HTTP SRP Authentication

draft-yusef-httpauth-srp-scheme-02

Overview

- **Secure Remote Password** (SRP) is an **Augmented PAKE** protocol that is used to authenticate users and exchange keys over an untrusted network, based on a shared password, without requiring a **Public Key Infrastructure** (PKI) or any **trusted third party**.

Proposal Highlight

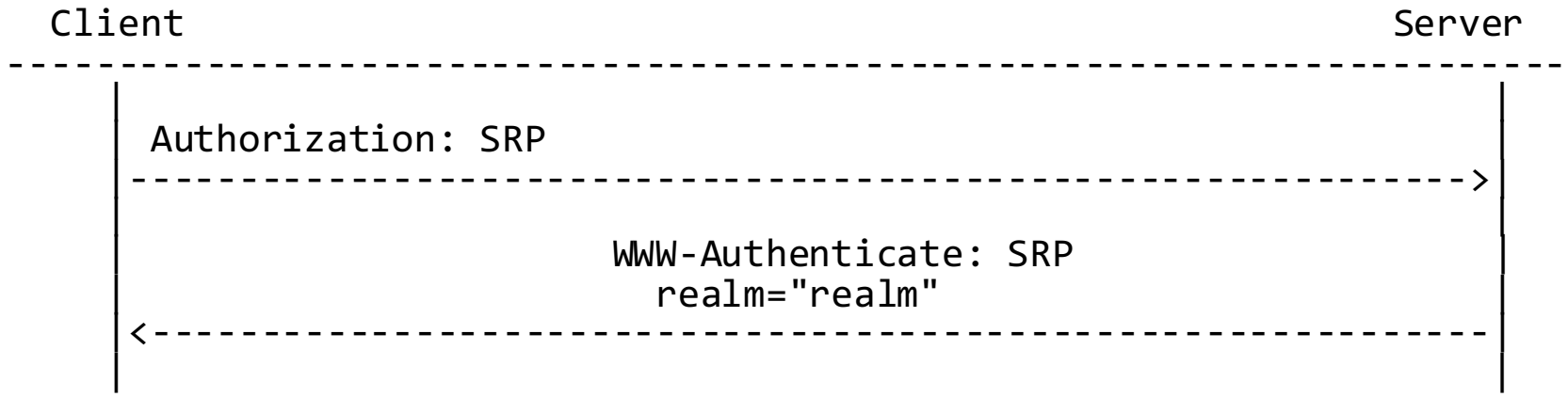
- A generic authentication framework based on the **HTTP Authentication Framework** [RFC7235] and **SRP**.
- Can be used for **HTTP**, **SIP**, as well as other protocols.
  - Not expected to be used for generic Web traffic.

