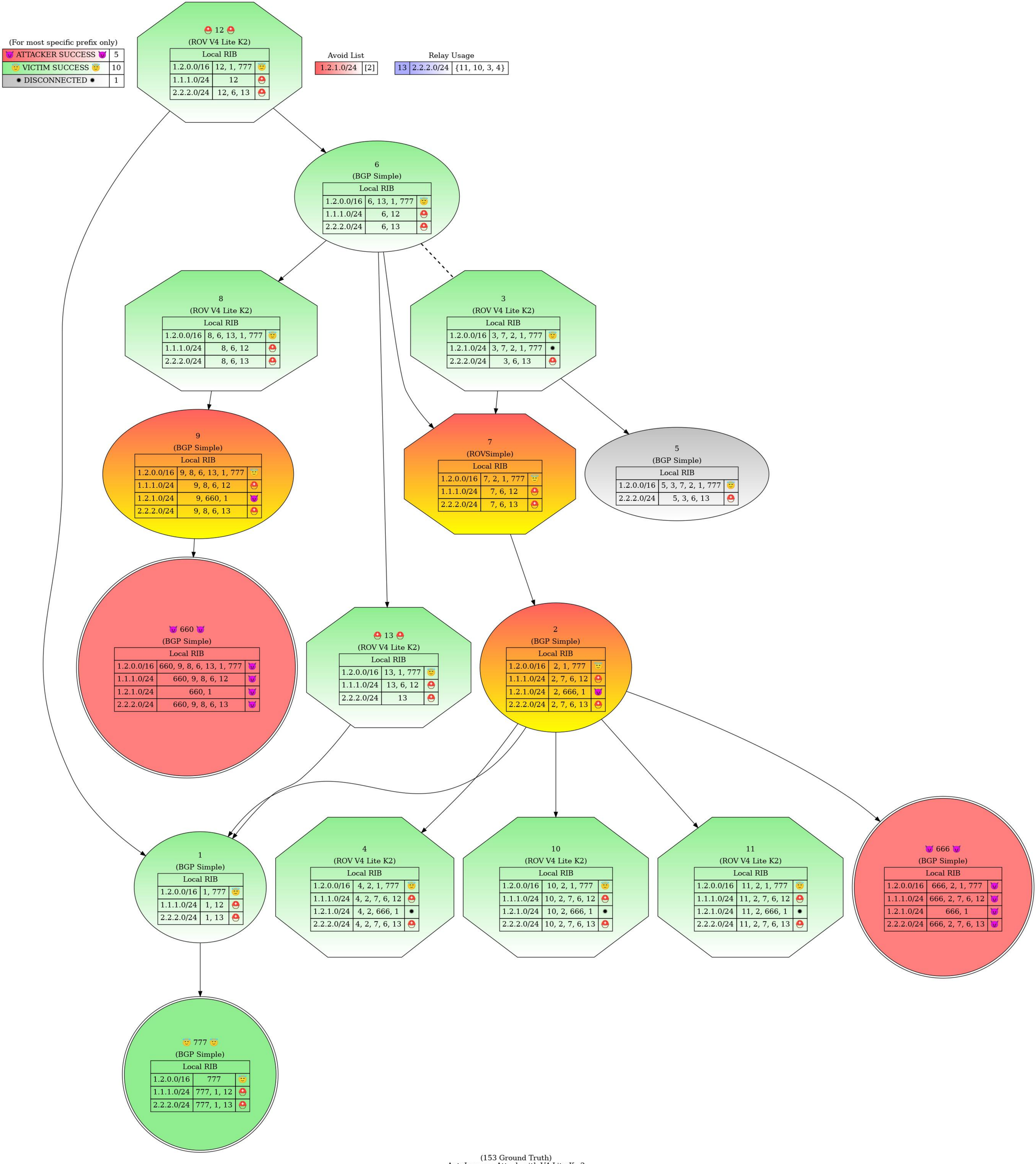
(152 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



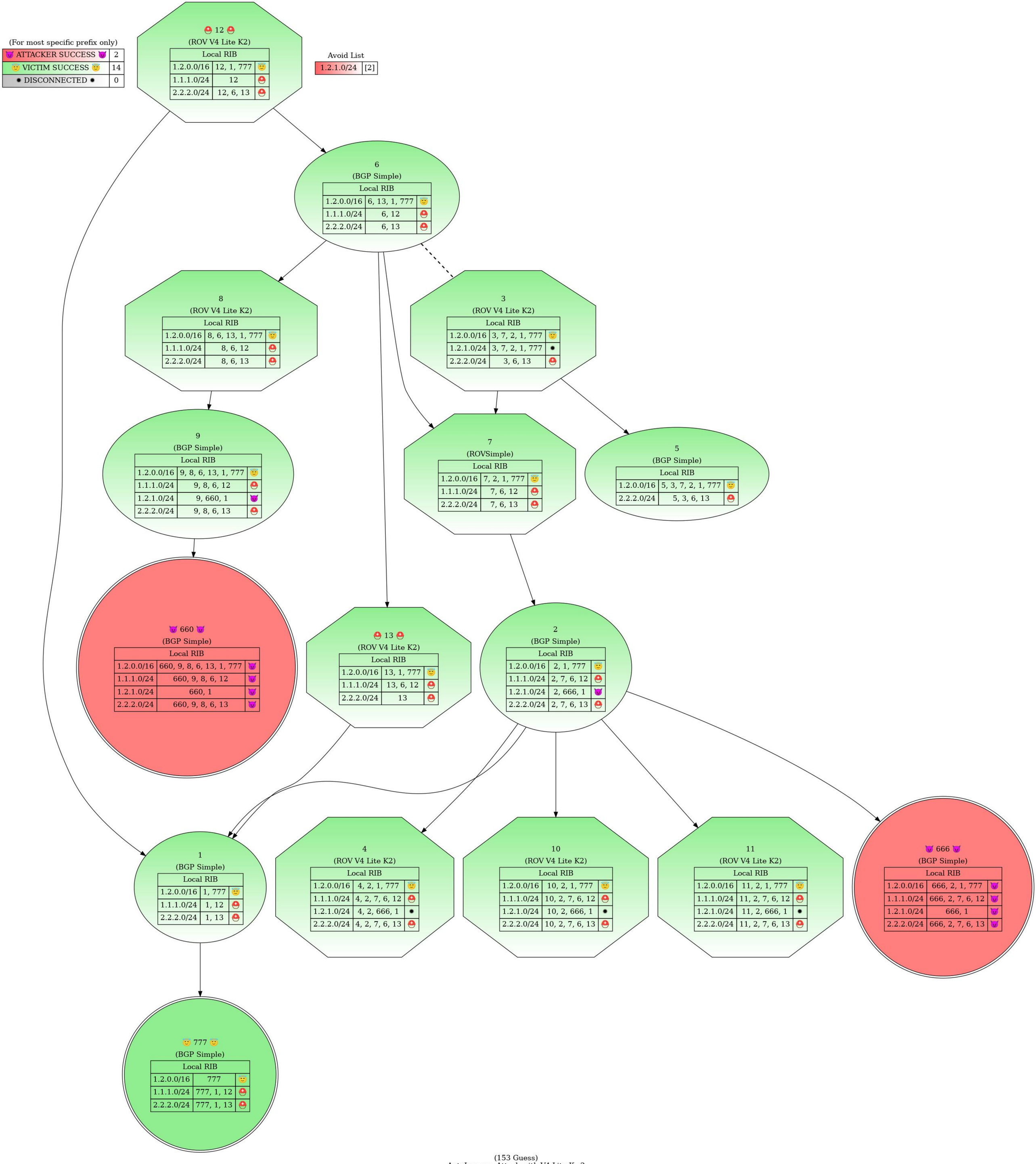
(152 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



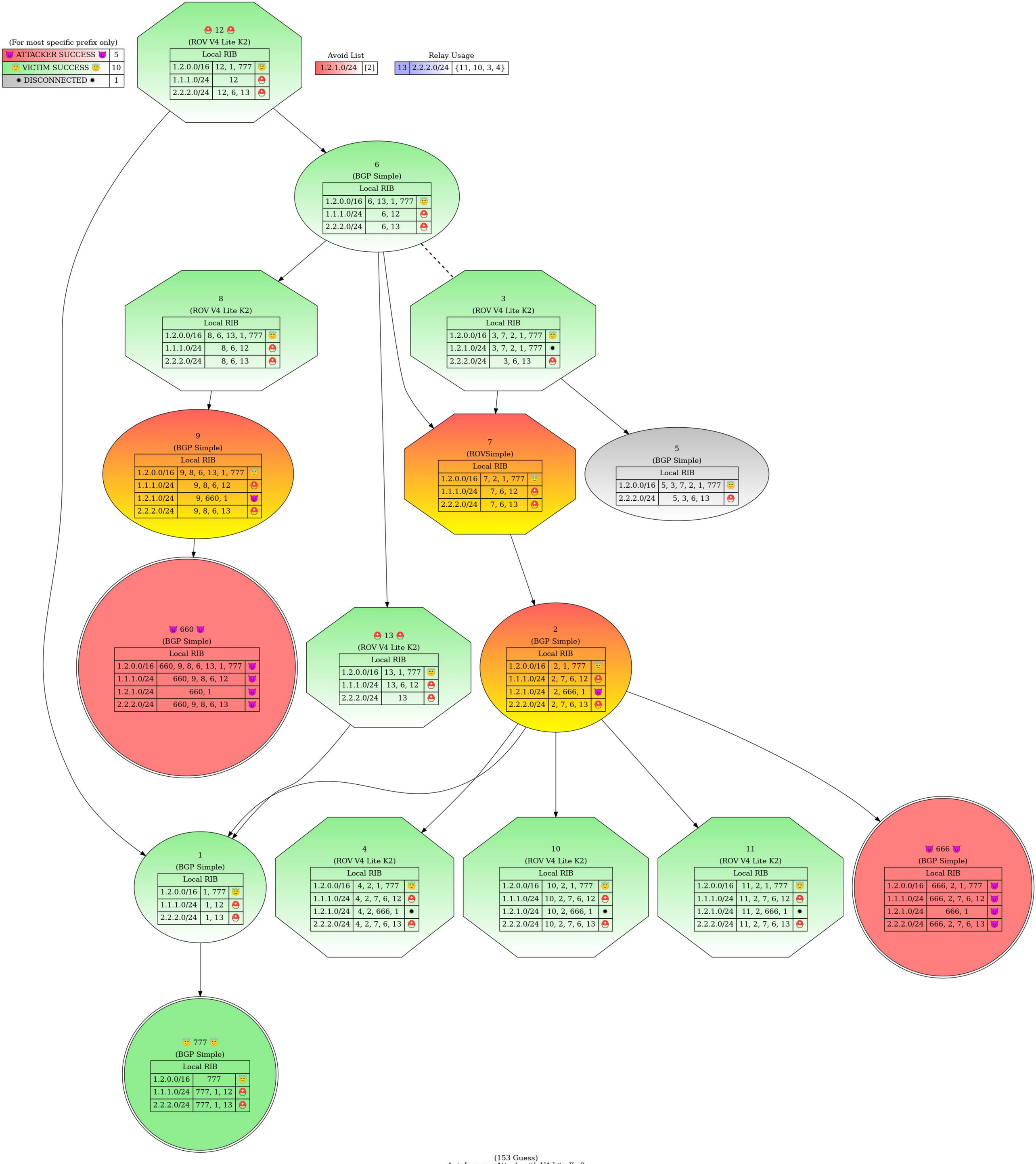
(153 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



(153 Ground Truth)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24



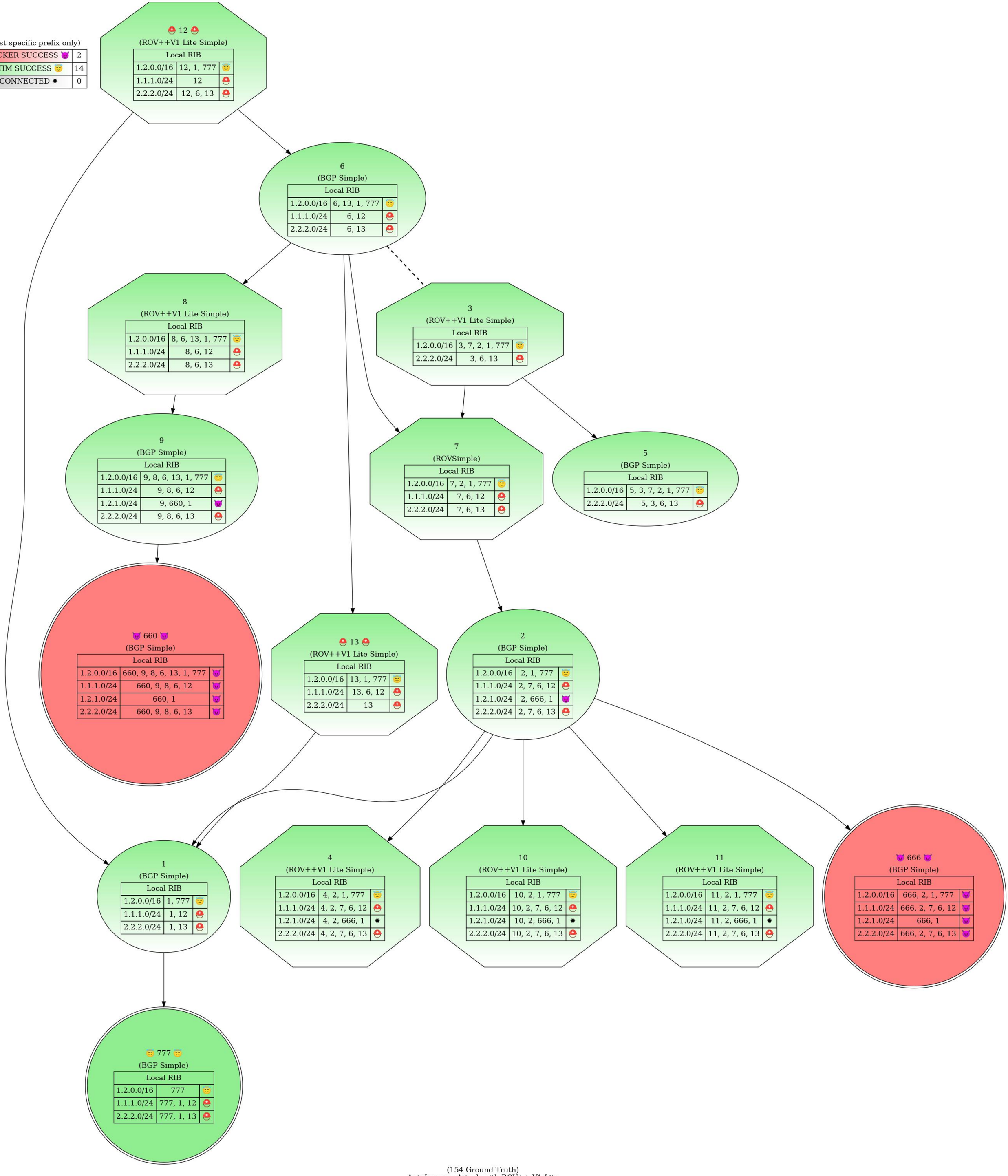
(153 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.0.0/16



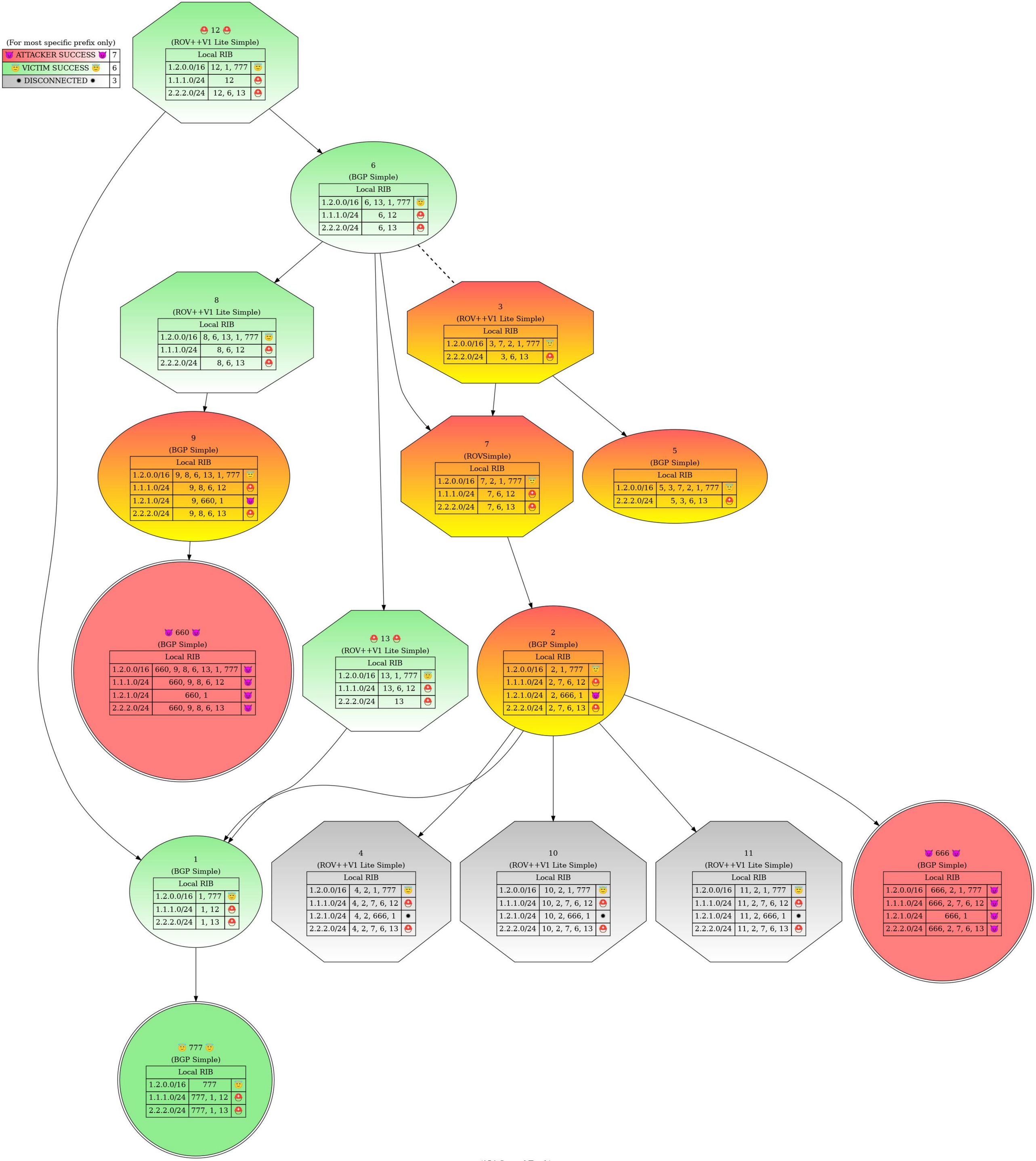
(153 Guess)
AutoImmune Attack with V4 Lite K=2
Traceback for 1.2.1.0/24

(For most specific prefix only)

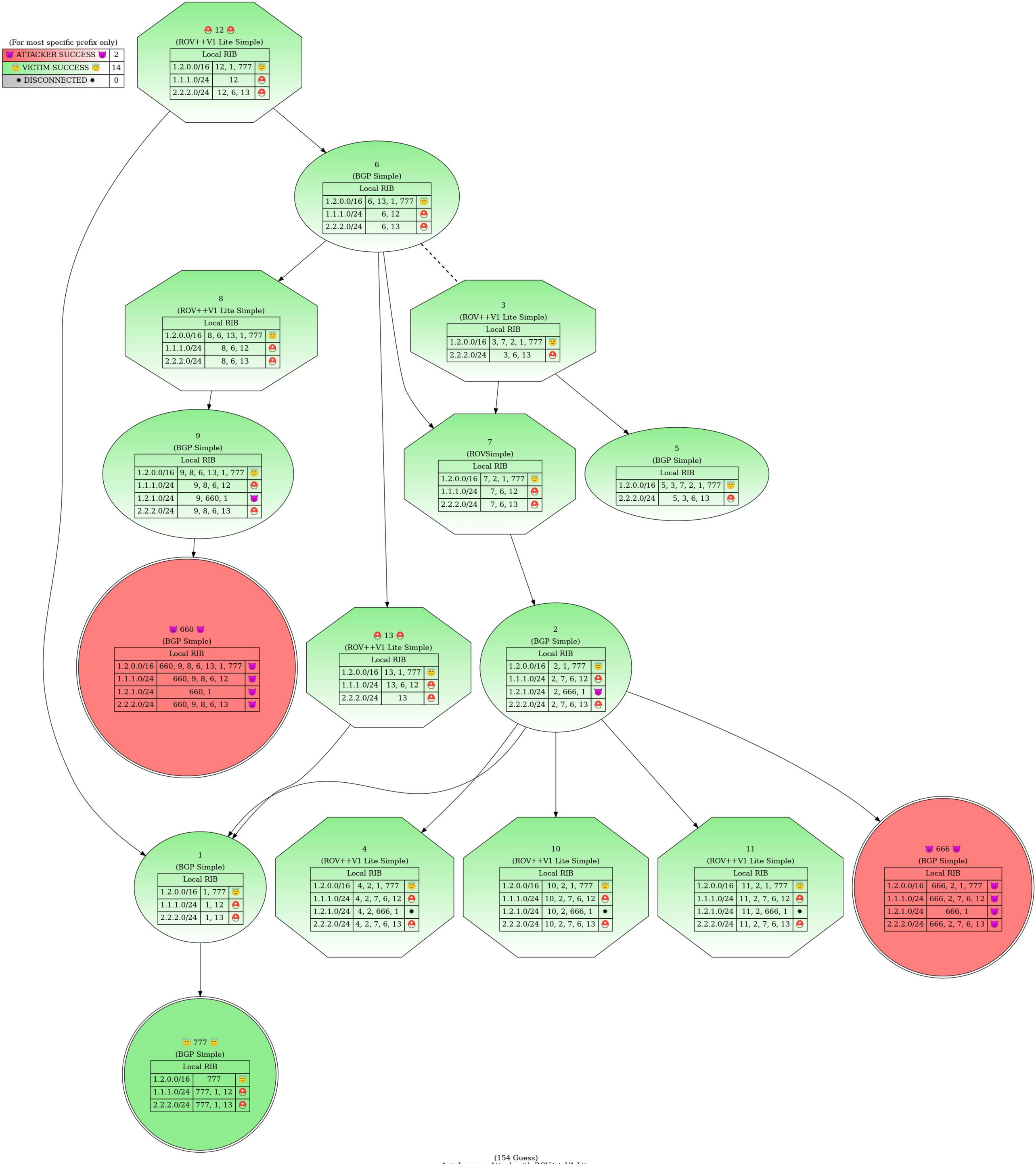
😈 ATTACKER SUCCESS 😈	2
😇 VICTIM SUCCESS 😇	14
✹ DISCONNECTED ✹	0



