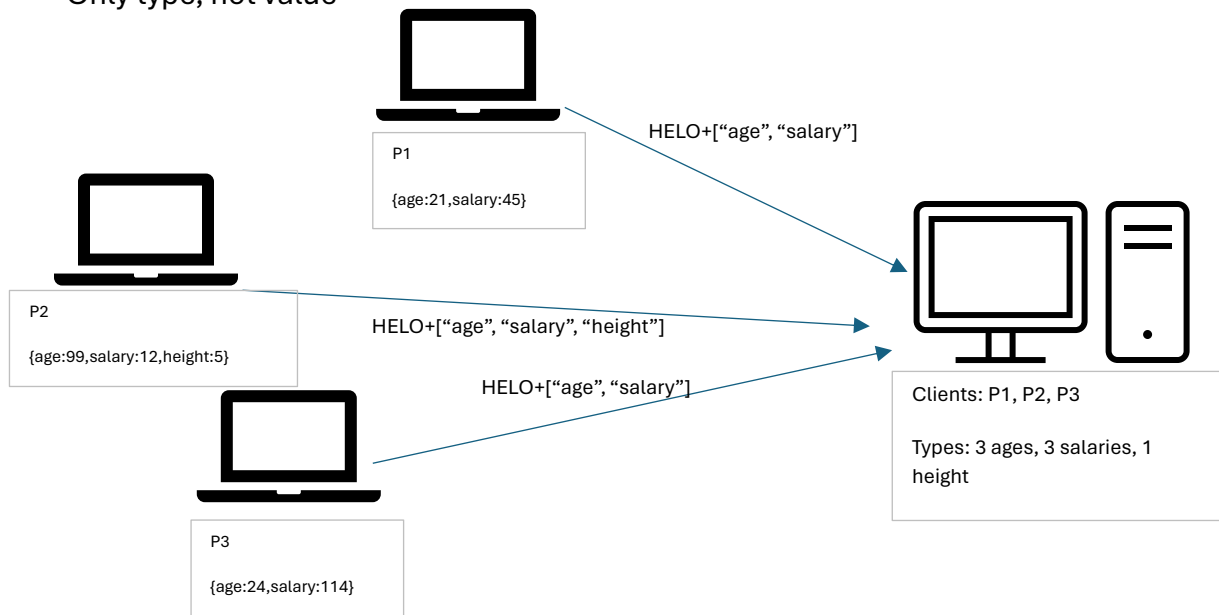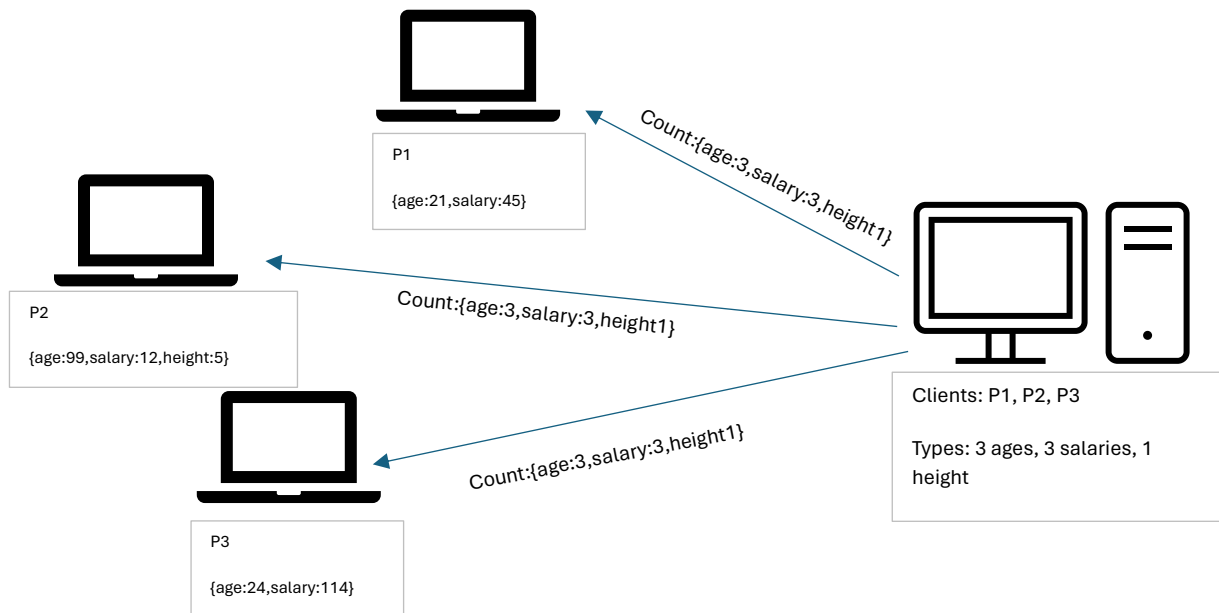# Explanation of MPC with one TTP Coordination server

