The Gossiping Persons Problem

There are n persons. All have one gossip to tell, which is not known to others. They are very desperate to tell their gossips and hear what others have. They communicate via a two way channel (eg. Telephone), thus when two persons are on the phone they exchange all the gossips they already know. What is the minimum telephone calls needed so that every one of them knows all the gossips?
The Gossiping Persons Problem

- Use a channel to synchronize between two Person automatas (call/answer)
- Each person has an internal state representing the secrets (s)he knows
  - \( n \) persons => \( n \) secrets
  - \( n \) bits representing the knowledge of the secrets
- A global variable is used to communicate secrets between two persons