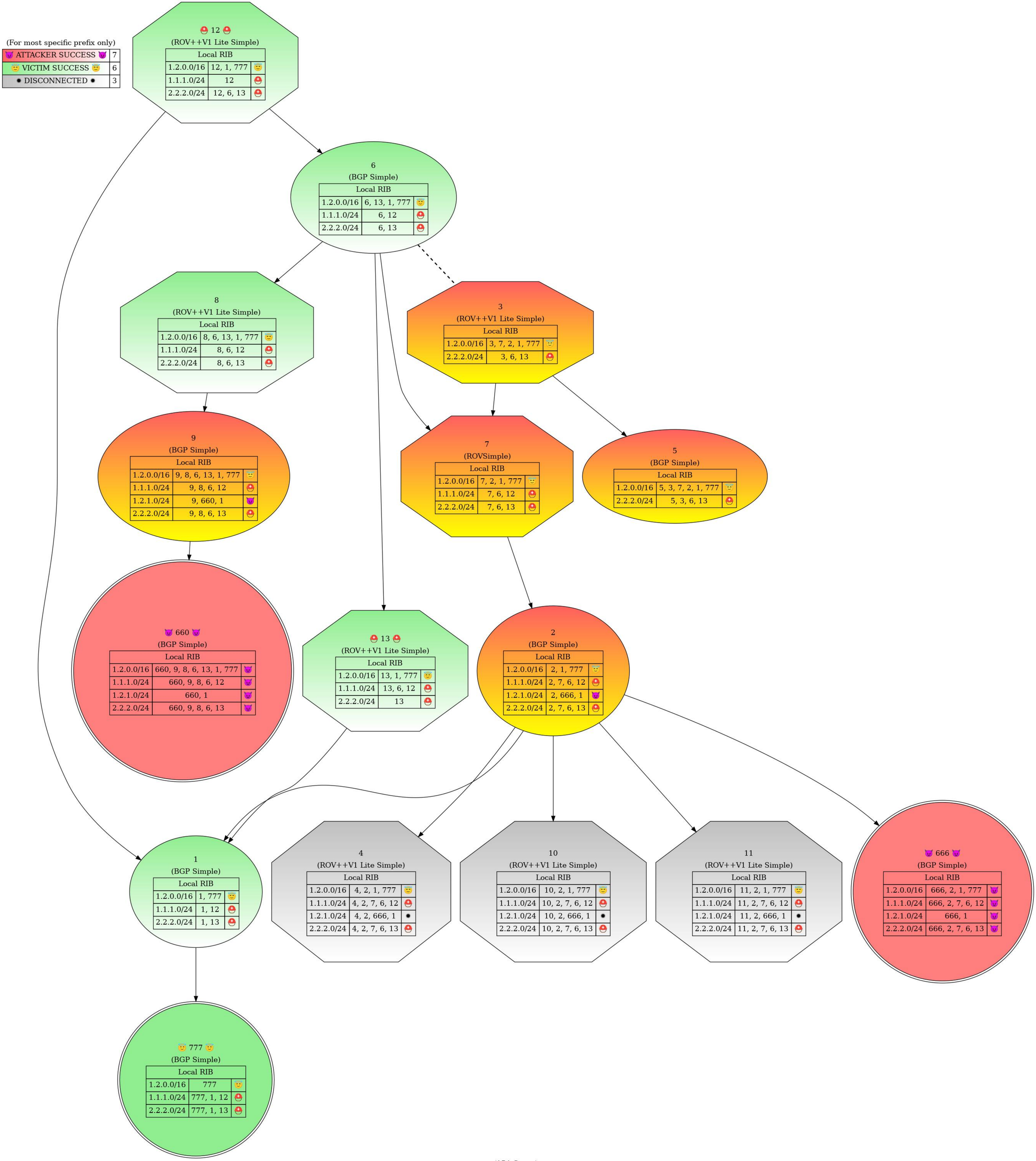
(154 Ground Truth)
AutoImmune Attack with ROV++ V1 Lite
Traceback for 1.2.0.0/16



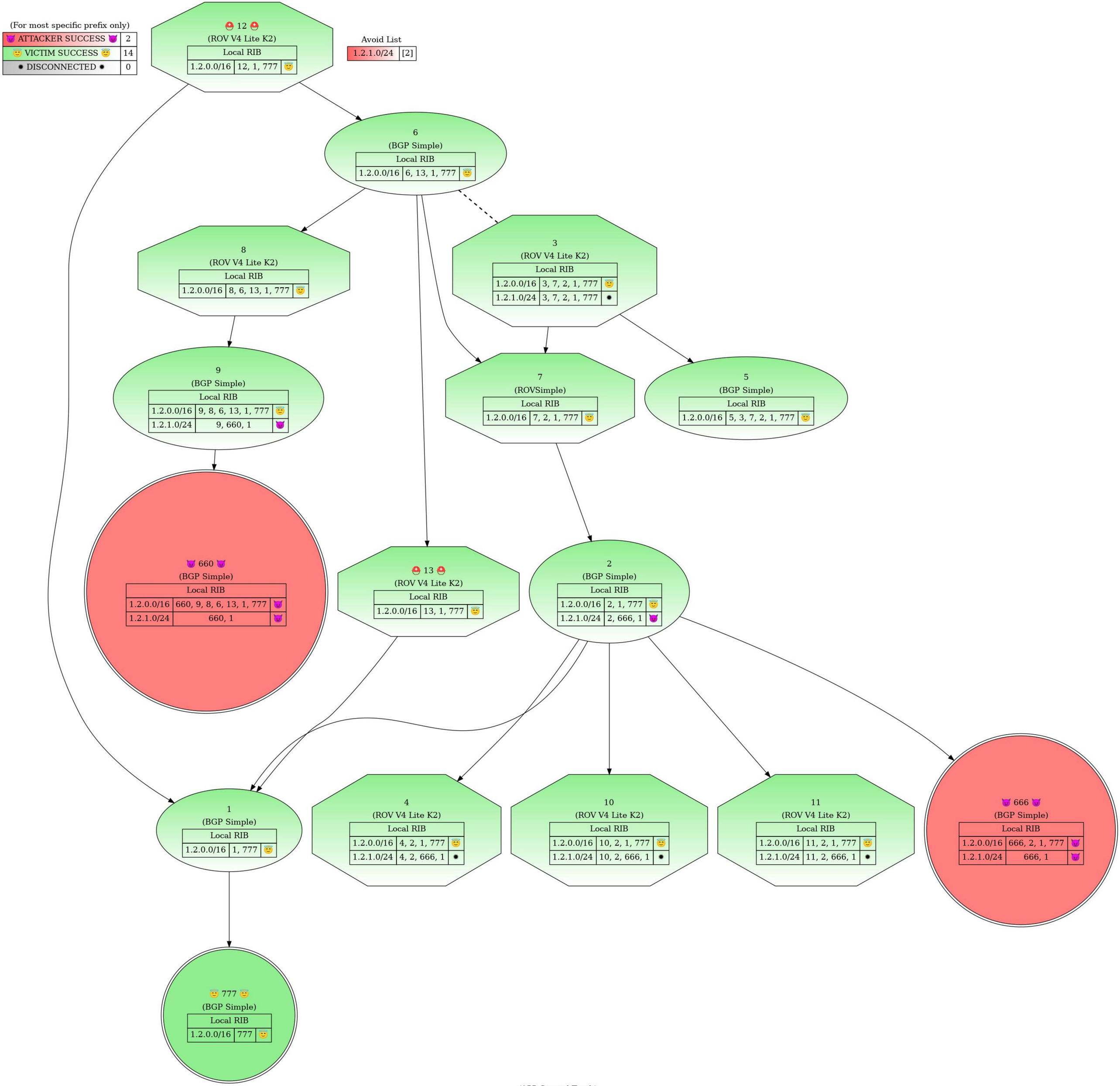
(154 Ground Truth)
AutoImmune Attack with ROV++ V1 Lite
Traceback for 1.2.1.0/24



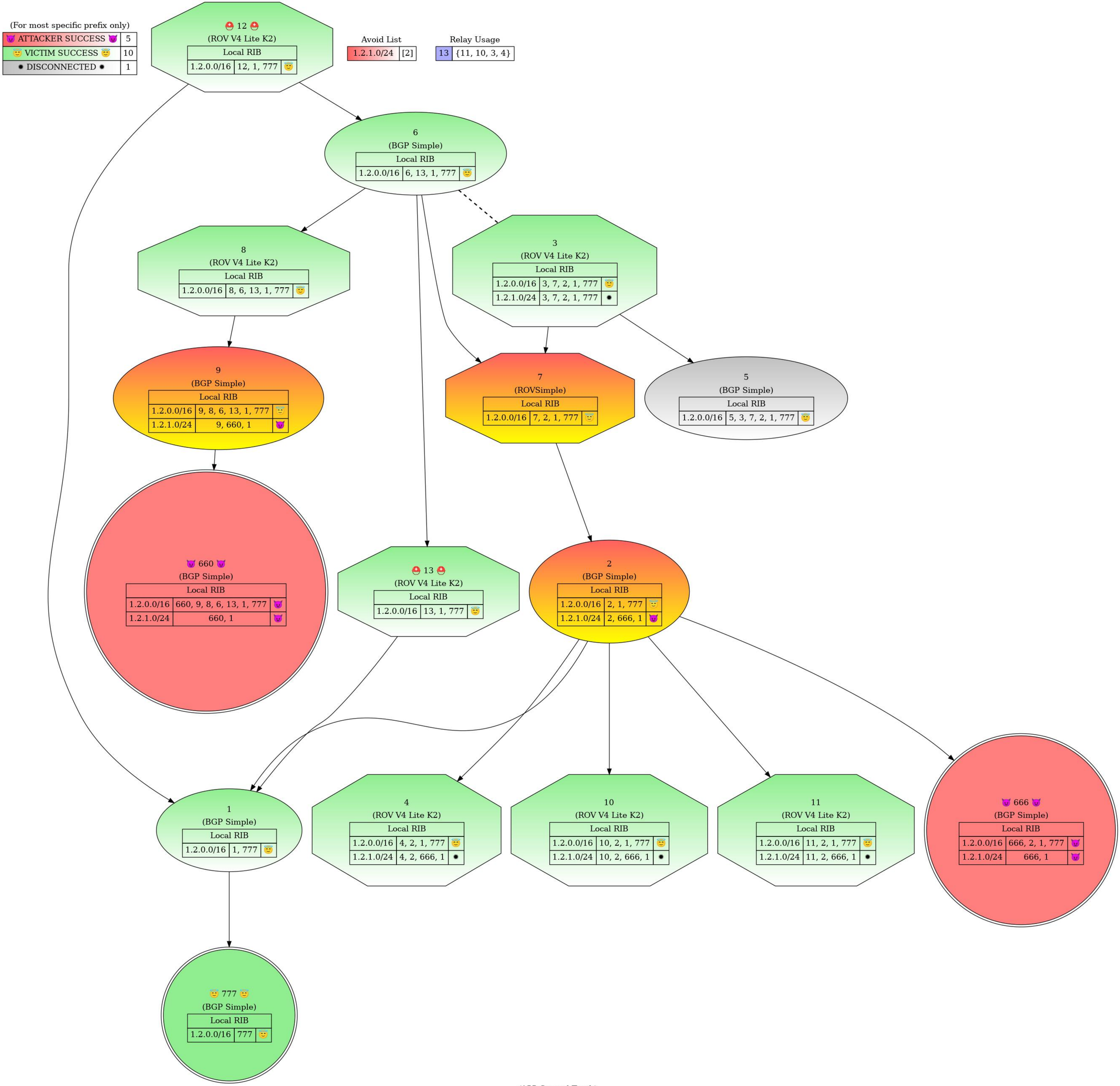
(154 Guess)
AutoImmune Attack with ROV++ V1 Lite
Traceback for 1.2.0.0/16



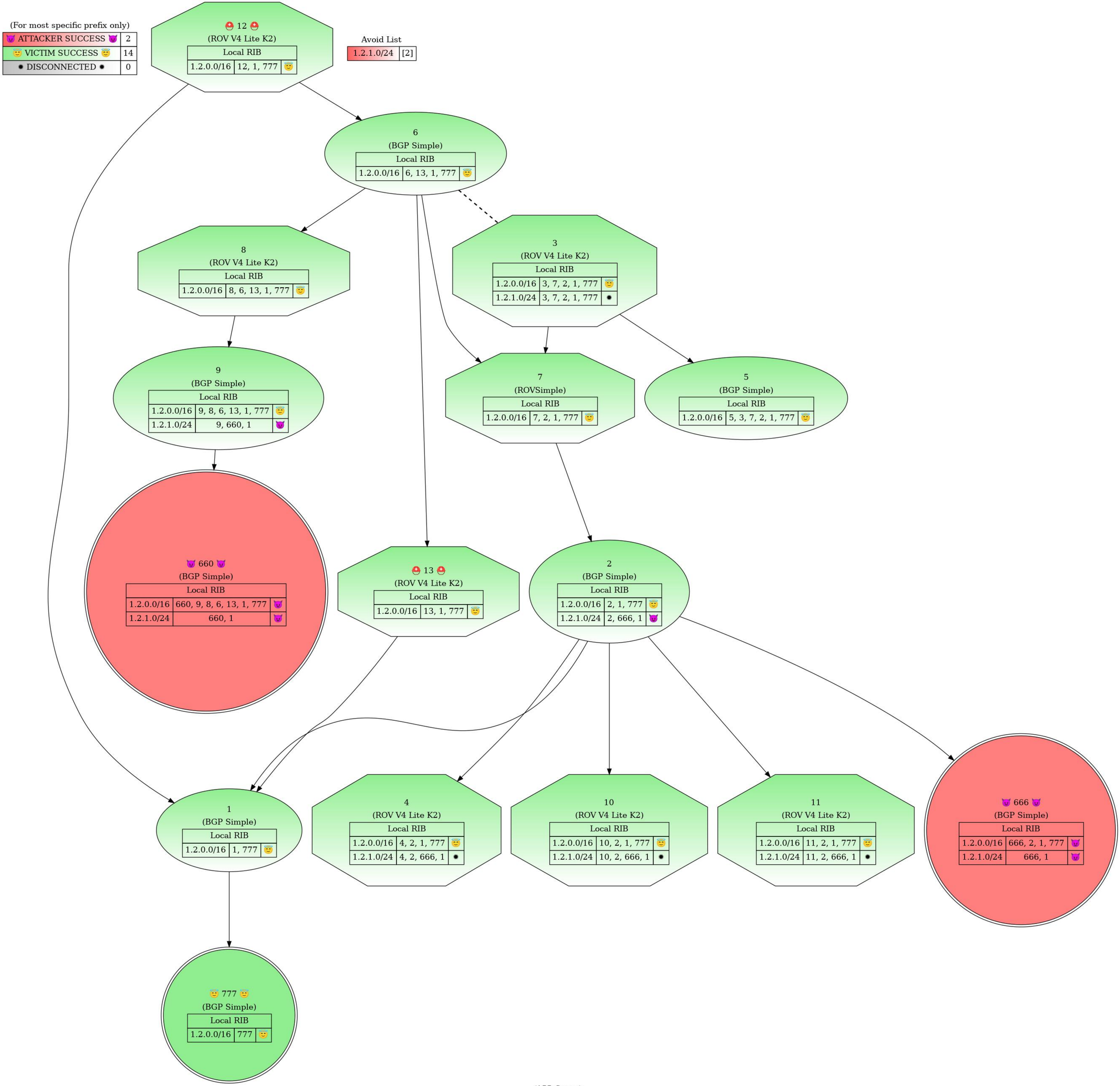
(154 Guess)
AutoImmune Attack with ROV++ V1 Lite
Traceback for 1.2.1.0/24



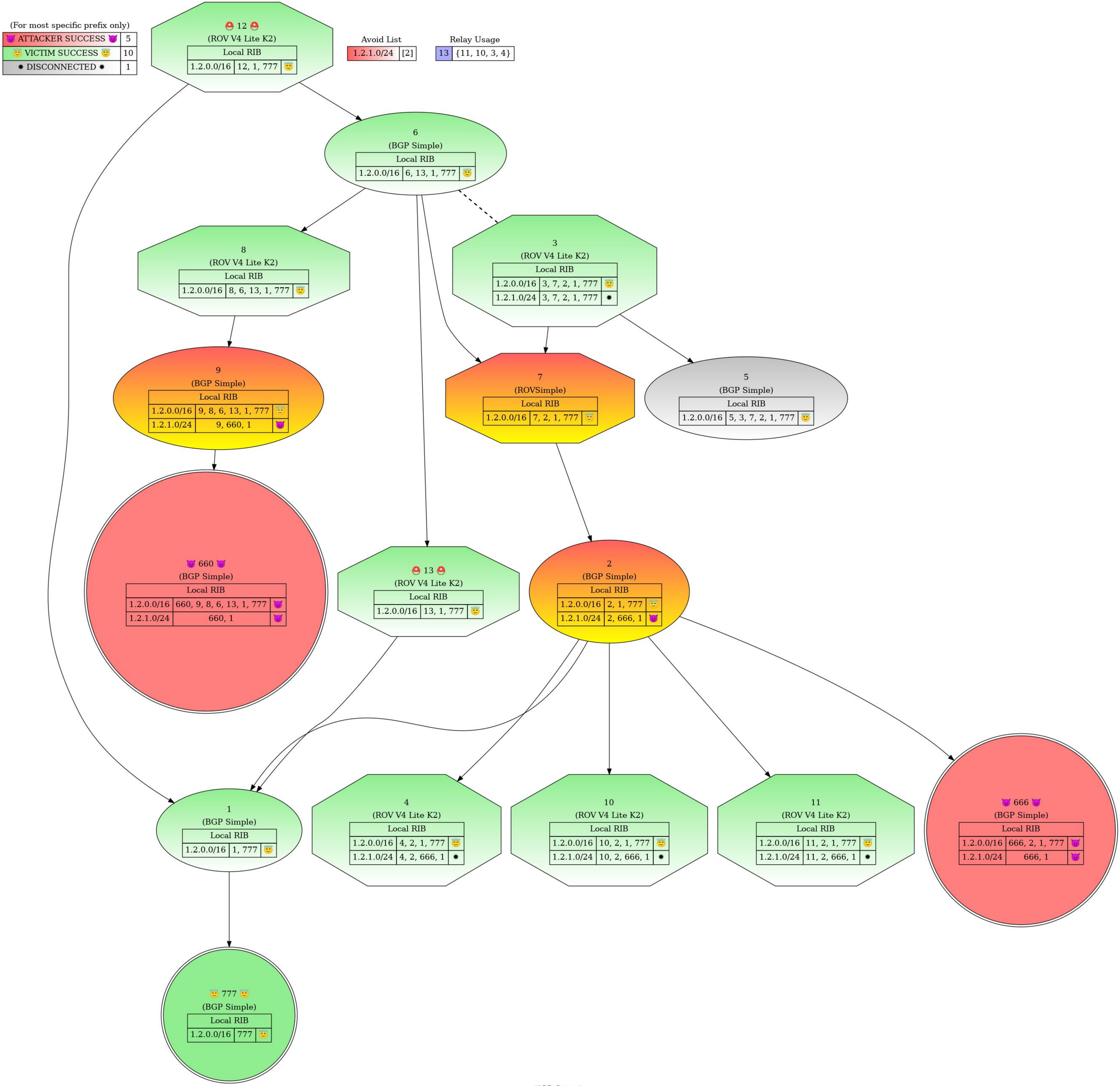
(155 Ground Truth)
AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.0.0/16



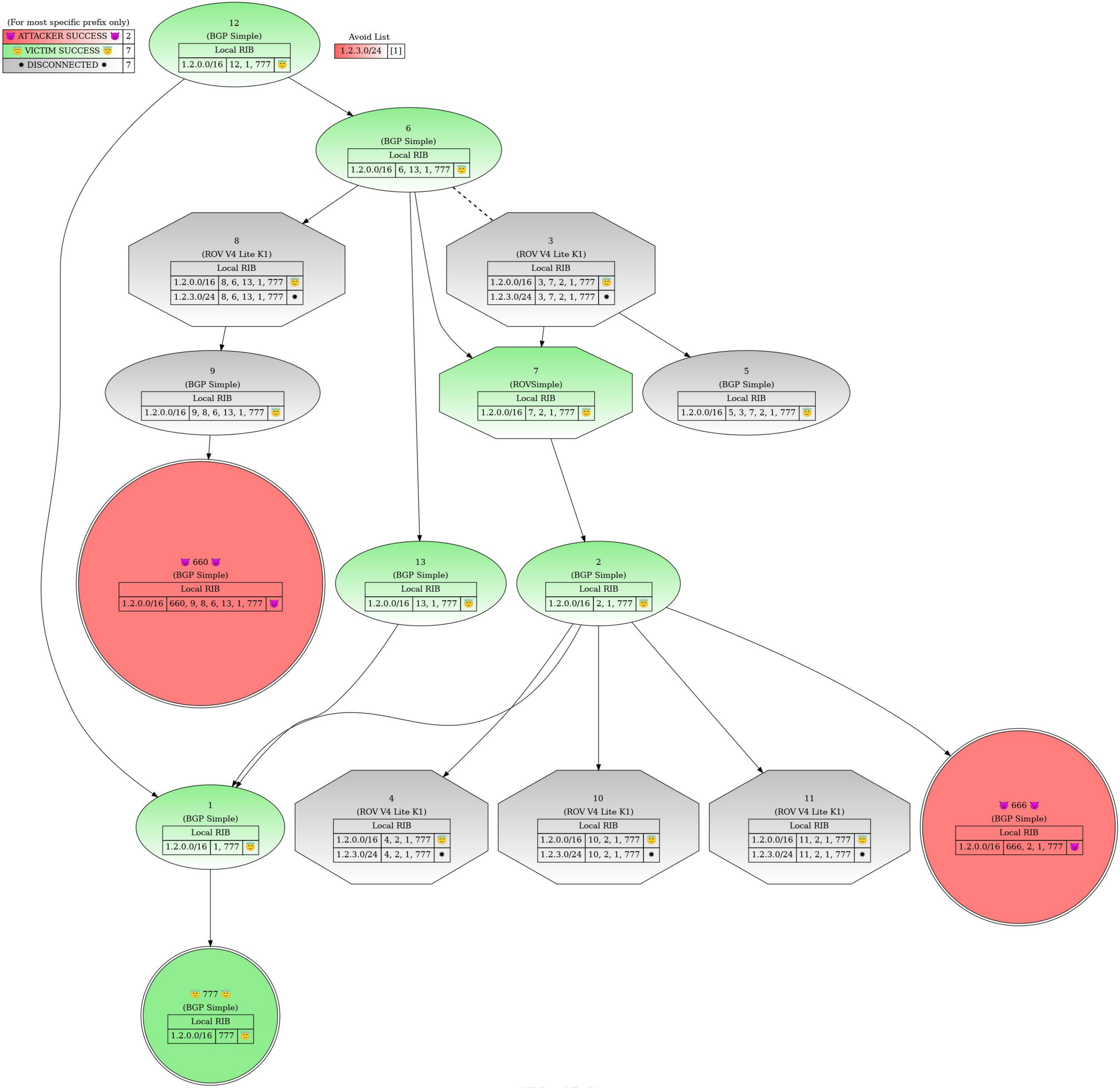
(155 Ground Truth)
AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.1.0/24