Process 1: client send information they want to compute to server.

Only type, not value
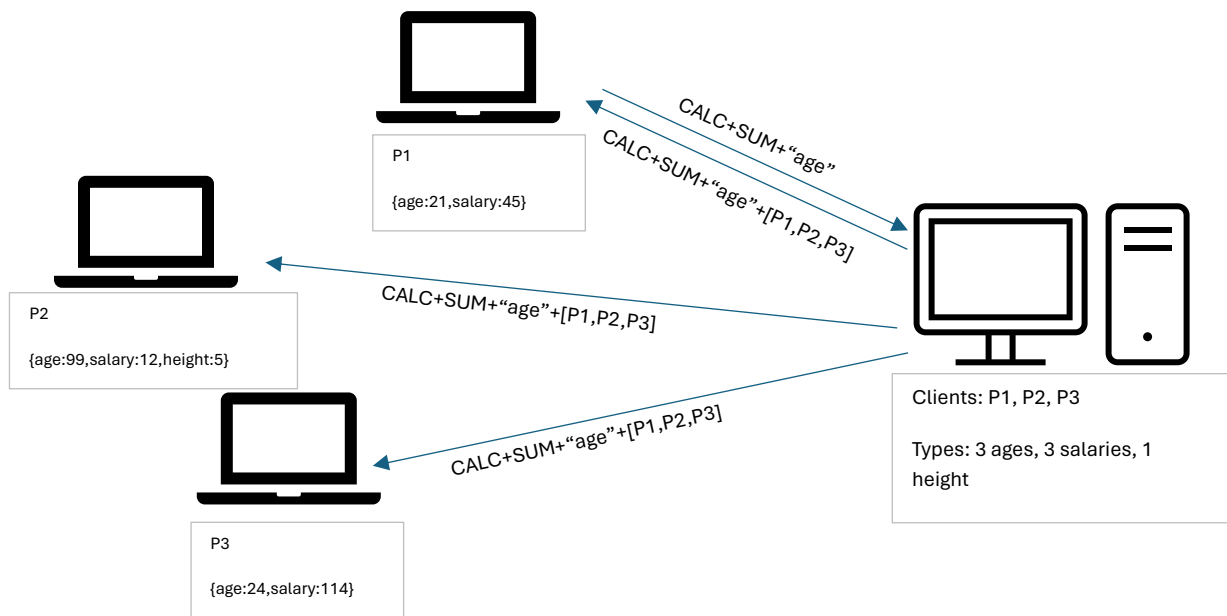
P1

{age:21,salary:45}

HELO+["age", "salary"]

P2

{age:99,salary:12,height:5}

HELO+["age", "salary", "height"]

HELO+["age", "salary"]

P3

{age:24,salary:114}

Clients: P1, P2, P3

Types: 3 ages, 3 salaries, 1 height

Process 2: server share information about party


```
P1
{age:21,salary:45}
```

```
P2
{age:99,salary:12,height:5}
```

```
P3
{age:24,salary:114}
```

