Lecture 24

Secure?

- Insecure: password is transmitted openly and frequently
- Solution: no password transmitted by involving ticket-granting server (TGS)

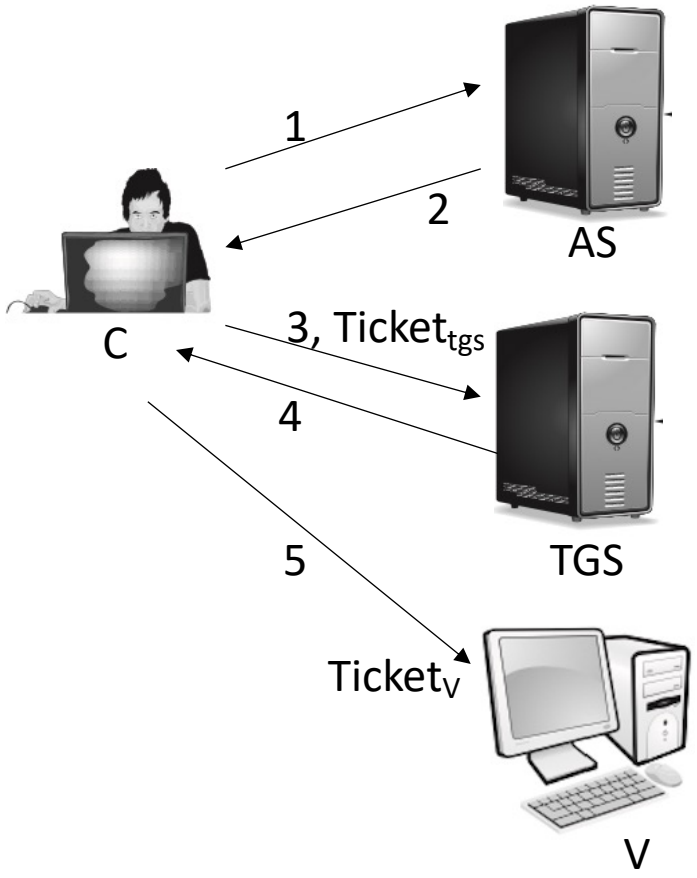
1. C —>AS: $ID_C \,||\, P_C \,||\, ID_V$
2. AS —> C : Ticket = $E(K_V, [ID_C \,||\, AD_C \,||\, ID_V])$
3. C —> V: $ID_C \,||$ Ticket

A More Secure Authentication Dialogue

- Once per user logon session
  - (1) C —>AS: $ID_C || ID_{tgs}$
  - (2) AS —> C: $E(K_C, Ticket_{tgs})$
- Once per type of service:
  - (3) C —>TGS: $ID_C || ID_v || Ticket_{tgs}$
  - (4) TGS —> C: $Ticket_V$
- Once per service session:
  - (5) C —> V: $ID_C || Ticket_V$

$$Ticket_{tgs} = E(K_{tgs}, [ID_C \| AD_C \| ID_{tgs} \| TS_1 \| Lifetime_1])$$

$$Ticket_v = E(K_v, [ID_C \| AD_C \| ID_v \| TS_2 \| Lifetime_2])$$



1. C —>AS: $ID_C || P_C || ID_V$
2. AS —> C : Ticket = $E(K_V, [ID_C || AD_C || ID_V])$
3. C —> V: $ID_C || Ticket$

Advantage

- No password transmitted in plaintext
- Ticket is reusable. Timestamp is added to prevent reuse of ticket by an attacker

Secure?

no user authentication

- Ticket hijacking
  - Malicious user may steal the service ticket of another user on the same workstation and try to use it
    - Network address verification does not help
  - Servers must verify that the user who is presenting the ticket is the same user to whom the ticket was issued
- No server authentication
  - Attacker may misconfigure the network so that he receives messages addressed to a legitimate server – man in the middle attack
    - Capture private information from users and/or deny service
  - Servers must prove their identity to users
- Solution: section key

- Once per user logon session
  - (1) C —>AS: $ID_C || ID_{tgs}$
  - (2) AS —> C: $E(K_C, Ticket_{tgs})$
- Once per type of service:
  - (3) C —>TGS: $ID_C || ID_V || Ticket_{tgs}$
  - (4) TGS —> C: $Ticket_V$
- Once per service session:
  - (5) C —> V: $ID_C || Ticket_V$