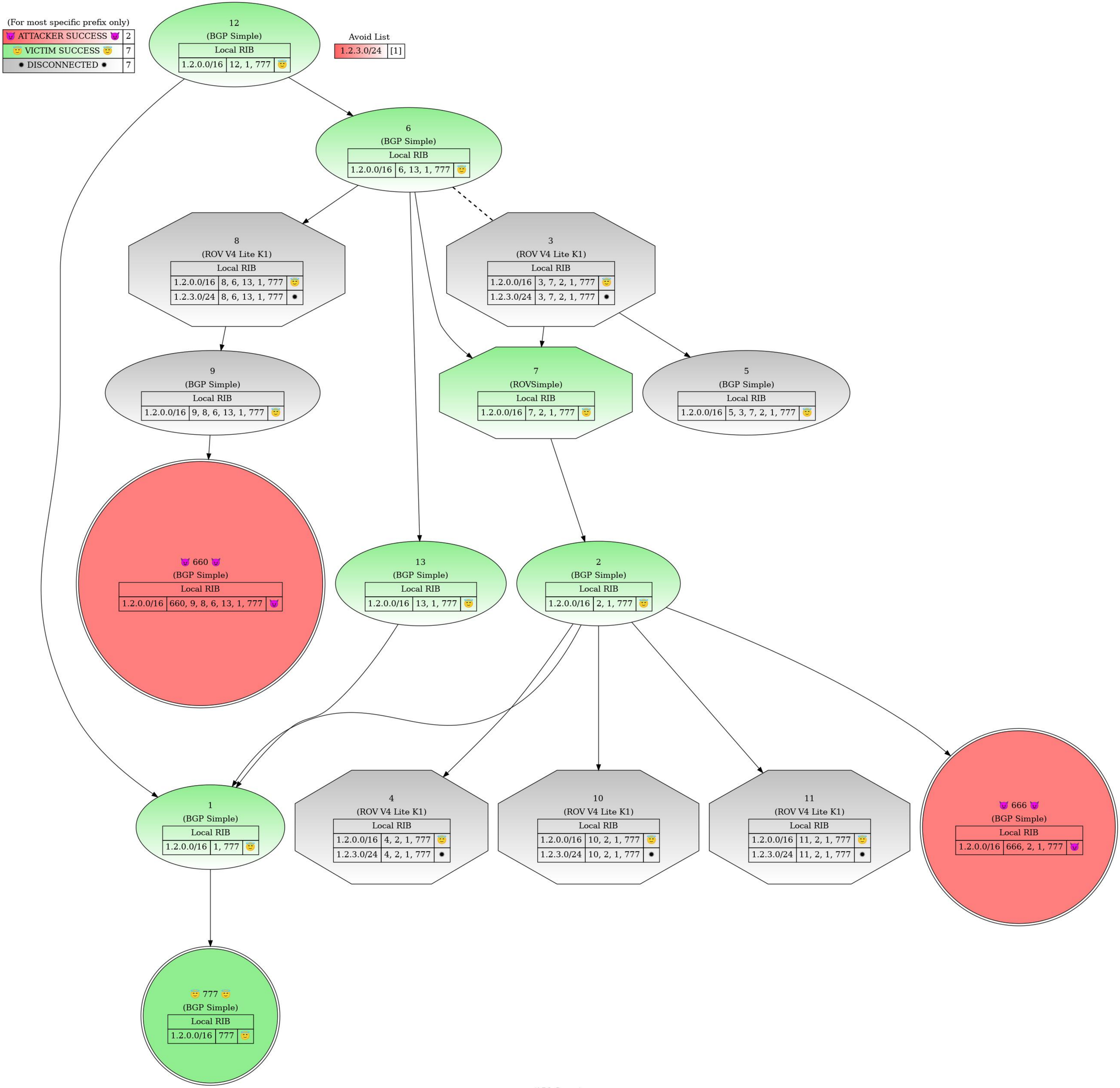
(155 Guess)
AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.0.0/16



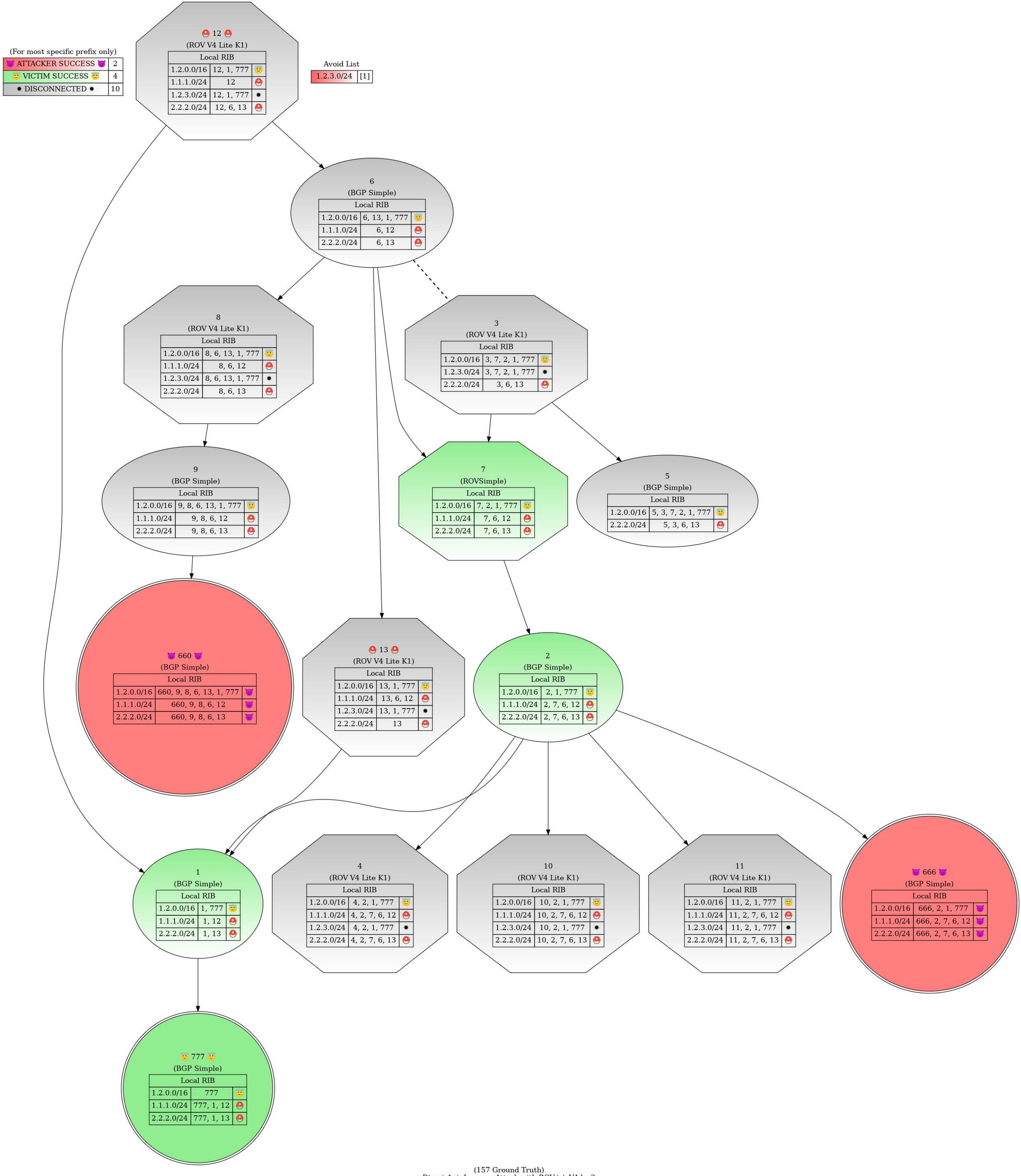
(155 Guess)
AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.1.0/24



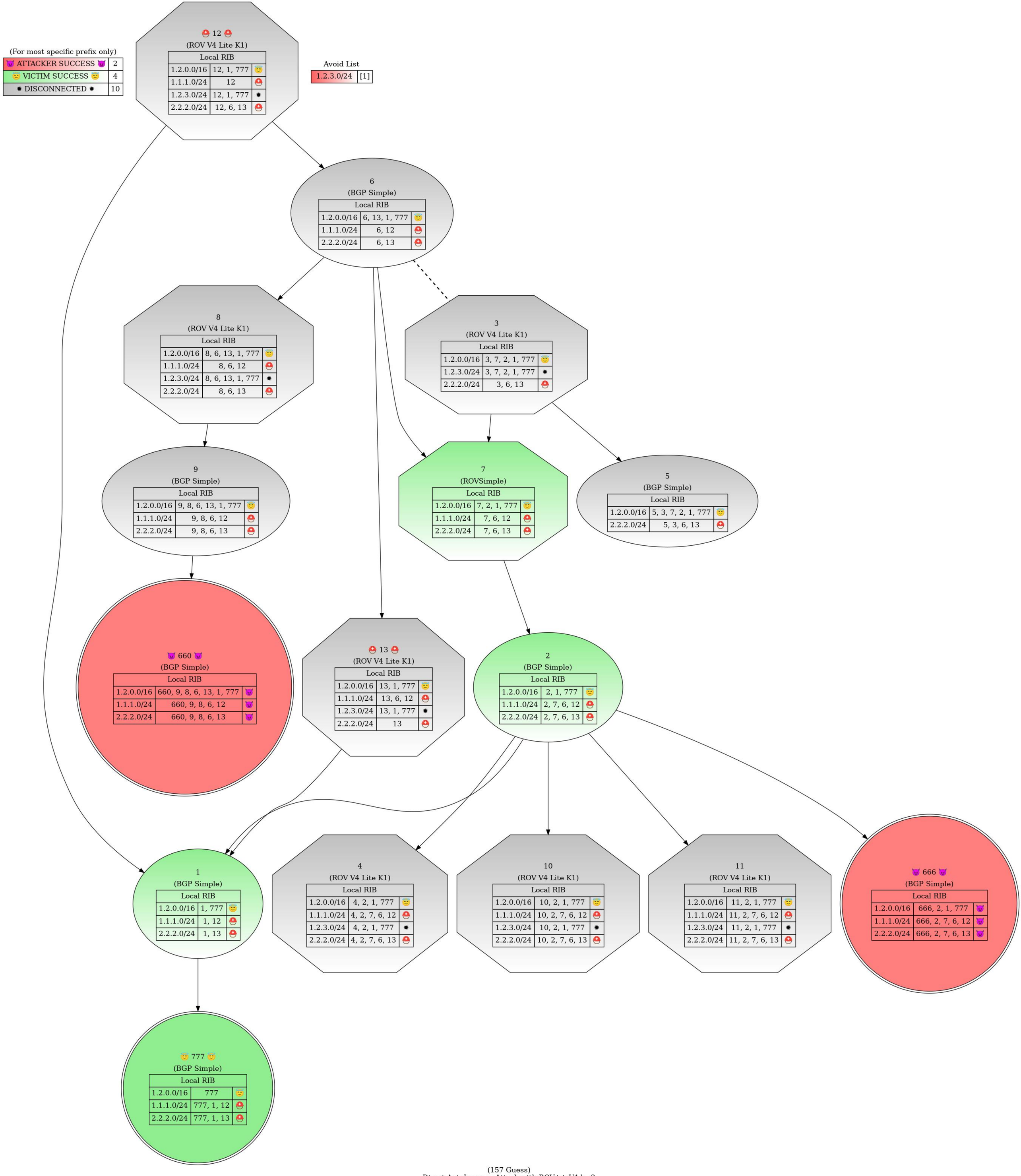
(156 Ground Truth)
Direct AutoImmune Attack with ROV++ V4 k=1
Traceback for 1.2.3.0/24



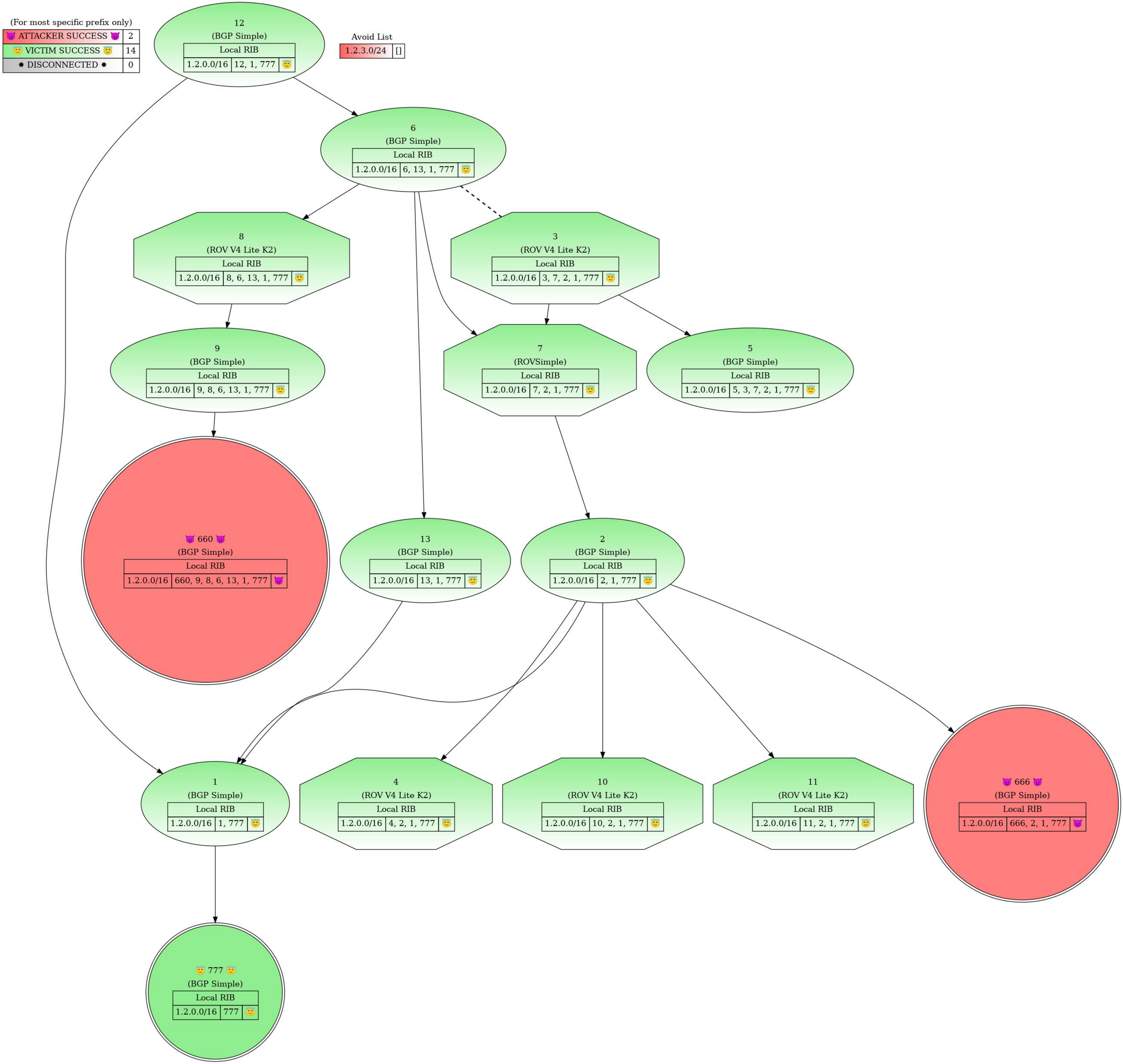
(156 Guess)
Direct AutoImmune Attack with ROV++ V4 k=1
Traceback for 1.2.3.0/24



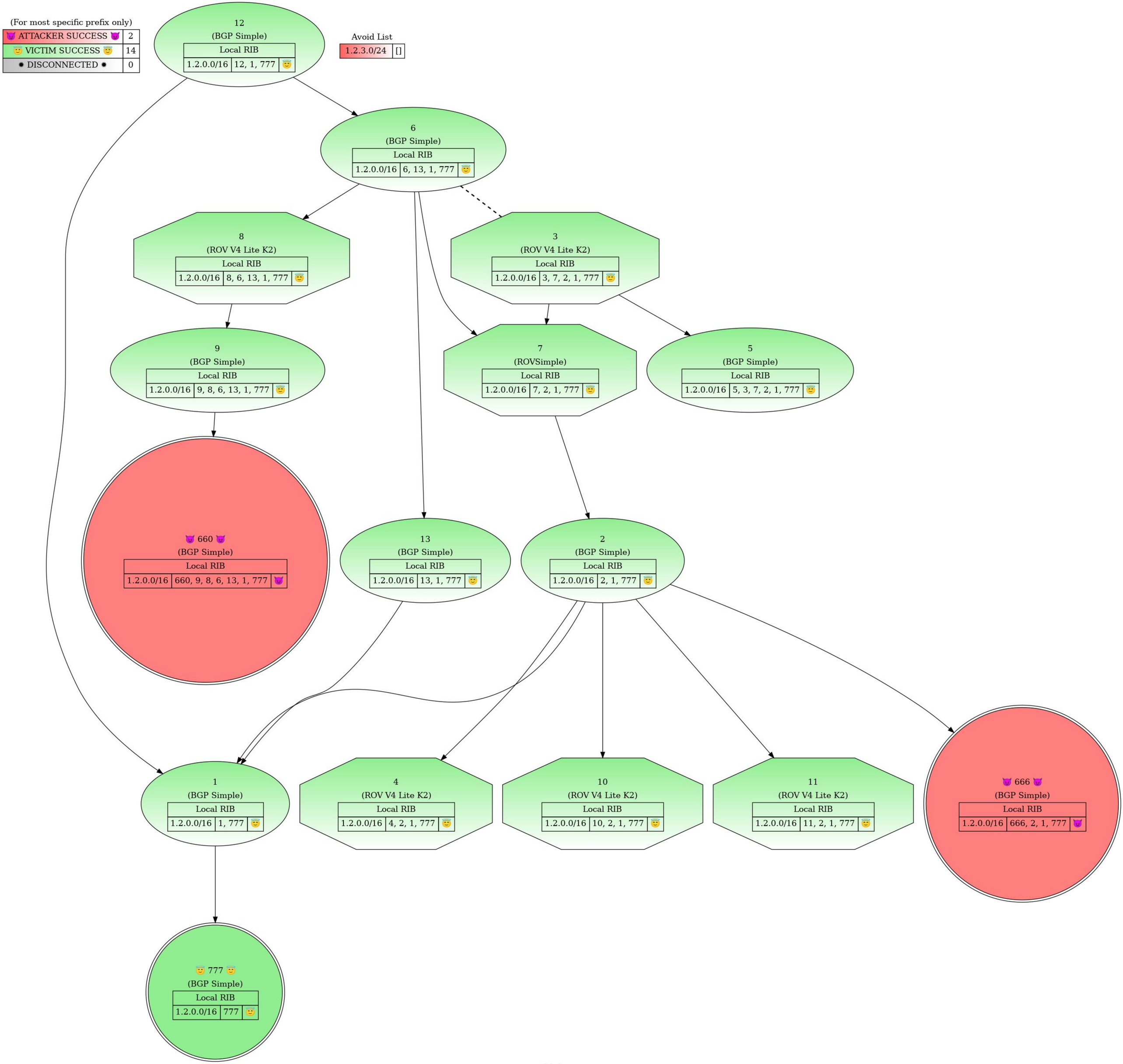
(157 Ground Truth)
Direct AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.3.0/24



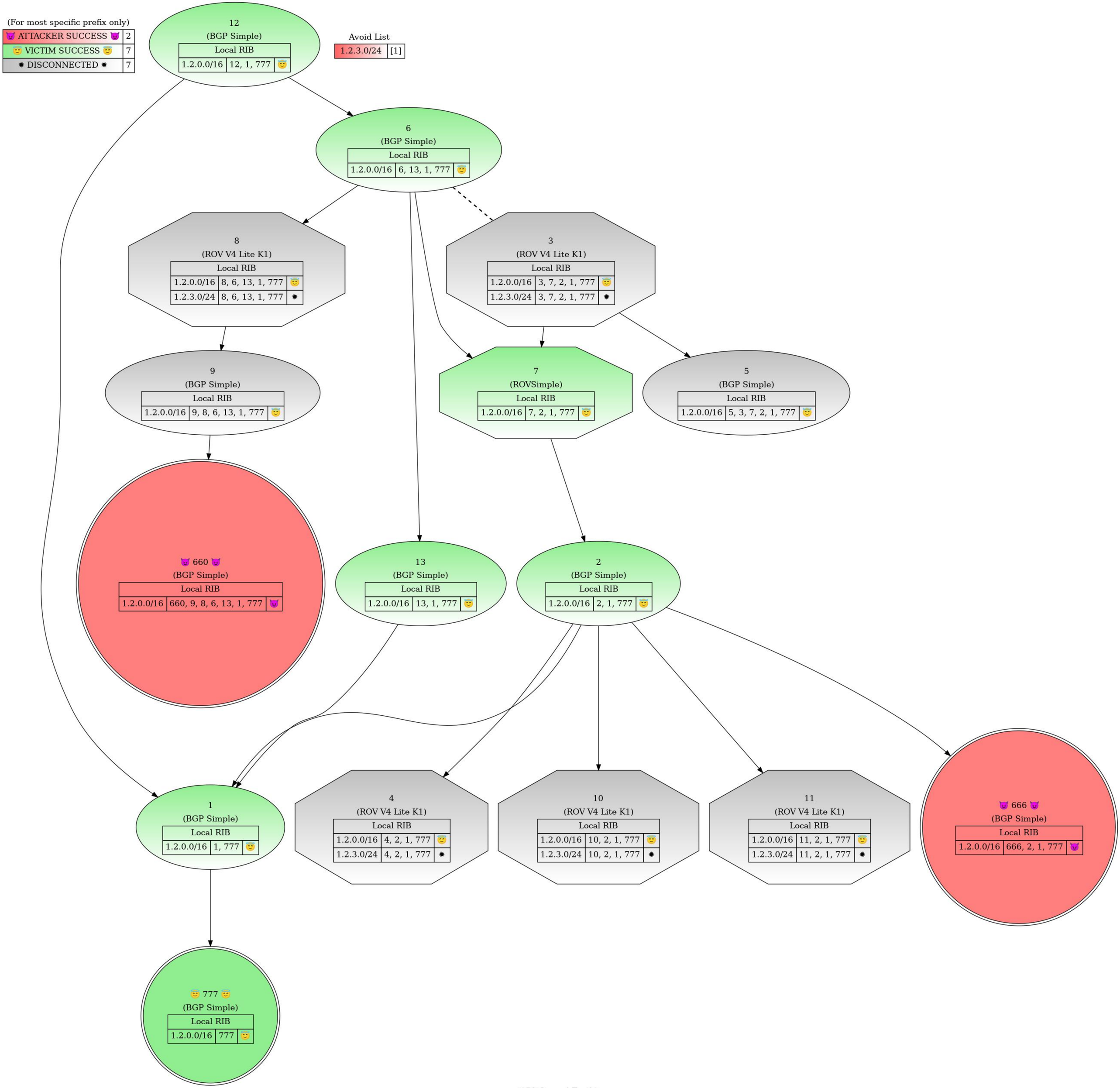
(157 Guess)
Direct AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.3.0/24