Server and Account Setup

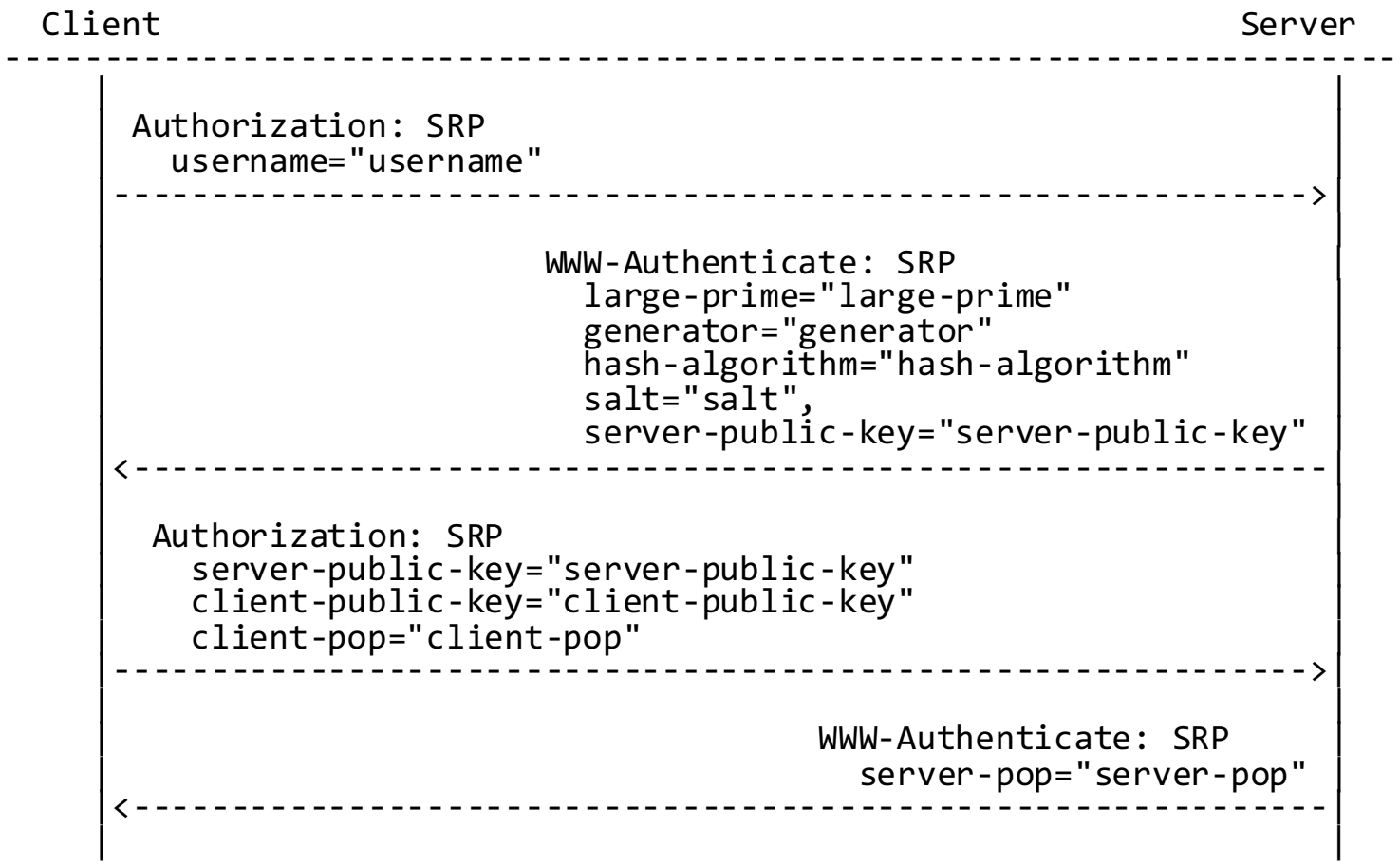
- **Server Setup**
  - Select a **large-prime** and a **generator**.
- **Account Setup**
  - Select a **hash function** and a **user salt**
  - Use a **realm** and the user **password** to create a **password-verifier** as follows:
    - **derived-private-key** = H(username:realm:password:salt)
    - **password-verifier** = generator ^ derived-private-key
  - Discard **derived-private-key.**
- **Database**
  - Store the following: **Username**, **Password-verifier**, **Hash-algorithm**, and **Salt**.

Realm Discovery

- The initial request that starts the **SRP** authentication process must include the **username** parameter.
  - To allow the user to select the proper **username**, the **Realm** is needed.
  - The discovery step is an optional step that allows the client to discover the **Realm**.



Authentication



Benefits

- Resists **passive** and **active** dictionary attacks.
- Offers **perfect forward secrecy**.
- User **passwords** or **hashes** are **not** stored in the DB.
  - Only **password verifiers** are stored, which cannot be used directly to compromise the security of the system in the case of DB compromise.
- **Royalty-free** worldwide for commercial and non-commercial use.
  - http://srp.stanford.edu/license.txt
- A variety of SRP implementations are available
  - http://srp.stanford.edu/links.html
- **IETF RFCs**
  - RFC2945 (SRP), RFC2944 (Telnet SRP), RFC5054 (SRP with TLS).

Questions?

- Can the WG adopt this work?