

Result • authentication? Alice \rightarrow Bob: c_3 – When:

- $c_1 \rightarrow \text{PKE_ENC}(G^{k_{sb}}, \text{CONCAT}(\text{alice}, na))$
- $\text{alice}_b \rightarrow \text{alice}$
- $b_{na} \rightarrow na$
- $\text{unnamed}_0 \rightarrow \text{ASSERT}(\text{alice}, \text{alice})?$
- $c_2 \rightarrow \text{PKE_ENC}(G^{k_{sa}}, \text{CONCAT}(\text{bob}, na, nb))$
- $\text{bob}_a \rightarrow \text{bob}$
- $a_{na} \rightarrow na$
- $a_{nb} \rightarrow nb$
- $\text{unnamed}_1 \rightarrow \text{ASSERT}(\text{bob}, \text{bob})?$
- $\text{unnamed}_2 \rightarrow \text{ASSERT}(na, na)?$
- $c_3 \rightarrow \text{alice} \leftarrow \text{mutated by Attacker (originally } \text{PKE_ENC}(k_{pb}, a_{nb}))$
- $b_{nb} \rightarrow \text{PKE_DEC}(k_{sb}, \text{alice})$
- $\text{unnamed}_3 \rightarrow \text{ASSERT}(\text{PKE_DEC}(k_{sb}, \text{alice}), nb)?$

c_3 (alice), sent by Attacker and not by Alice, is successfully used in $\text{PKE_DEC}(k_{sb}, \text{alice})$ within Bob's state.