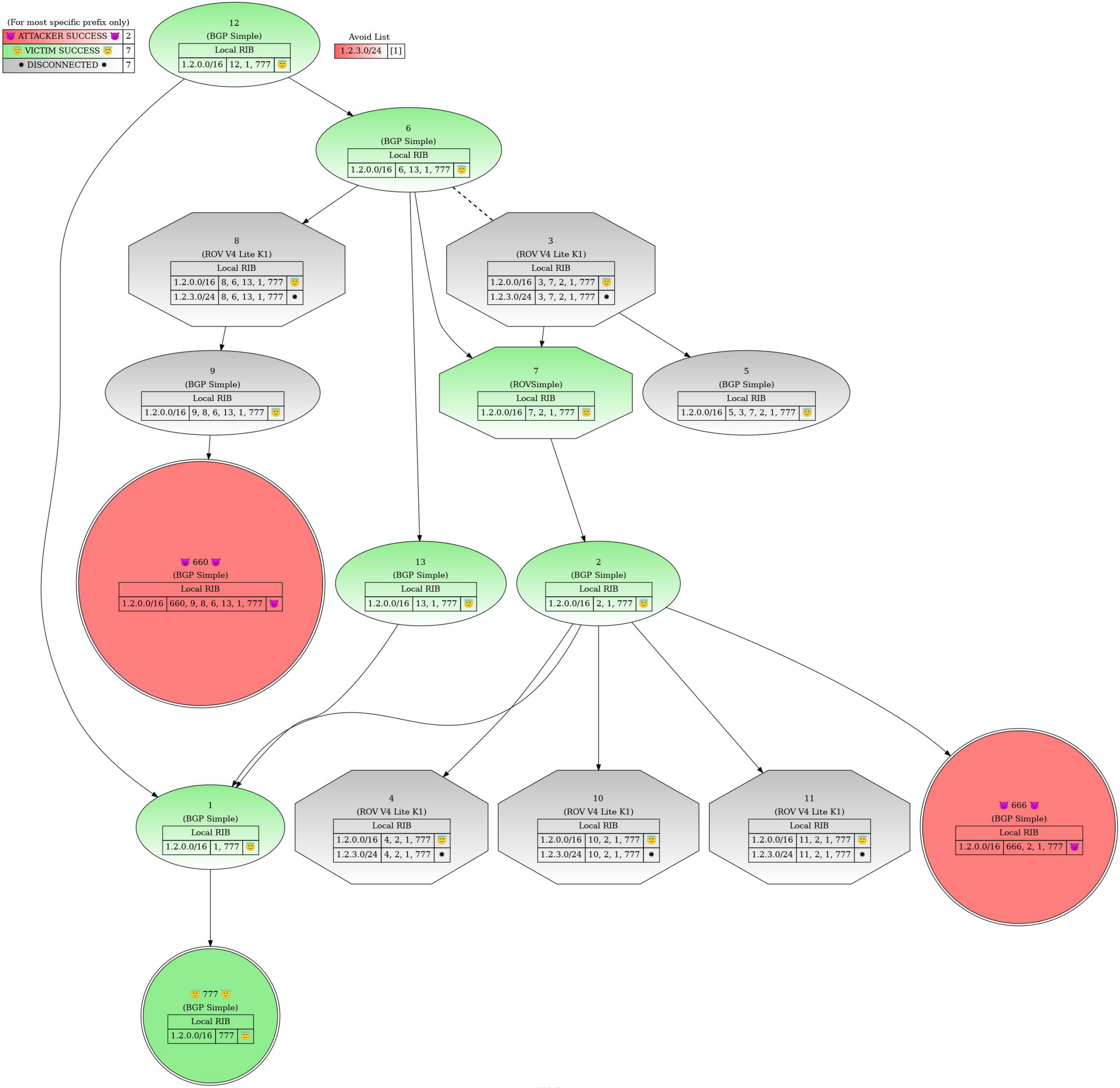
(158 Ground Truth)
Direct AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.3.0/24



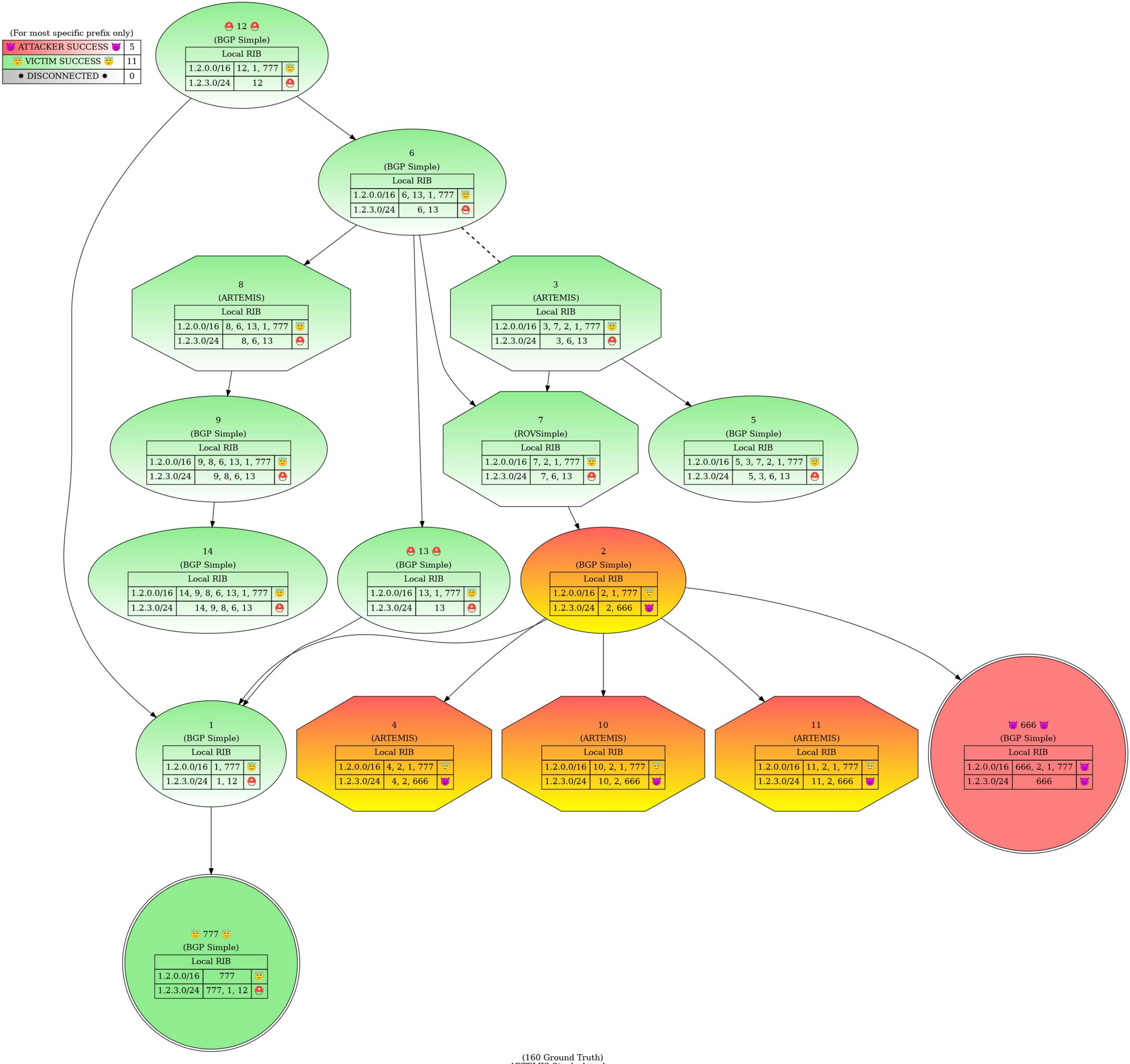
(158 Guess)
Direct AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.3.0/24



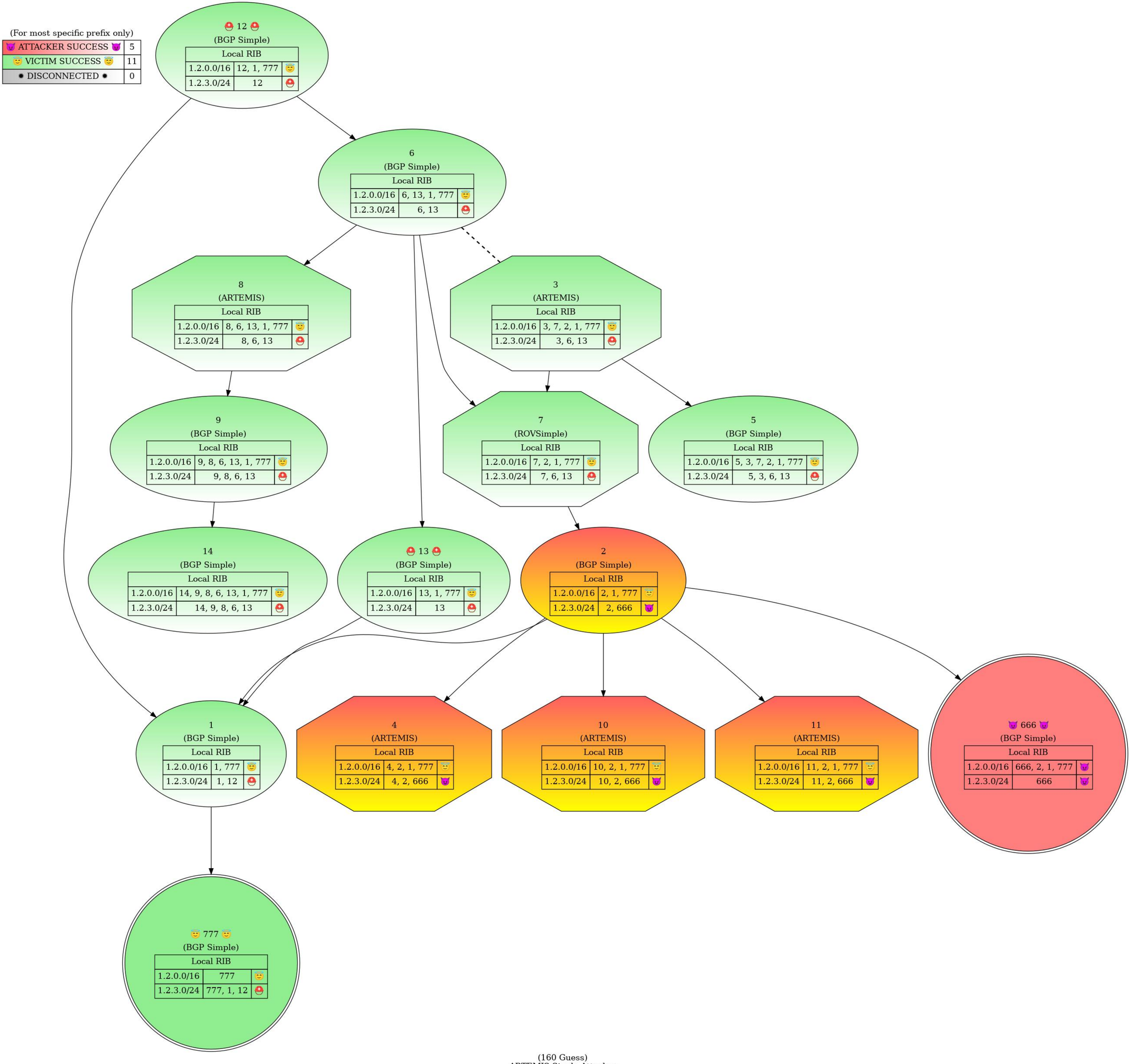
(159 Ground Truth)
Direct AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.3.0/24



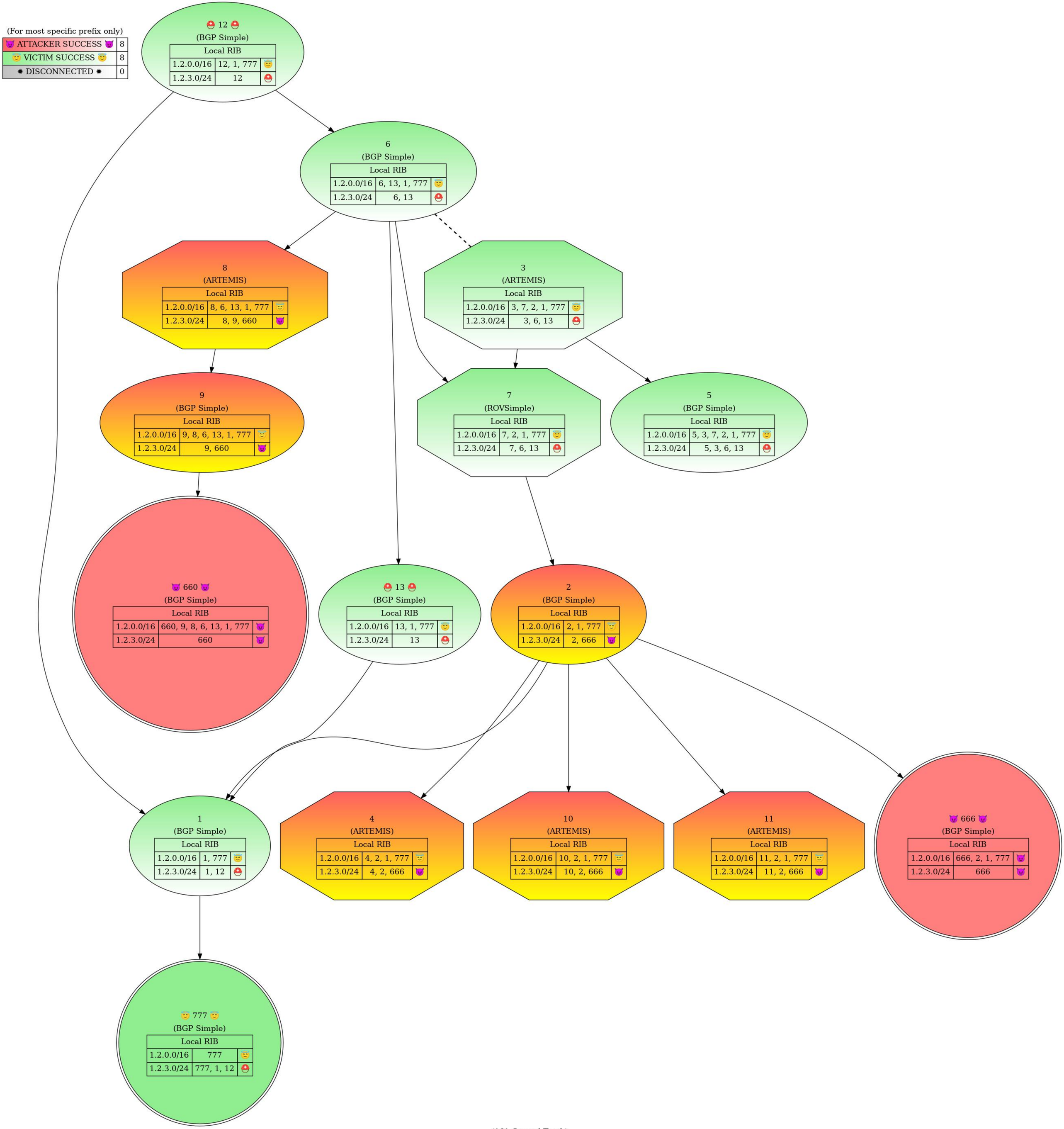
(159 Guess)
Direct AutoImmune Attack with ROV++ V4 k=2
Traceback for 1.2.3.0/24



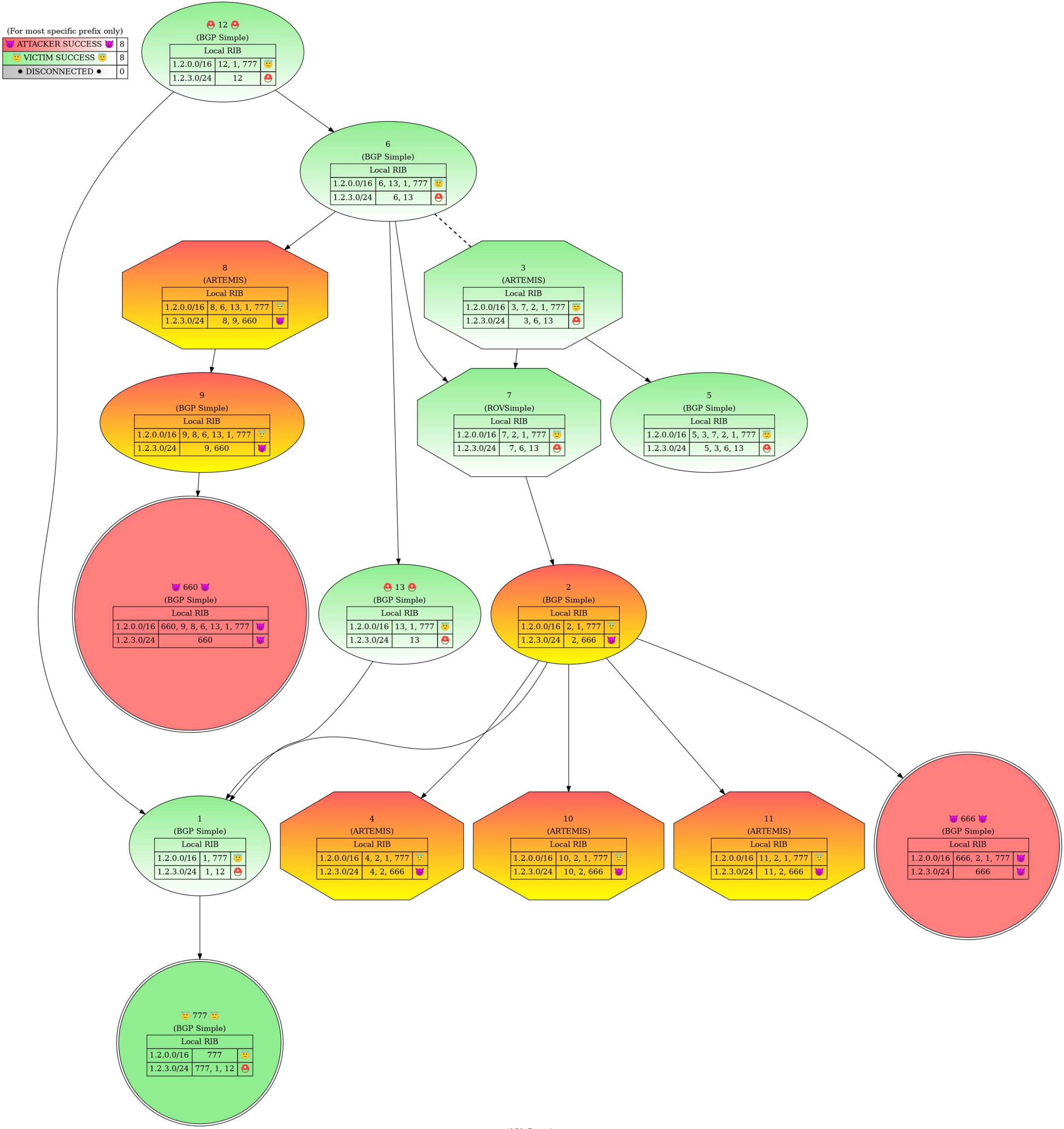
(160 Ground Truth)
ARTEMIS Single Attacker
Traceback for 1.2.3.0/24



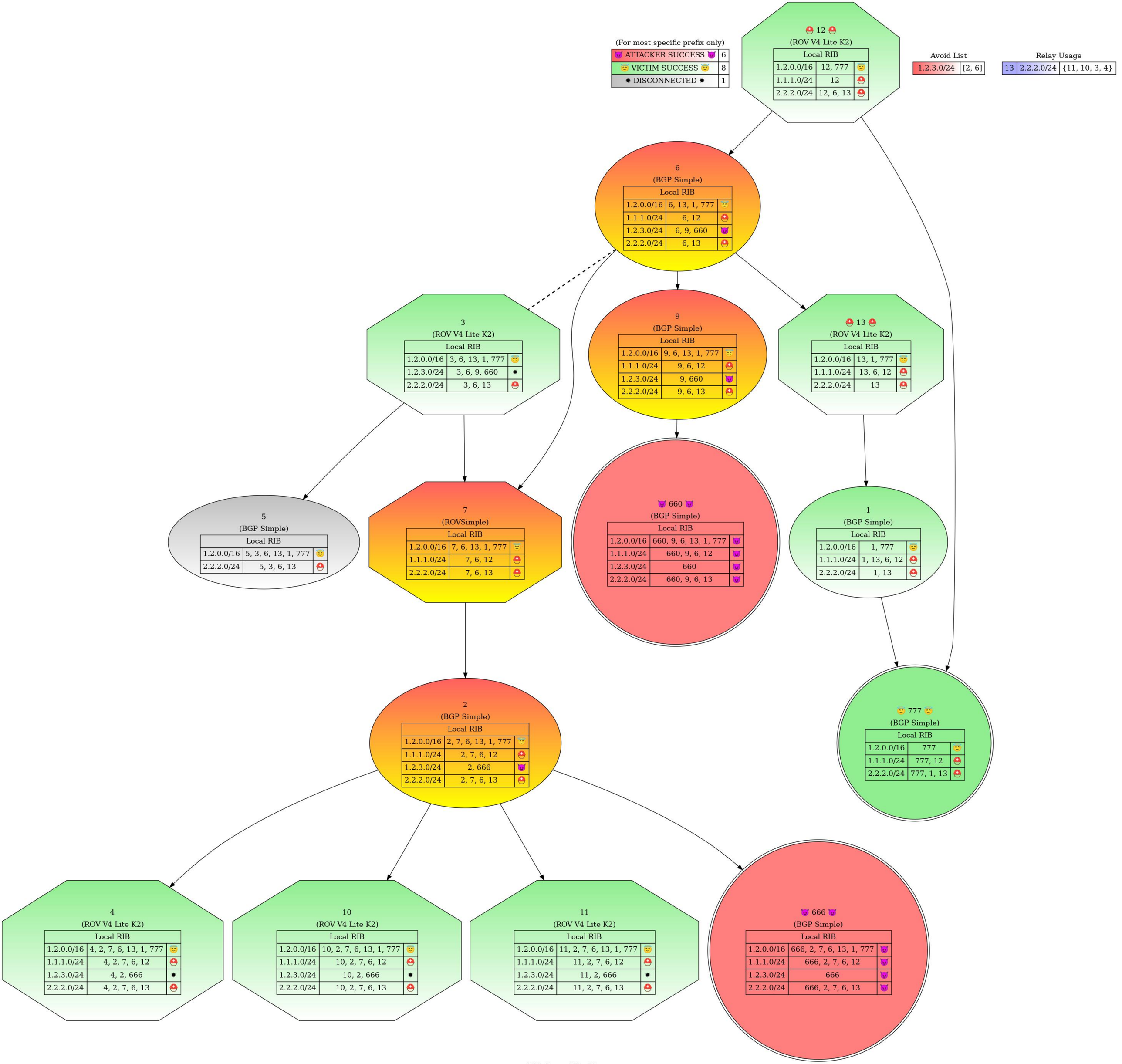
(160 Guess)
ARTEMIS Single Attacker
Traceback for 1.2.3.0/24



