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K = 3



Chuck and Sara establish via key agreement

$$C_s = H(A|C_c|K_c)$$

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$$C_c = H(A|B|K_c)$$

$$C_c = H(A|B|K_s)$$

$$K = (B - g^x)^{a+x} \% N$$

$$= (9 - 2^5)^{11+5} \% 13$$

$$= 3$$

$$K = (Av)^b \% N$$

$$= (7 \cdot 6)^4 \% 13$$

$$= 3$$

$$b = 4$$

$$B = v + g^b \% N$$

$$= 6 + 2^4 \% 13$$

$$= 9$$

$$a = 11$$

$$\begin{aligned} A &= g^a \% N \\ &= 2^{11} \% 13 \\ &= 7 \end{aligned}$$

$$x = 5 \qquad y = 6$$

$$x=5 \qquad v=6$$



• Chuck keeps (secret) and gives to Sara (verifier)

$$x = 5 \qquad v = g^x \% N = 2^5 \% 13 = 6$$



• Chukose and calculates

$$g=2, N=13$$

SRP (simplified)

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Chuck and Sara agree to use $g = 2, N = 13$ (public)

- Chuck chooses $x = 5$ and calculates $v = g^x \% N = 2^5 \% 13 = 6$
 - Chuck keeps $x = 5$ (secret) and gives $v = 6$ to Sara (verifier)

$x = 5$ Chuck

Random $a = 11$
 Computes $A = g^a \% N$
 $= 2^{11} \% 13$
 $= 7$

Computes $K = (B - g^x)^{a+x} \% N$
 $= (9 - 2^5)^{11+5} \% 13$
 $= 3$

Computes $C_c = H(A | B | K_c)$

Checks $C_s = H(A | C_c | K_c)$

Id, 7 $\xrightarrow{\hspace{1cm}}$
 $\xleftarrow{\hspace{1cm}}$ 9

C_c $\xrightarrow{\hspace{1cm}}$
 $\xleftarrow{\hspace{1cm}}$ C_s

Sara $v = 6$

Random $b = 4$
 Computes $B = v + g^b \% N$
 $= 6 + 2^4 \% 13$
 $= 9$

Computes $K = (Av)^b \% N$
 $= (7 \cdot 6)^4 \% 13$
 $= 3$

Checks $C_c = H(A | B | K_s)$

Computes $C_s = H(A | C_c | K_s)$

- Chuck and Sara establish $K = 3$ via *key agreement*

Structure