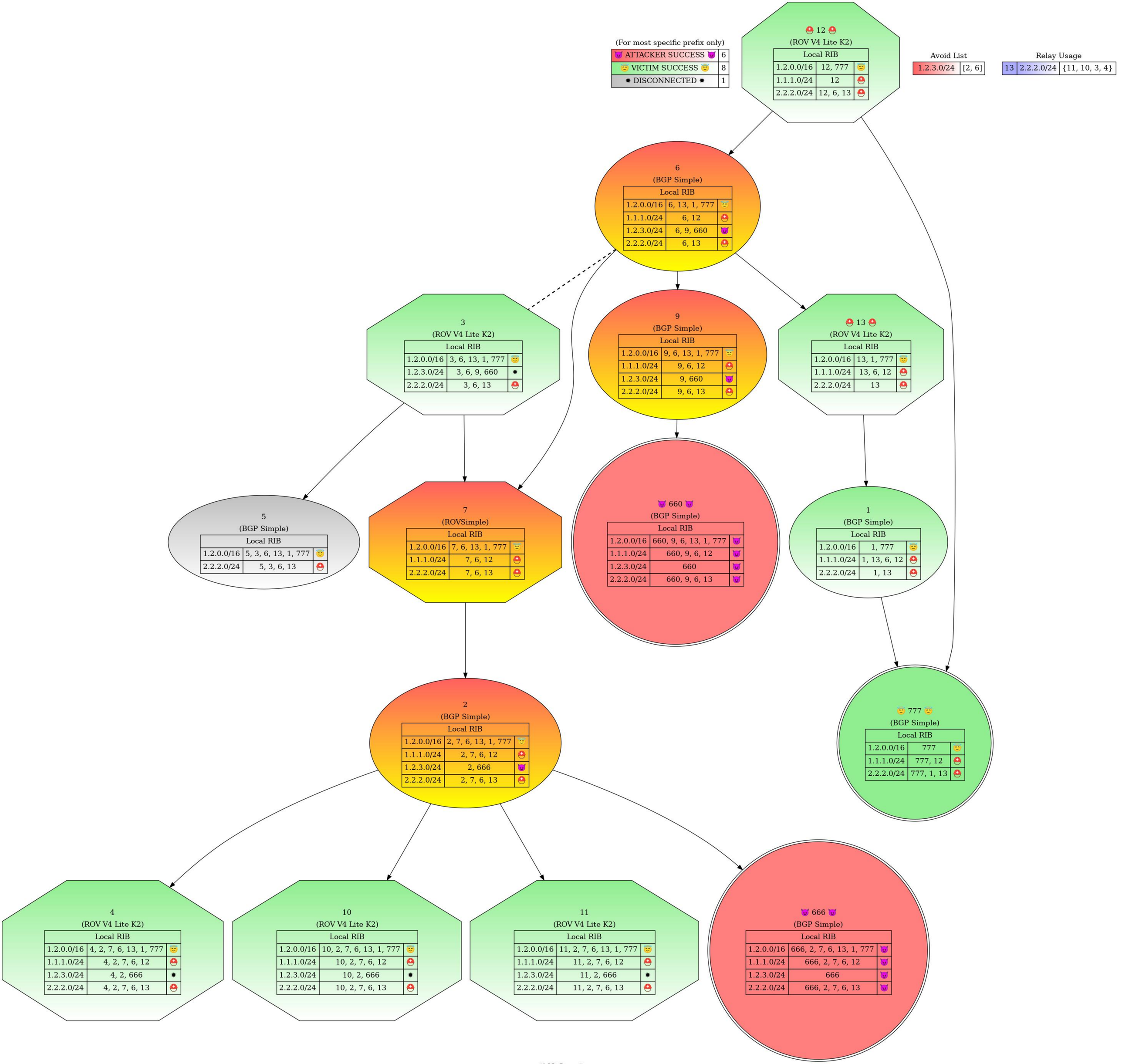
(161 Ground Truth)
ARTEMIS 2 Attackers
Traceback for 1.2.3.0/24



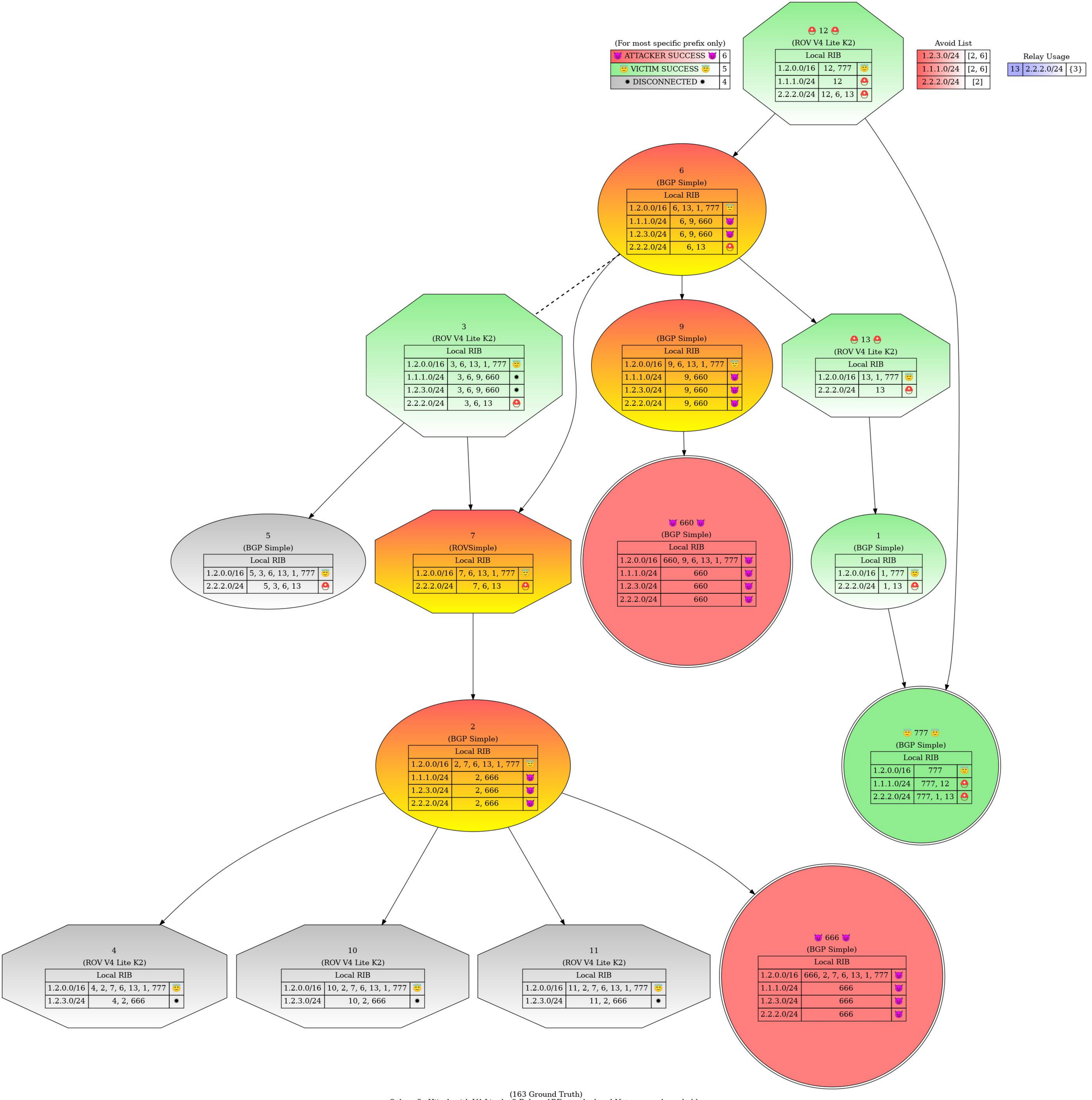
(161 Guess)
ARTEMIS 2 Attackers
Traceback for 1.2.3.0/24



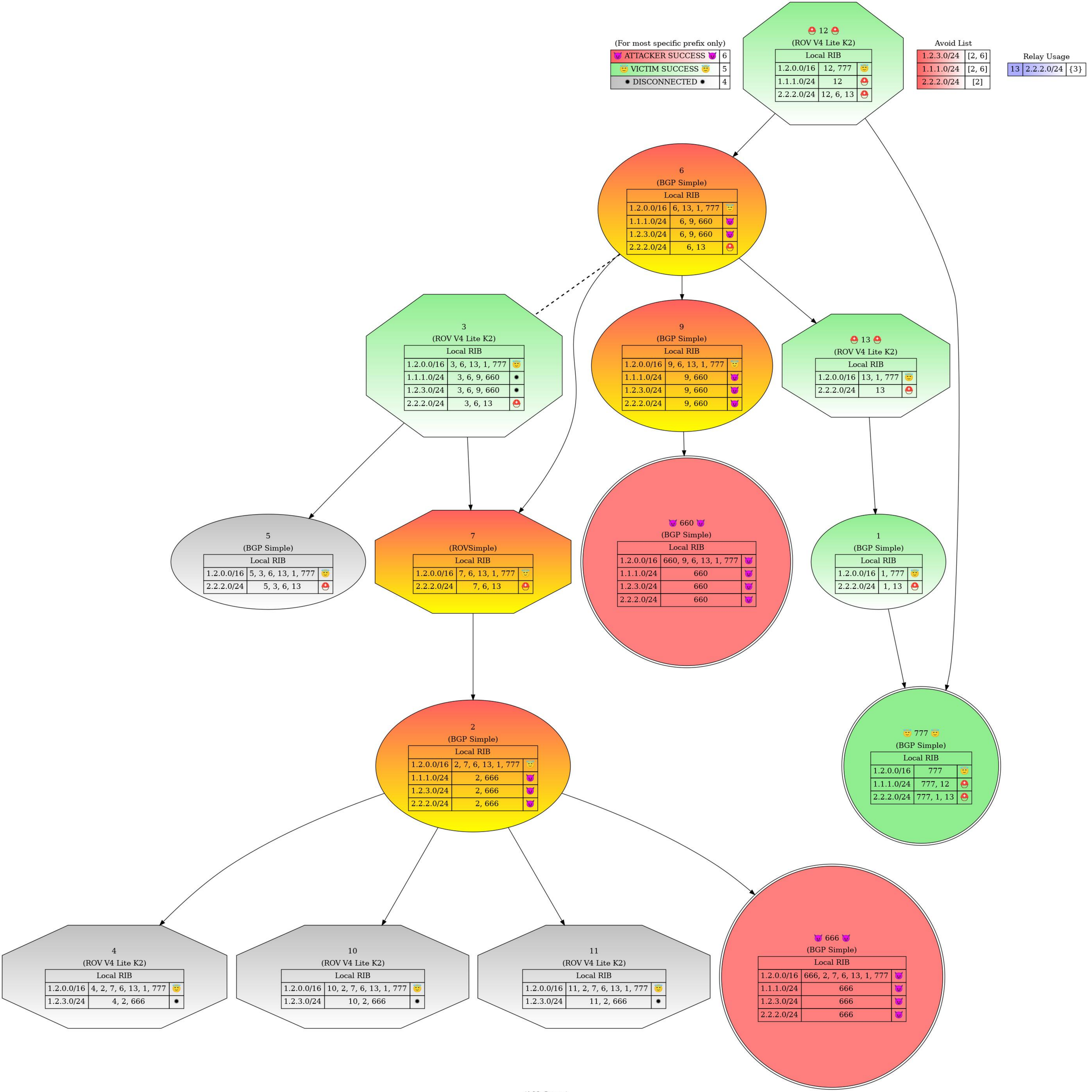
(162 Ground Truth)
Subprefix Hijack with V4 Lite k=2 Relays Not attacked and Not assumed reachable
Traceback for 1.2.3.0/24



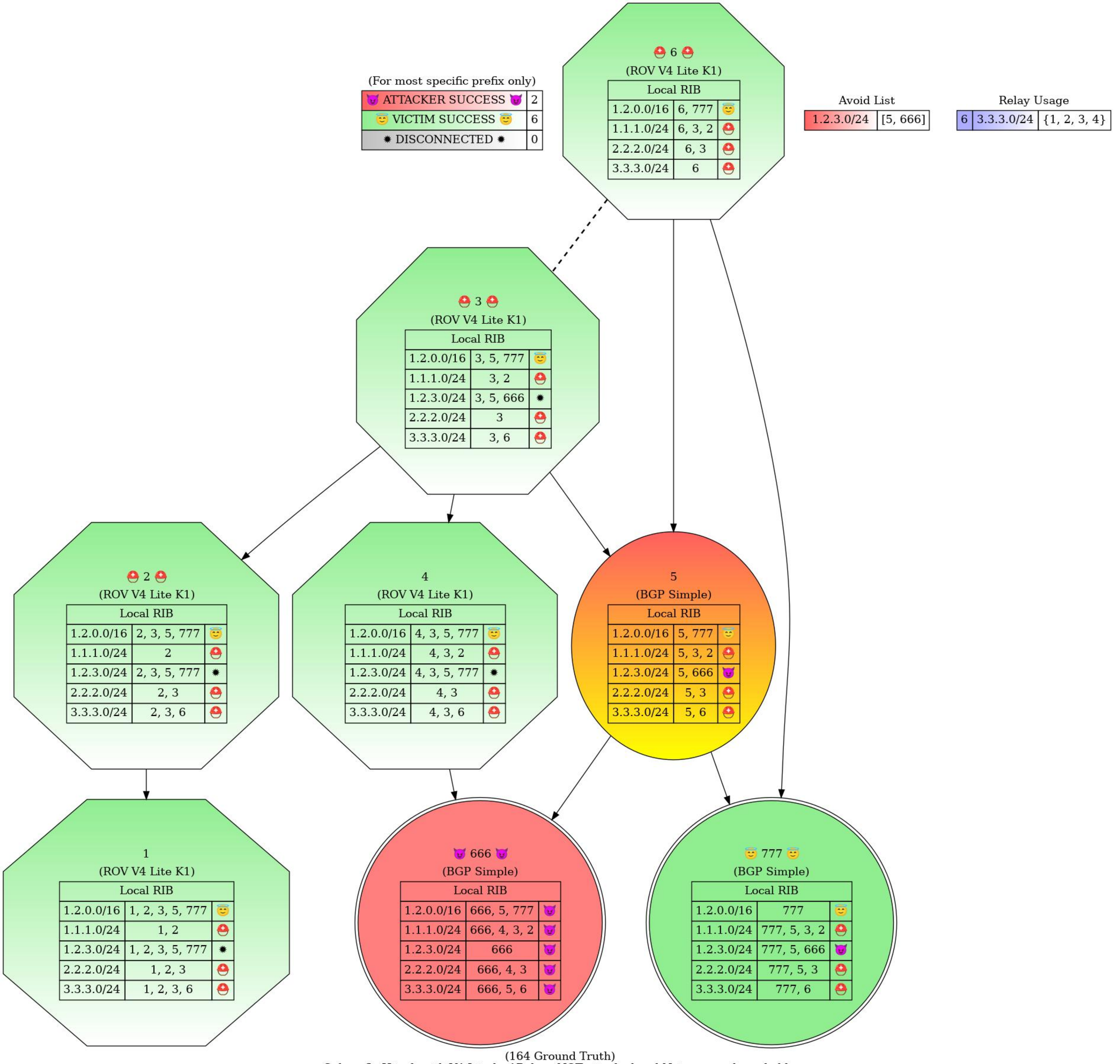
(162 Guess)
Subprefix Hijack with V4 Lite k=2 Relays Not attacked and Not assumed reachable
Traceback for 1.2.3.0/24



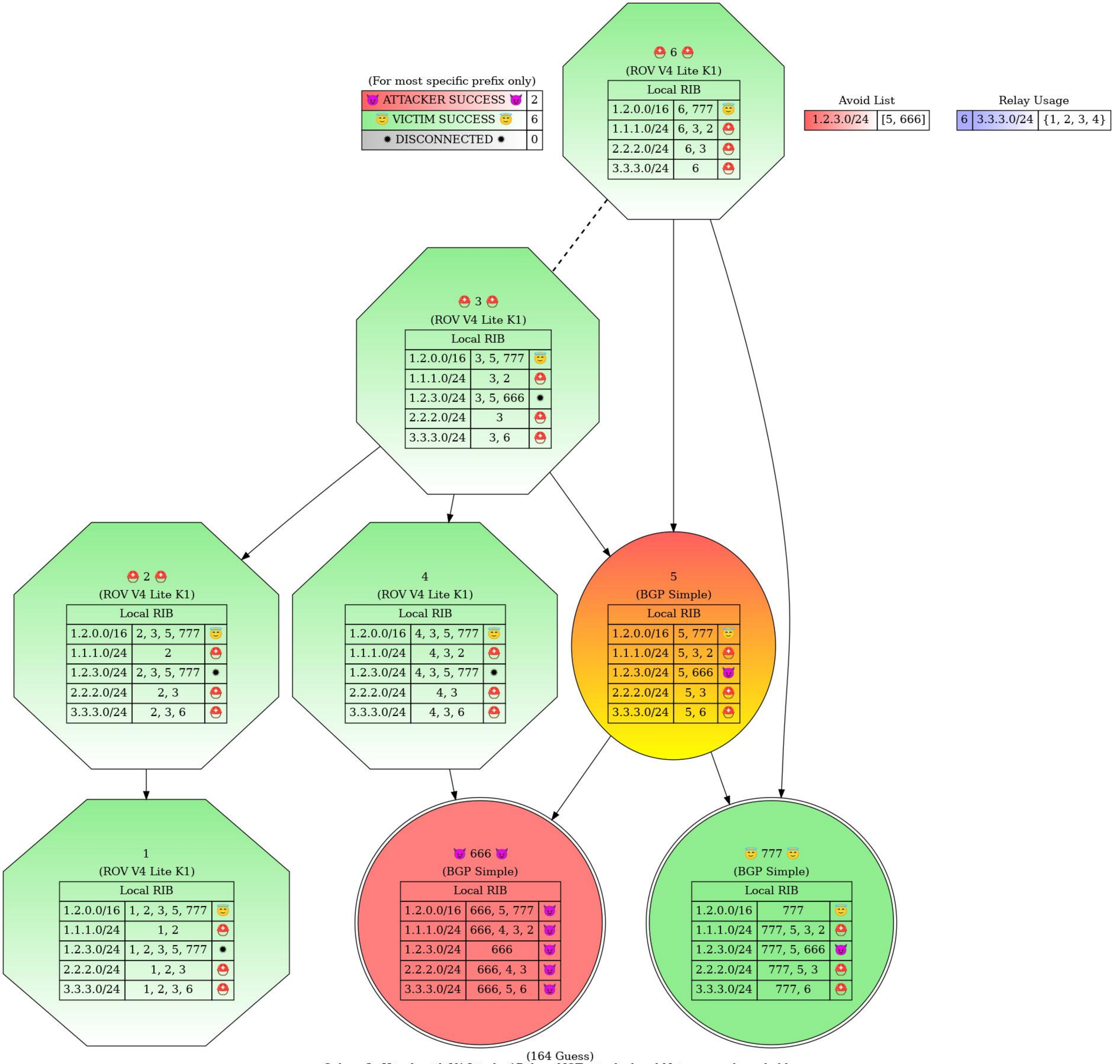
(163 Ground Truth)
Subprefix Hijack with V4 Lite k=2 Relays ARE attacked and Not assumed reachable
Traceback for 1.2.3.0/24



(163 Guess)
Subprefix Hijack with V4 Lite k=2 Relays ARE attacked and Not assumed reachable
Traceback for 1.2.3.0/24



(164 Ground Truth)
Subprefix Hijack with V4 Lite k=1Relays NOT attacked and Not assumed reachable
No CDN used (i.e. Peer like setting)
Traceback for 1.2.3.0/24



(164 Guess)
Subprefix Hijack with V4 Lite k=1Relays NOT attacked and Not assumed reachable
No CDN used (i.e. Peer like setting)
Traceback for 1.2.3.0/24

(For most specific prefix only)

😈 ATTACKER SUCCESS 😈	2
😇 VICTIM SUCCESS 😇	6
✹ DISCONNECTED ✹	0

Avoid List

1.2.3.0/24	[5, 666]

Relay Usage

19905	7.7.7.0/24	{12008, 7786}
12008	7.7.7.0/24	{4}
7786	7.7.7.0/24	{1}

⛑ 19905 ⛑
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	19905, 777	😇
7.7.7.0/24	19905	⛑

⛑ 12008 ⛑
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	12008, 5, 777	😇
1.2.3.0/24	12008, 5, 666	✹
7.7.7.0/24	12008	⛑

5
(BGP Simple)

Local RIB		
1.2.0.0/16	5, 777	😇
1.2.3.0/24	5, 666	😈
7.7.7.0/24	5, 12008	⛑

4
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	4, 12008, 5, 777	😇
1.2.3.0/24	4, 12008, 5, 777	✹
7.7.7.0/24	4, 12008	⛑

⛑ 7786 ⛑
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	7786, 12008, 5, 777	😇
1.2.3.0/24	7786, 12008, 5, 777	✹
7.7.7.0/24	7786	⛑

😇 777 😇
(BGP Simple)

Local RIB		
1.2.0.0/16	777	😇
1.2.3.0/24	777, 5, 666	😈
7.7.7.0/24	777, 19905	⛑

😈 666 😈
(BGP Simple)

Local RIB		
1.2.0.0/16	666, 5, 777	😈
1.2.3.0/24	666	😈
7.7.7.0/24	666, 4, 12008	😈

1
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	1, 7786, 12008, 5, 777	😇
1.2.3.0/24	1, 7786, 12008, 5, 777	✹
7.7.7.0/24	1, 7786	⛑

(165 Ground Truth)
Subprefix Hijack with V4 Lite k=1Relays NOT attacked and Not assumed reachable
CDN Neustar being used
Traceback for 1.2.3.0/24

(For most specific prefix only)

😈 ATTACKER SUCCESS 😈	2
😇 VICTIM SUCCESS 😇	6
✹ DISCONNECTED ✹	0

Avoid List

1.2.3.0/24	[5, 666]

Relay Usage

19905	7.7.7.0/24	{12008, 7786}
12008	7.7.7.0/24	{4}
7786	7.7.7.0/24	{1}

⛑ 19905 ⛑
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	19905, 777	😇
7.7.7.0/24	19905	⛑

⛑ 12008 ⛑
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	12008, 5, 777	😇
1.2.3.0/24	12008, 5, 666	✹
7.7.7.0/24	12008	⛑

5
(BGP Simple)

Local RIB		
1.2.0.0/16	5, 777	😇
1.2.3.0/24	5, 666	😈
7.7.7.0/24	5, 12008	⛑

4
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	4, 12008, 5, 777	😇
1.2.3.0/24	4, 12008, 5, 777	✹
7.7.7.0/24	4, 12008	⛑

⛑ 7786 ⛑
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	7786, 12008, 5, 777	😇
1.2.3.0/24	7786, 12008, 5, 777	✹
7.7.7.0/24	7786	⛑

😇 777 😇
(BGP Simple)

Local RIB		
1.2.0.0/16	777	😇
1.2.3.0/24	777, 5, 666	😈
7.7.7.0/24	777, 19905	⛑

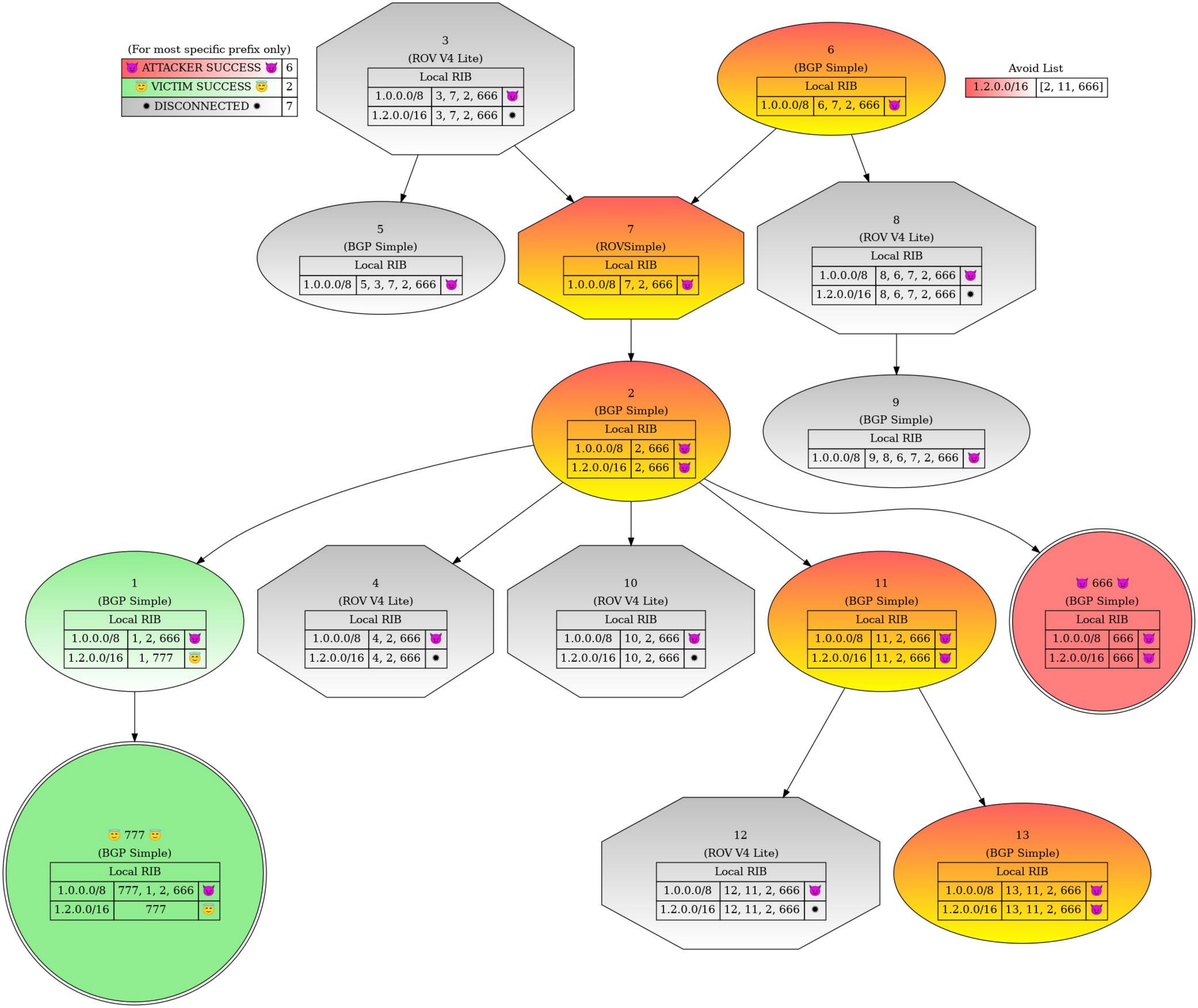
😈 666 😈
(BGP Simple)

Local RIB		
1.2.0.0/16	666, 5, 777	😈
1.2.3.0/24	666	😈
7.7.7.0/24	666, 4, 12008	😈

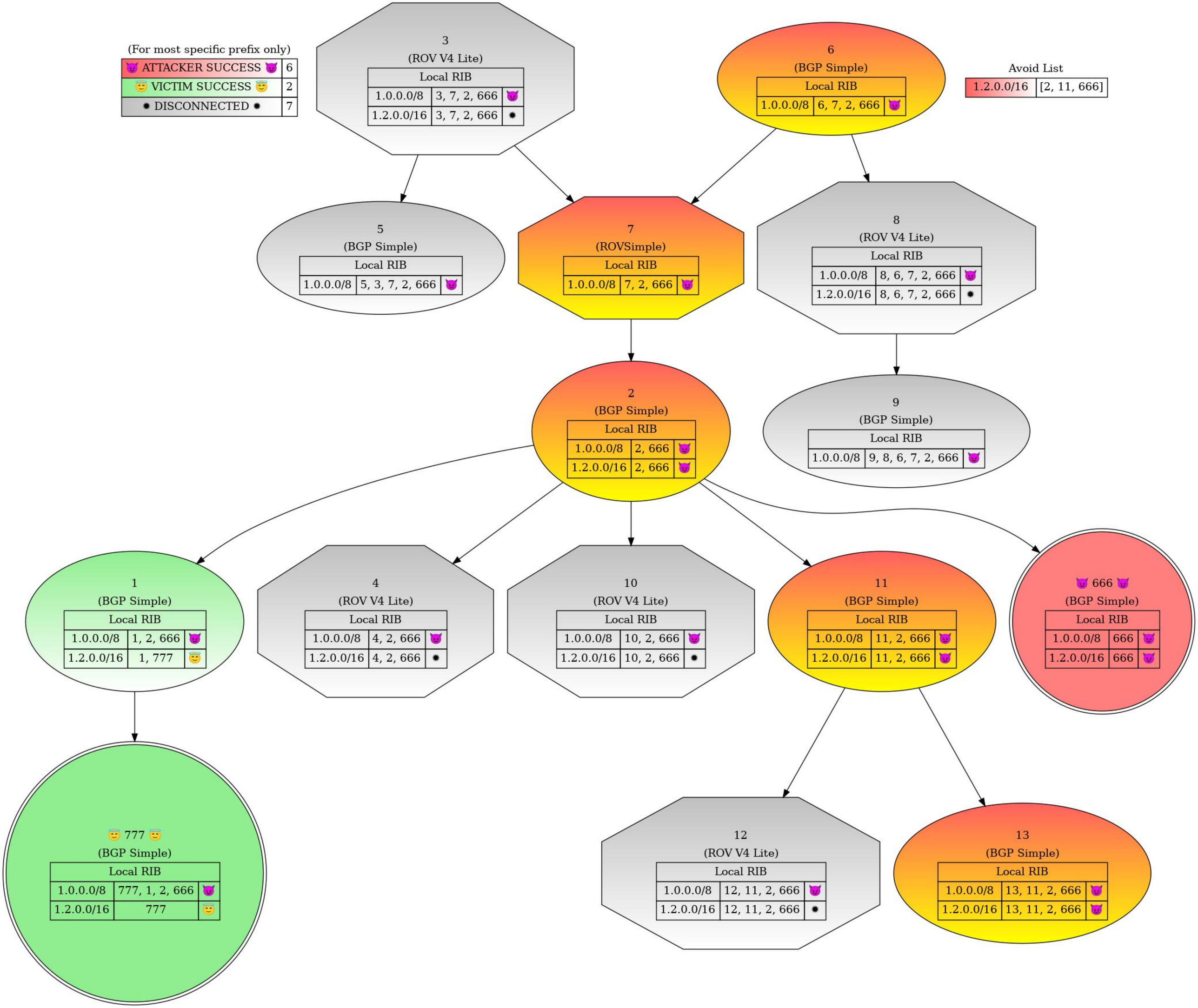
1
(ROV V4 Lite K1)

Local RIB		
1.2.0.0/16	1, 7786, 12008, 5, 777	😇
1.2.3.0/24	1, 7786, 12008, 5, 777	✹
7.7.7.0/24	1, 7786	⛑

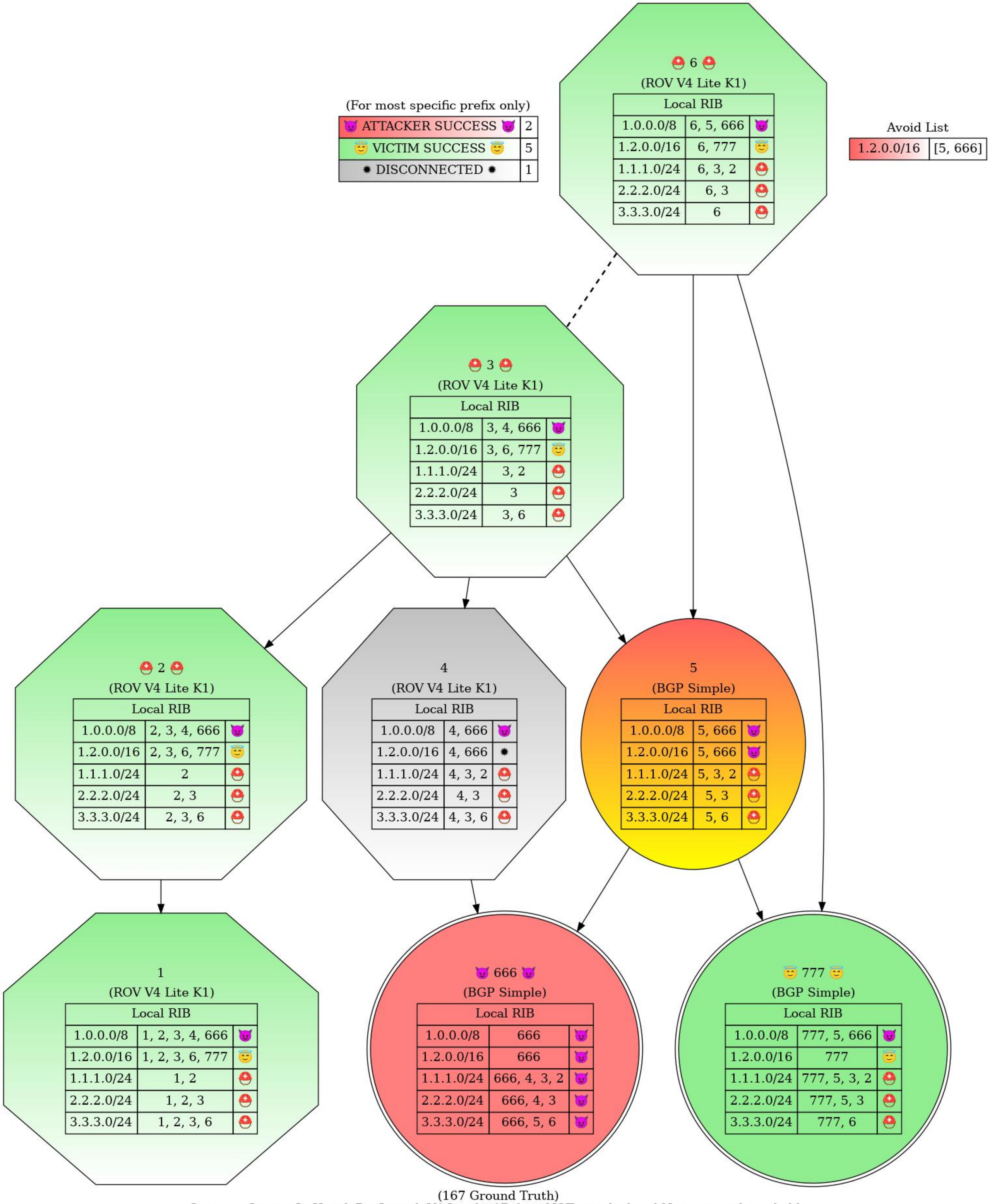
(165 Guess)
Subprefix Hijack with V4 Lite k=1Relays NOT attacked and Not assumed reachable
CDN Neustar being used
Traceback for 1.2.3.0/24



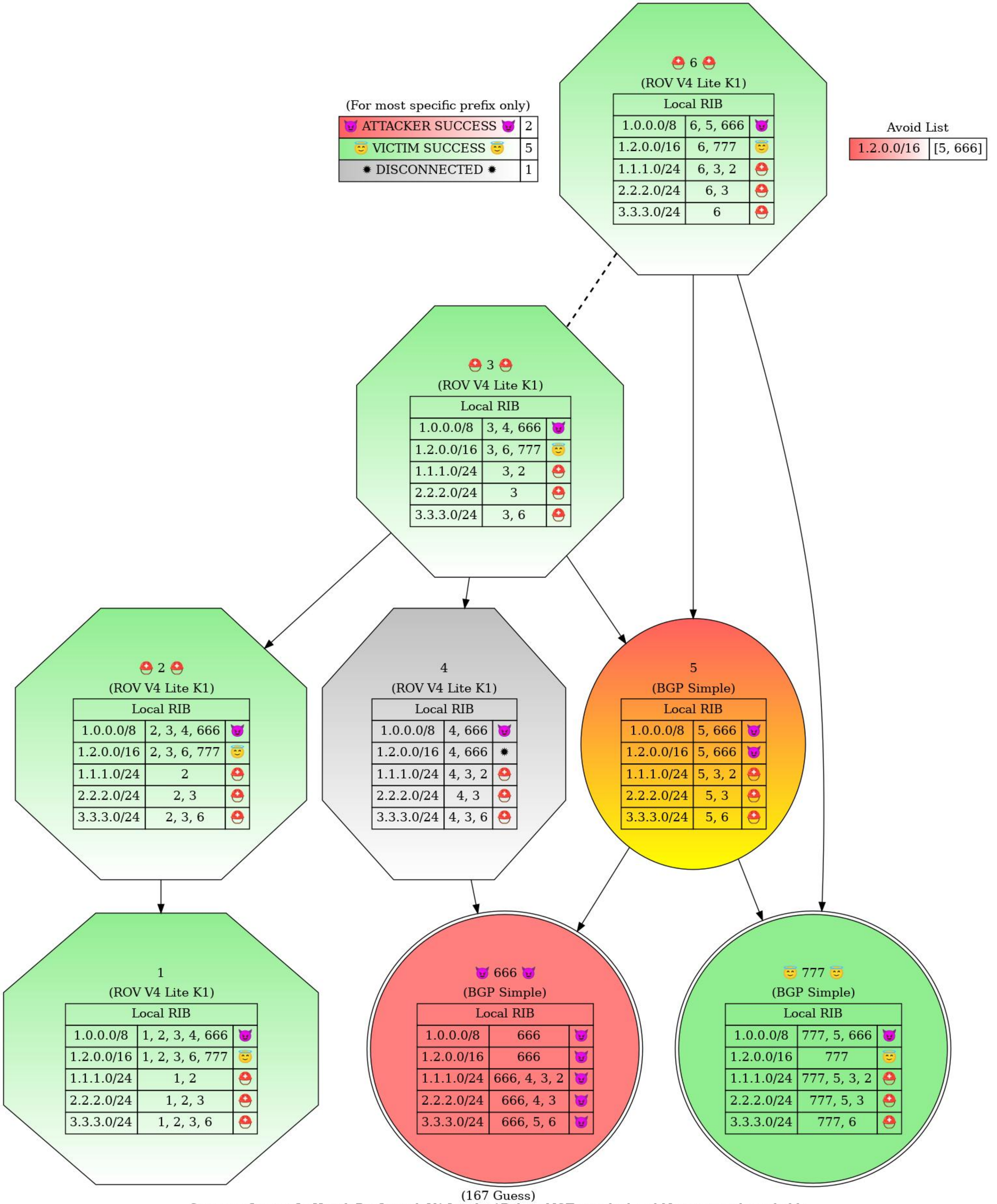
(166 Ground Truth)
Superprefix+prefix hijack prefix with V4 Lite
Traceback for 1.2.0.0/16



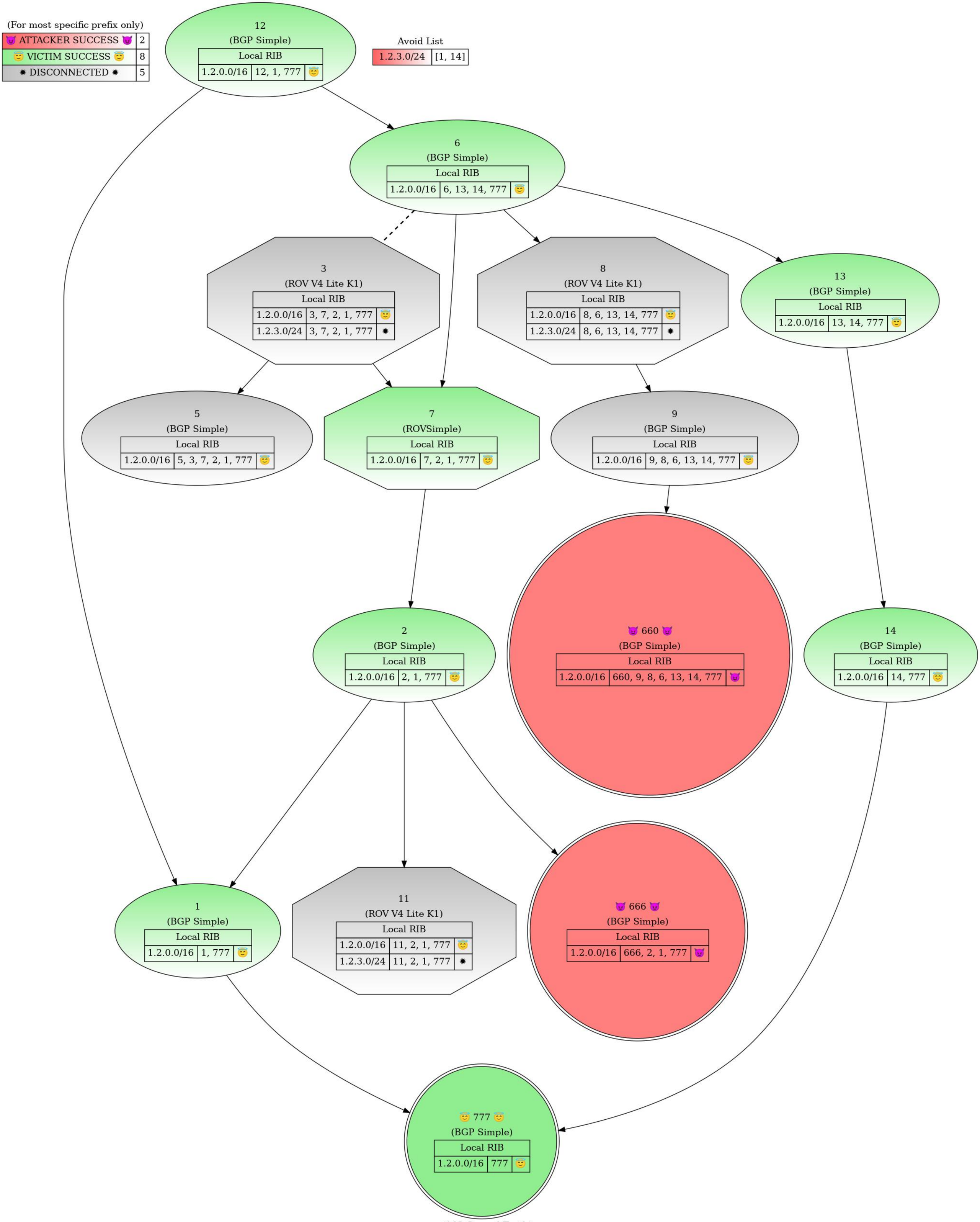
(166 Guess)
Superprefix+prefix hijack prefix with V4 Lite
Traceback for 1.2.0.0/16



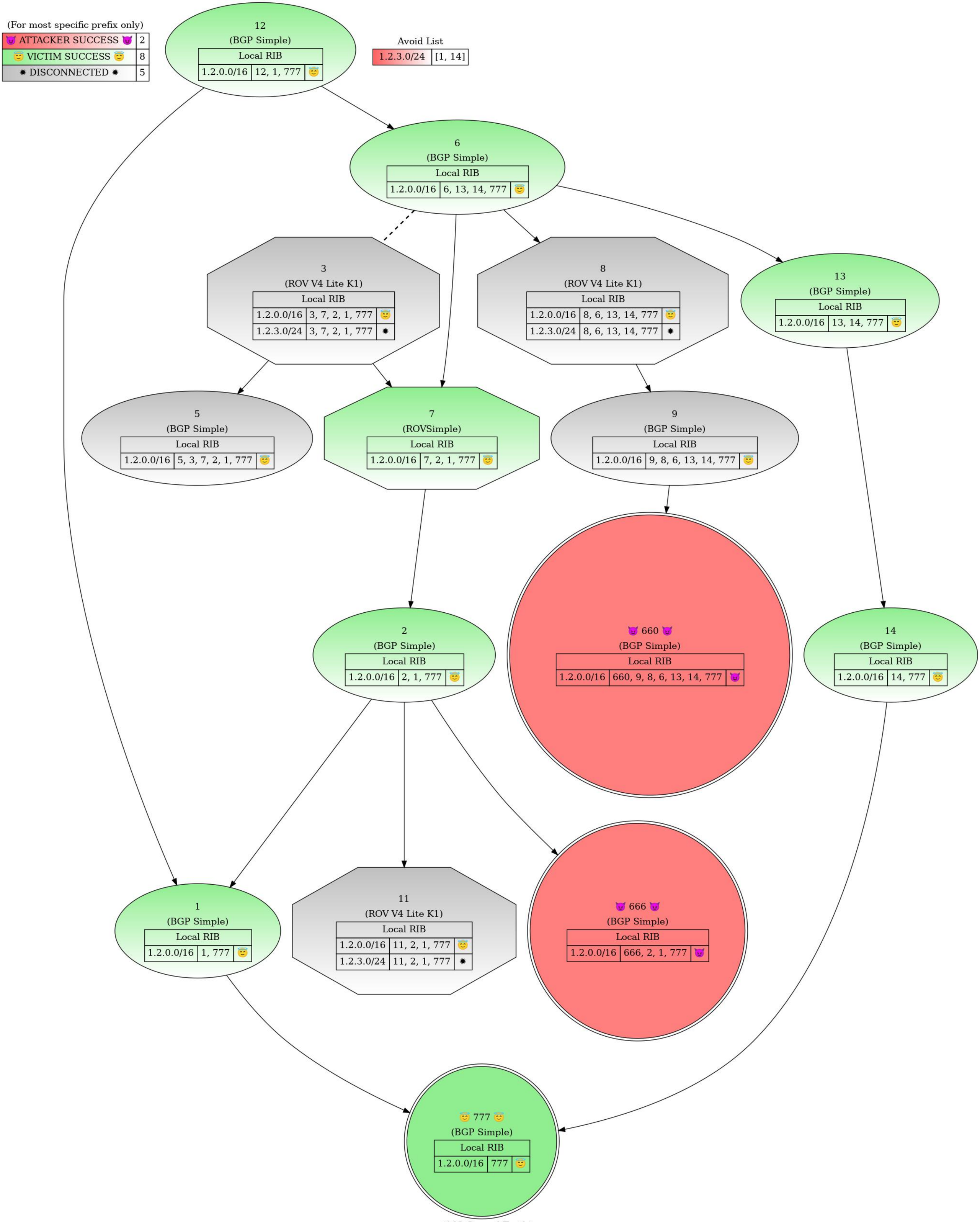
(167 Ground Truth)
Superprefix+prefix Hijack Prefix with V4 Lite k=1Relays NOT attacked and Not assumed reachable
No CDN used (i.e. Peer like setting)
Traceback for 1.2.0.0/16



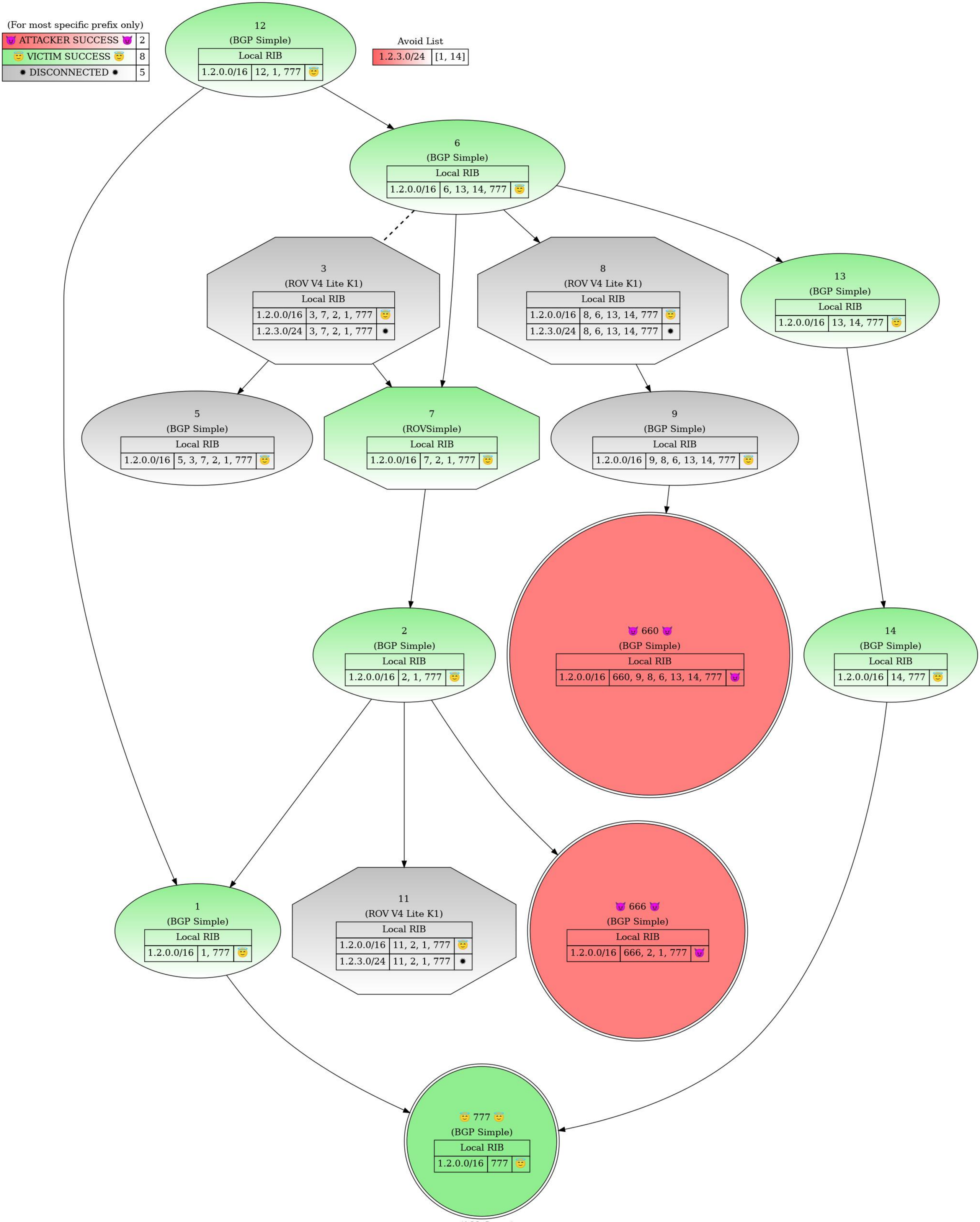
(167 Guess)
Superprefix+prefix Hijack Prefix with V4 Lite k=1Relays NOT attacked and Not assumed reachable
No CDN used (i.e. Peer like setting)
Traceback for 1.2.0.0/16



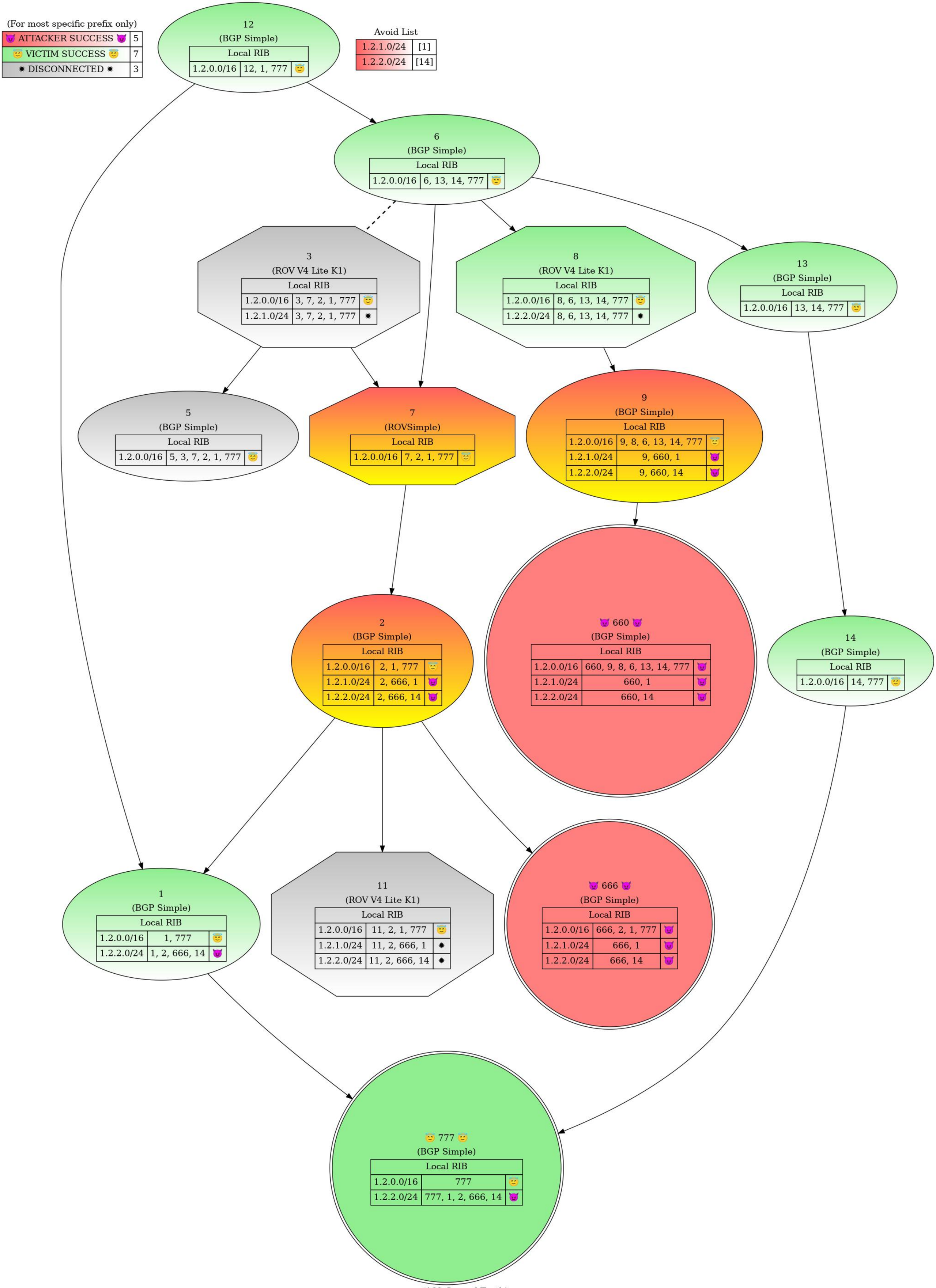
(168 Ground Truth)
Direct AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
ASes 3, 8, 11, and 7 are adopters
AS 7 is adopting ROV
Origin 777 has two providers ASes 1 and 14
The adopting ASes get disconnected because k < m
Traceback for 1.2.3.0/24



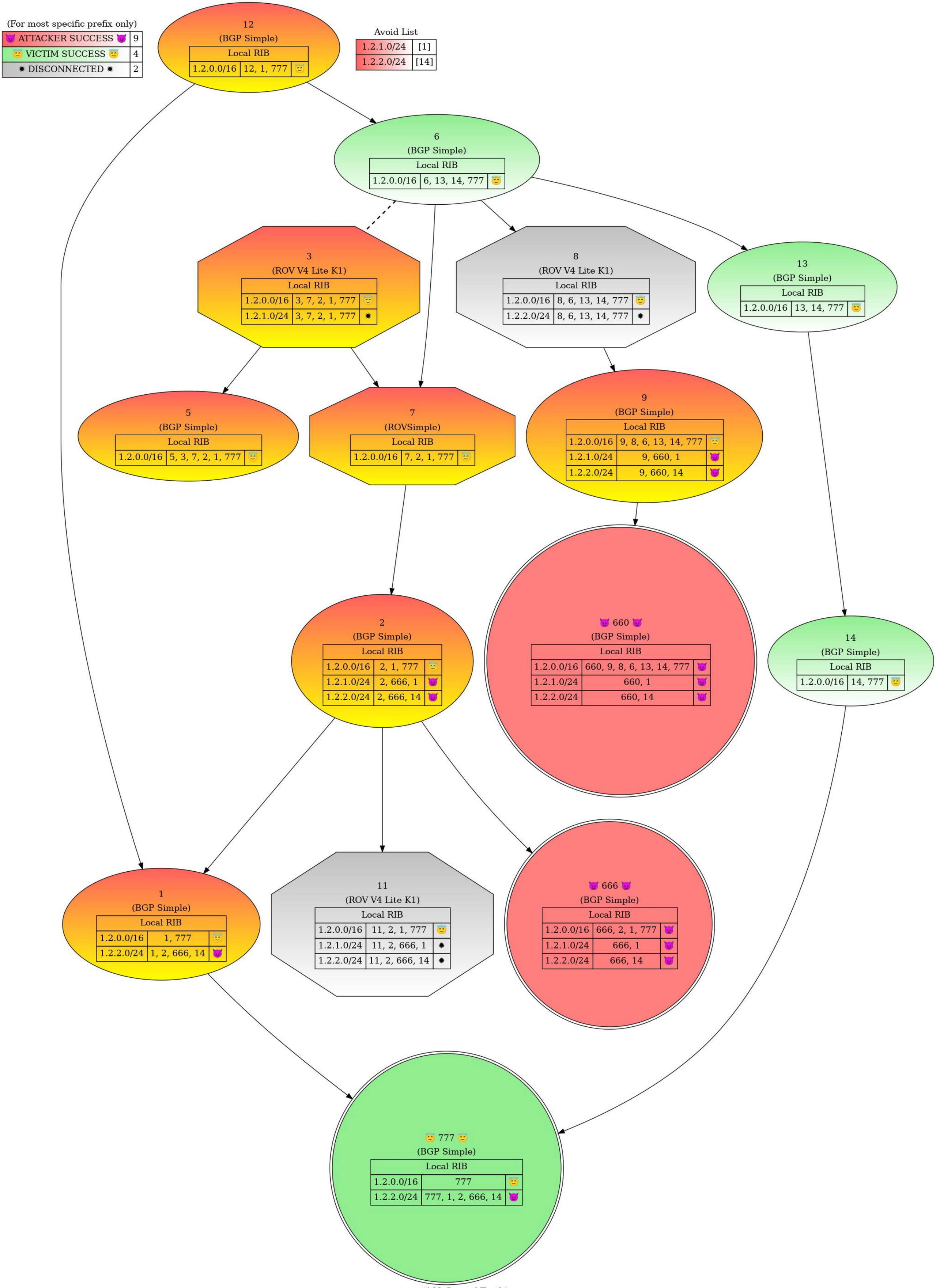
(168 Ground Truth)
Direct AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
ASes 3, 8, 11, and 7 are adopters
AS 7 is adopting ROV
Origin 777 has two providers ASes 1 and 14
The adopting ASes get disconnected because k < m
Traceback for 1.2.3.0/24



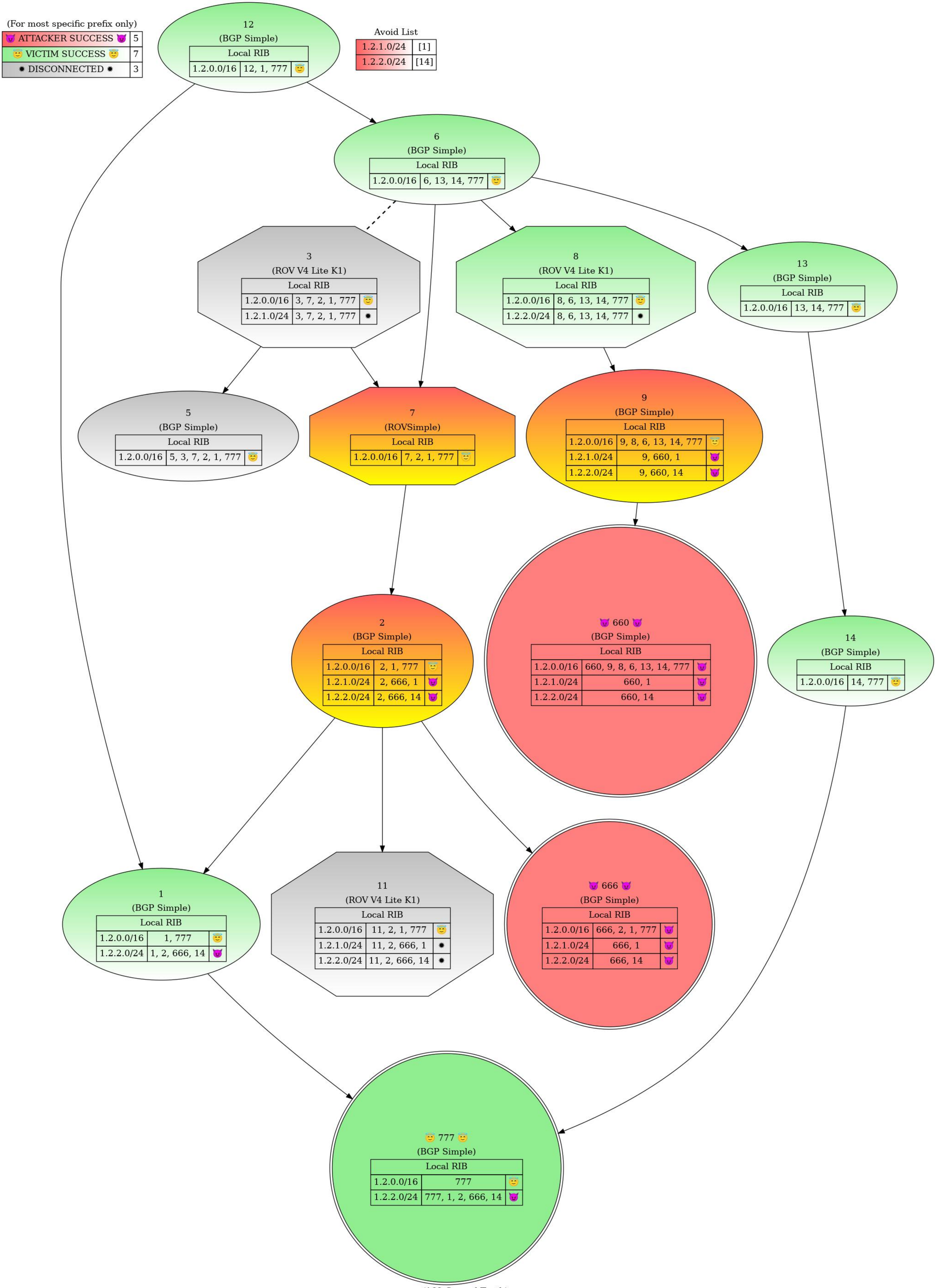
(168 Guess)
Direct AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
ASes 3, 8, 11, and 7 are adopters
AS 7 is adopting ROV
Origin 777 has two providers ASes 1 and 14
The adopting ASes get disconnected because k < m
Traceback for 1.2.3.0/24



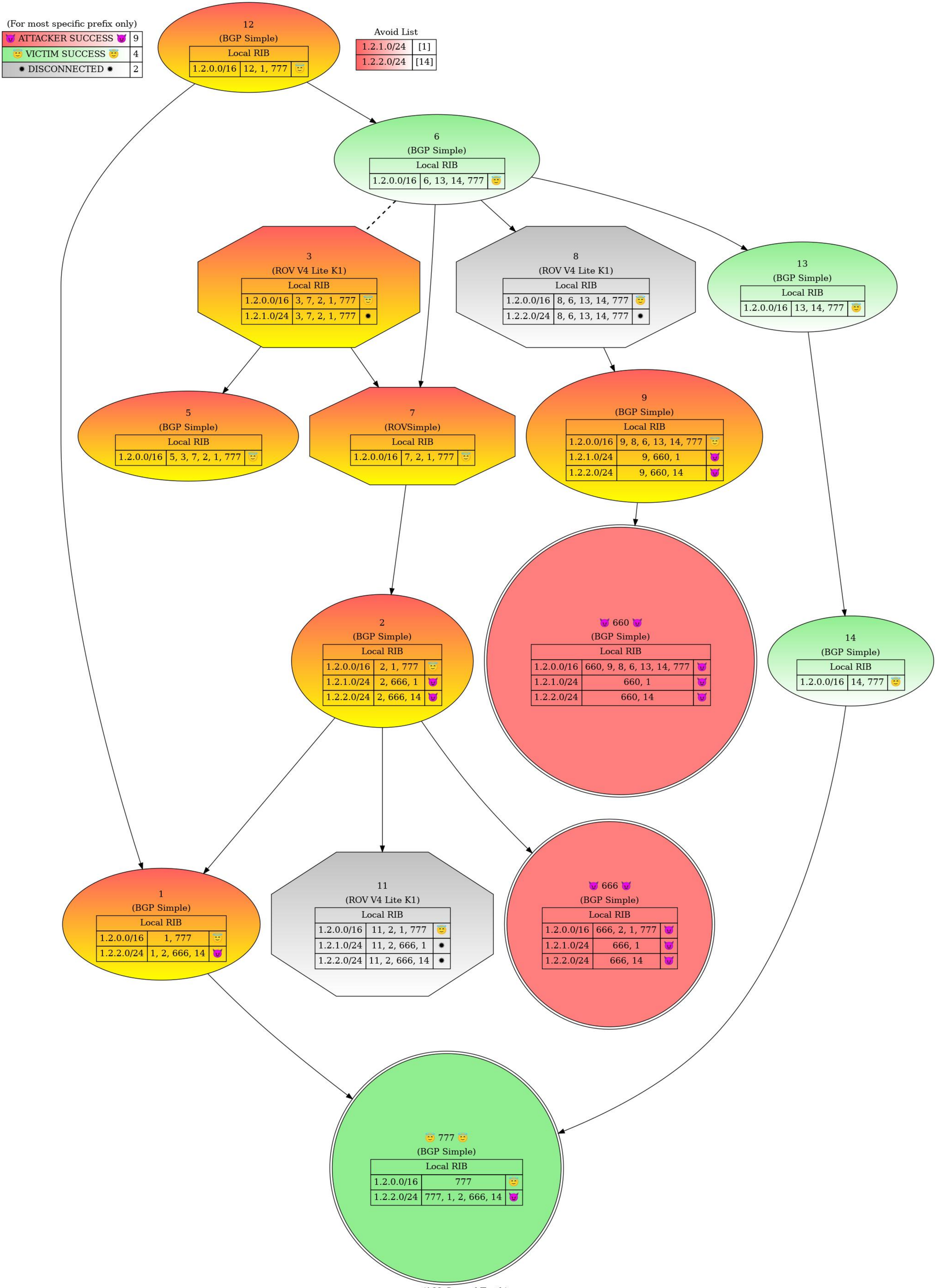
(169 Ground Truth)
Indirect AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
Traceback for 1.2.1.0/24



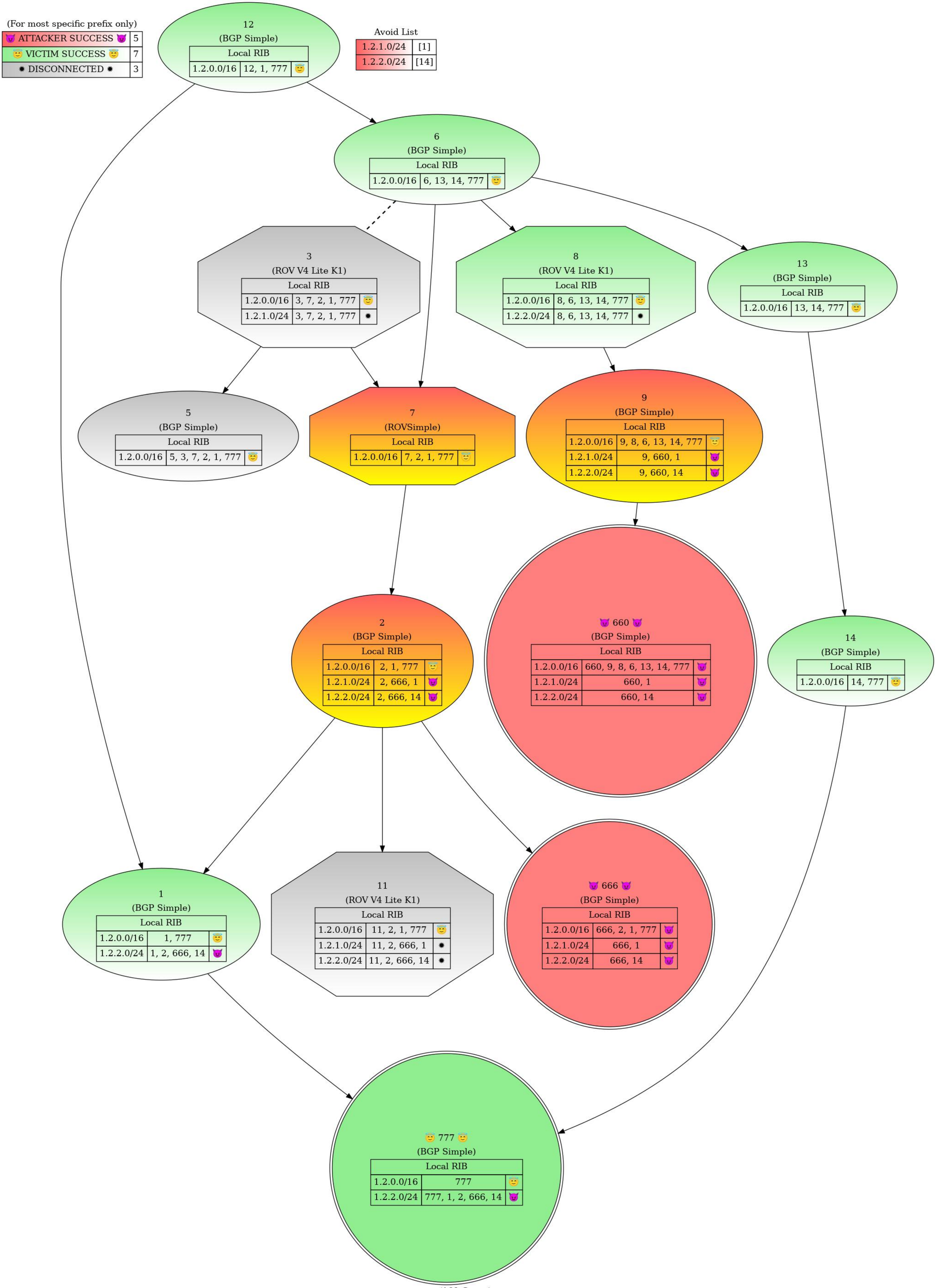
(169 Ground Truth)
Indirect AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
Traceback for 1.2.2.0/24



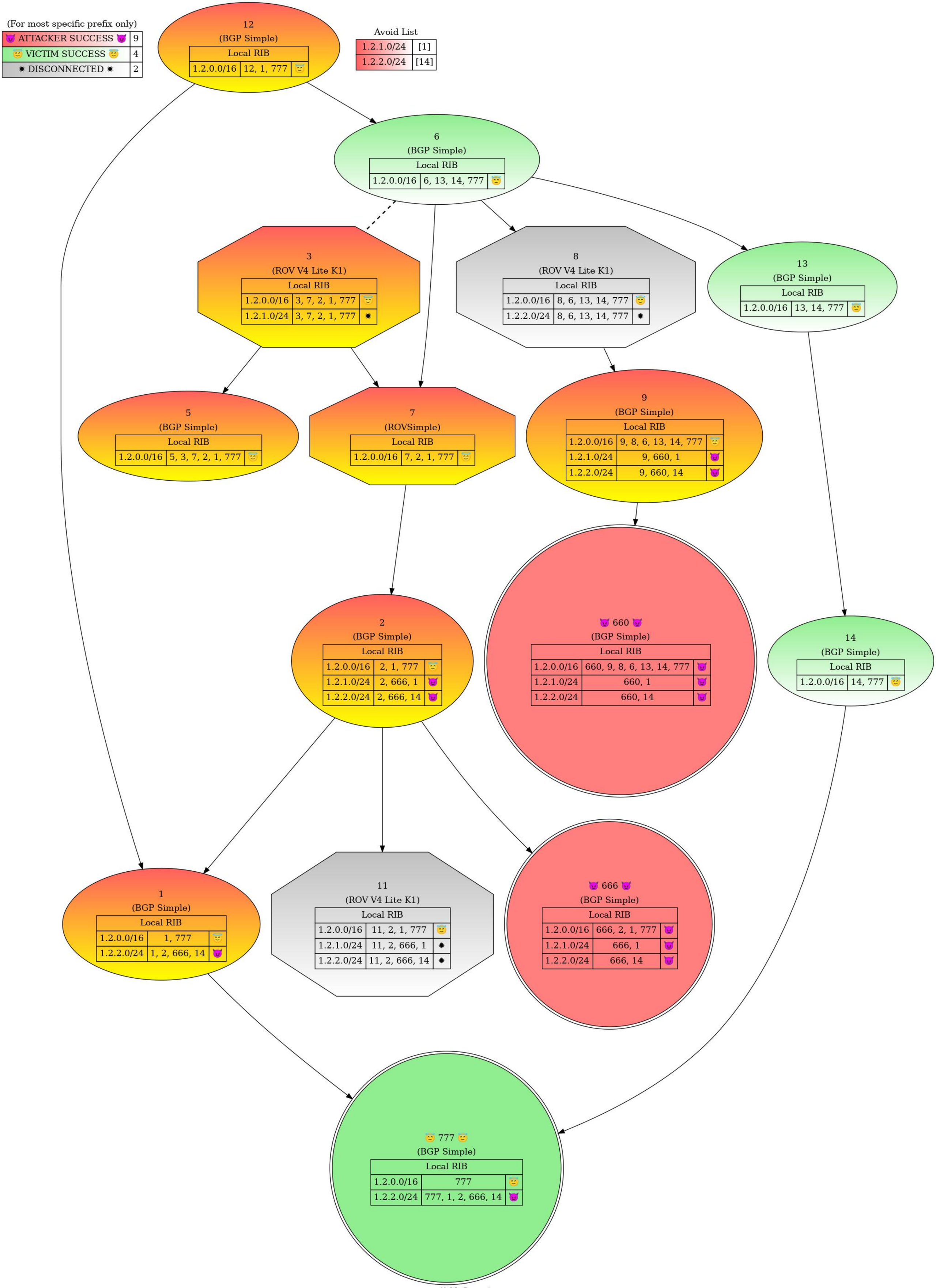
(169 Ground Truth)
Indirect AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
Traceback for 1.2.1.0/24



(169 Ground Truth)
Indirect AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
Traceback for 1.2.2.0/24



(169 Guess)
Indirect AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
Traceback for 1.2.1.0/24



(169 Guess)
Indirect AutoImmune Attack with ROV++ V4 k=1
The origin has two providers
Traceback for 1.2.2.0/24

(For most specific prefix only)

😈 ATTACKER SUCCESS 😈	2
😇 VICTIM SUCCESS 😇	2
✹ DISCONNECTED ✹	4

⛑ 19905 ⛑
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	19905, 777	😇
7.7.7.0/24	19905	⛑

Relay Usage

12008	7.7.7.0/24	{4}
7786	7.7.7.0/24	{1}

⛑ 12008 ⛑
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	12008, 5, 777	😇
1.2.3.0/24	12008, 5, 666	✹
7.7.7.0/24	12008	⛑

5
(BGP Simple)

Local RIB		
1.2.0.0/16	5, 777	😇
1.2.3.0/24	5, 666	😈
7.7.7.0/24	5, 12008	⛑

4
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	4, 12008, 5, 777	😇
7.7.7.0/24	4, 12008	⛑

⛑ 7786 ⛑
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	7786, 12008, 5, 777	😇
7.7.7.0/24	7786	⛑

😇 777 😇
(BGP Simple)

Local RIB		
1.2.0.0/16	777	😇
1.2.3.0/24	777, 5, 666	😈
7.7.7.0/24	777, 19905	⛑

😈 666 😈
(BGP Simple)

Local RIB		
1.2.0.0/16	666, 5, 777	😈
1.2.3.0/24	666	😈
7.7.7.0/24	666, 4, 12008	😈

1
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	1, 7786, 12008, 5, 777	😇
7.7.7.0/24	1, 7786	⛑

(170 Ground Truth)
Subprefix Hijack with ROV++ V1 Lite Overlayed
Relays NOT attacked and Not assumed reachable
CDN Neustar being used
Traceback for 1.2.3.0/24

(For most specific prefix only)

😈 ATTACKER SUCCESS 😈	2
😇 VICTIM SUCCESS 😇	2
✹ DISCONNECTED ✹	4

Relay Usage

12008	7.7.7.0/24	{4}
7786	7.7.7.0/24	{1}

⛑ 19905 ⛑
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	19905, 777	😇
7.7.7.0/24	19905	⛑

⛑ 12008 ⛑
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	12008, 5, 777	😇
1.2.3.0/24	12008, 5, 666	✹
7.7.7.0/24	12008	⛑

5
(BGP Simple)

Local RIB		
1.2.0.0/16	5, 777	😇
1.2.3.0/24	5, 666	😈
7.7.7.0/24	5, 12008	⛑

4
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	4, 12008, 5, 777	😇
7.7.7.0/24	4, 12008	⛑

⛑ 7786 ⛑
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	7786, 12008, 5, 777	😇
7.7.7.0/24	7786	⛑

😇 777 😇
(BGP Simple)

Local RIB		
1.2.0.0/16	777	😇
1.2.3.0/24	777, 5, 666	😈
7.7.7.0/24	777, 19905	⛑

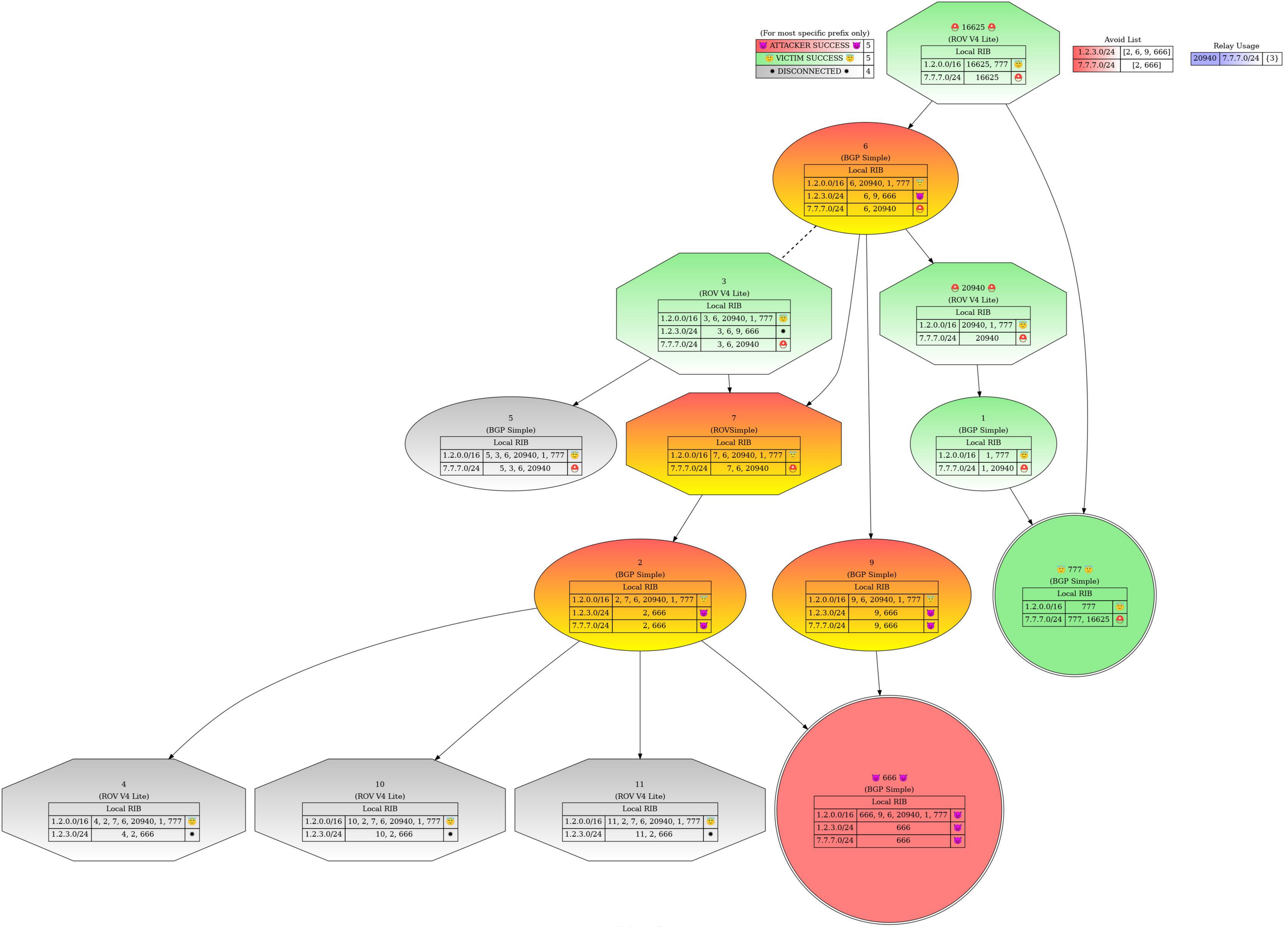
😈 666 😈
(BGP Simple)

Local RIB		
1.2.0.0/16	666, 5, 777	😈
1.2.3.0/24	666	😈
7.7.7.0/24	666, 4, 12008	😈

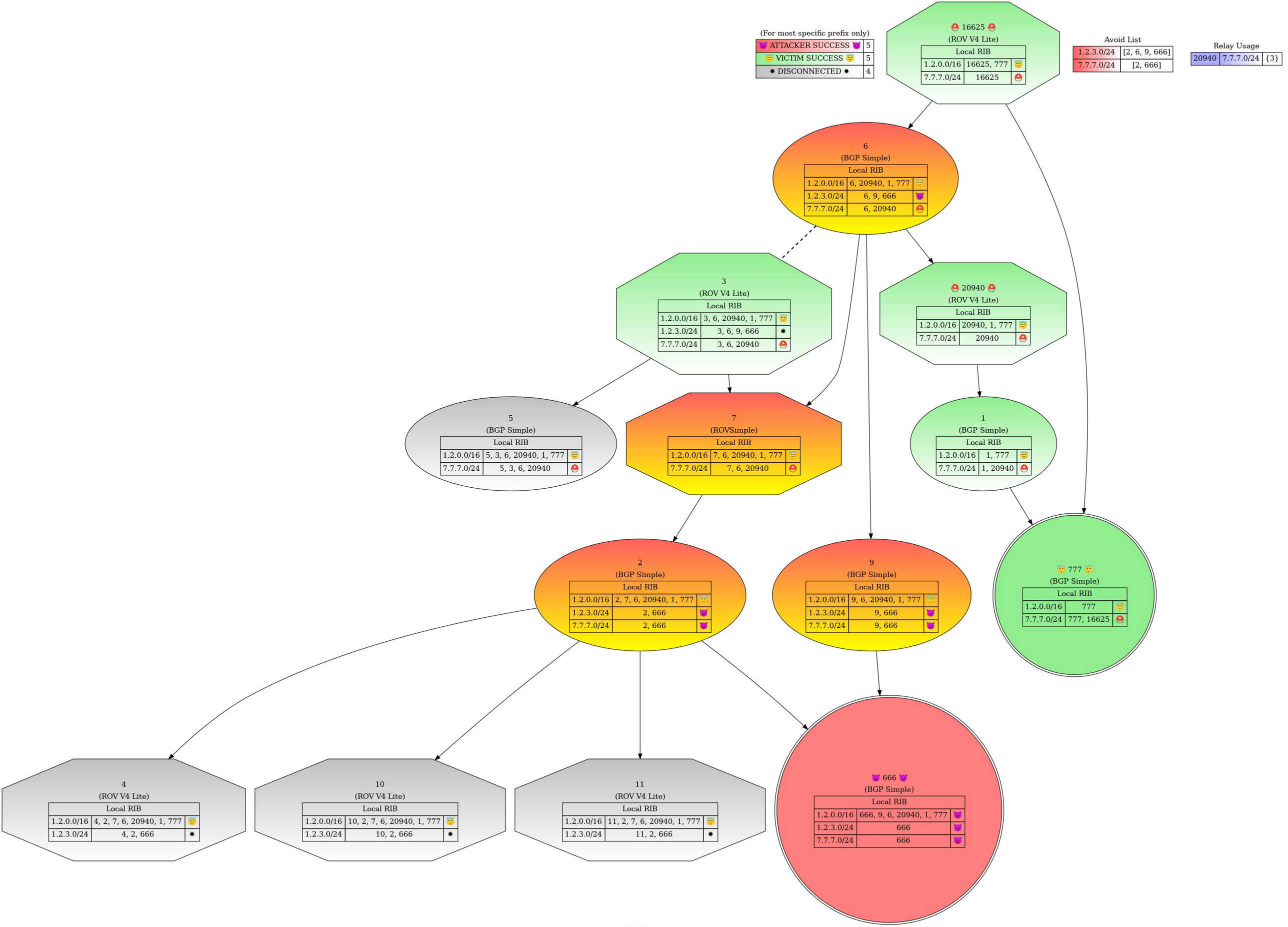
1
(ROV++ V1 Lite Simple Overlayed)

Local RIB		
1.2.0.0/16	1, 7786, 12008, 5, 777	😇
7.7.7.0/24	1, 7786	⛑

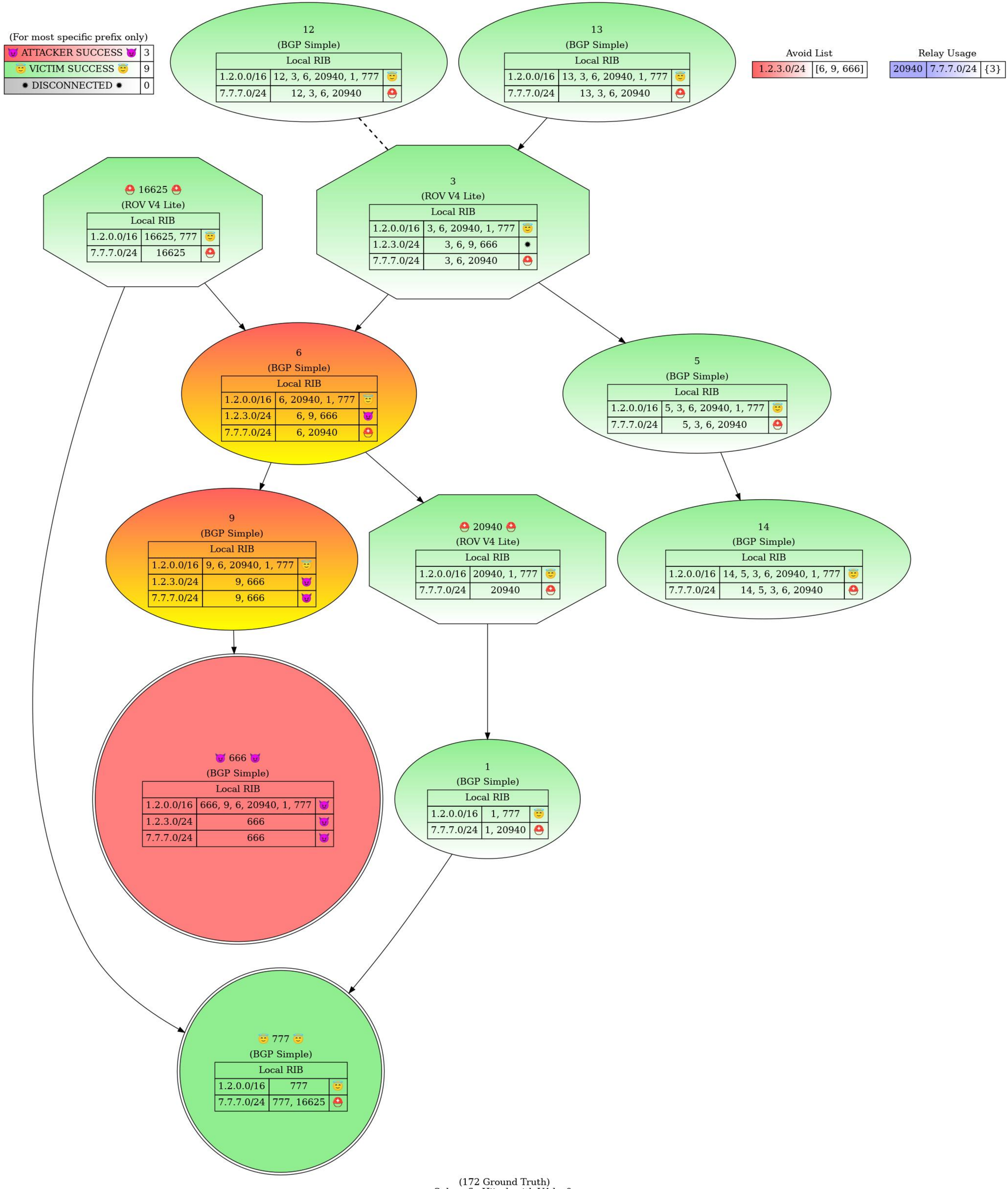
(170 Guess)
Subprefix Hijack with ROV++ V1 Lite Overlayed
Relays NOT attacked and Not assumed reachable
CDN Neustar being used
Traceback for 1.2.3.0/24



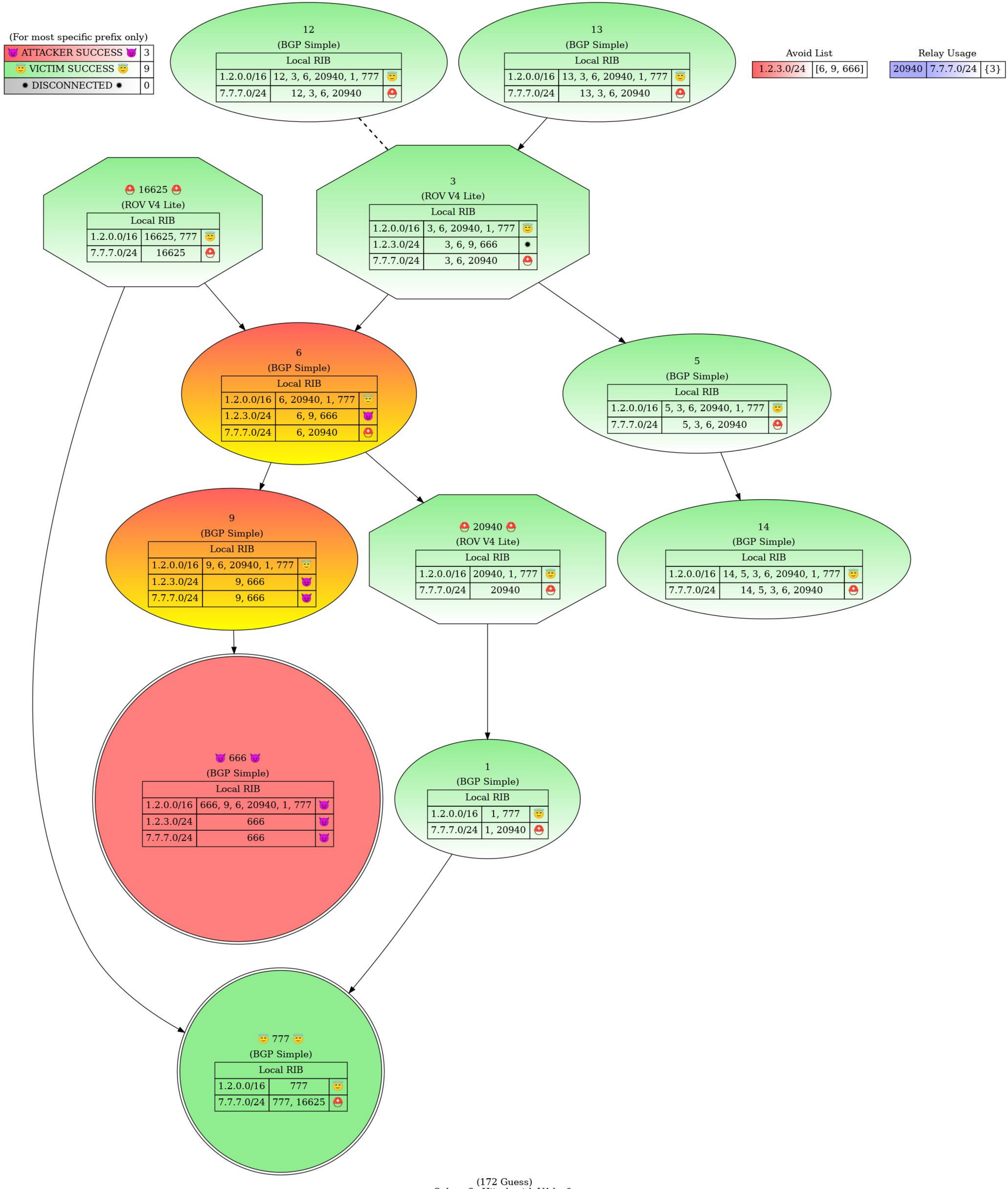
(171 Ground Truth)
Subprefix Hijack with V4 k=0
CDN Setting (Akamai)
Relays ARE attacked and Not assumed reachable
Traceback for 1.2.3.0/24



(171 Guess)
Subprefix Hijack with V4 k=0
CDN Setting (Akamai)
Relays ARE attacked and Not assumed reachable
Traceback for 1.2.3.0/24



(172 Ground Truth)
Subprefix Hijack with V4 k=0
CDN Setting (Akamai)
Relays ARE attacked and Not assumed reachable
Traceback for 1.2.3.0/24



(172 Guess)
Subprefix Hijack with V4 k=0
CDN Setting (Akamai)
Relays ARE attacked and Not assumed reachable
Traceback for 1.2.3.0/24