Count:{age:3,salary:3,height1}

Count:{age:3,salary:3,height1}

Count:{age:3,salary:3,height1}

```
Clients: P1, P2, P3

Types: 3 ages, 3 salaries, 1
height
```
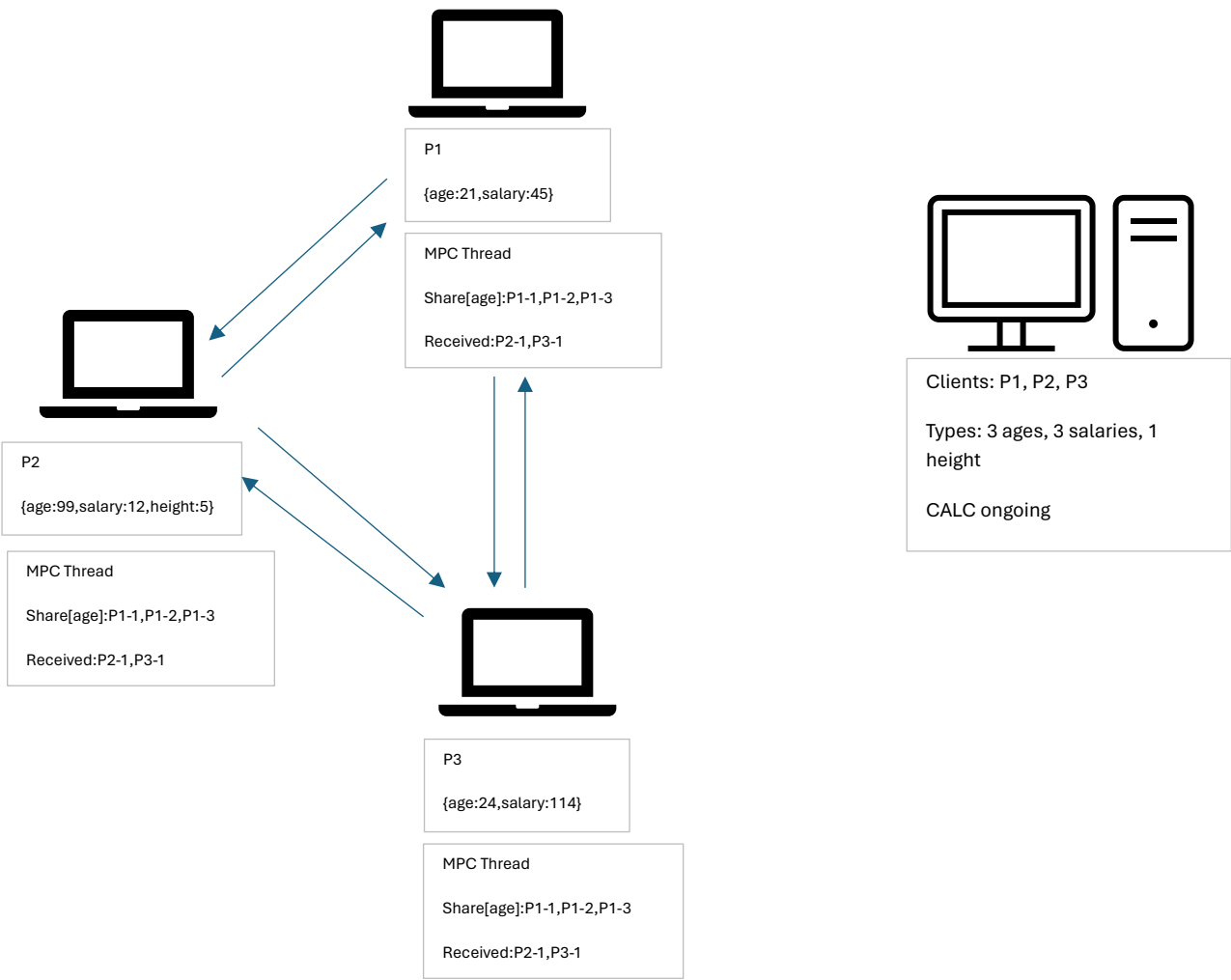
If want to update, just repeat the process 1 above.

Process 3: Server receive client request to compute.

Use summation of age as example

P1

{age:21,salary:45}

P2

{age:99,salary:12,height:5}

P3

{age:24,salary:114}

CALC+SUM+"age"

CALC+SUM+"age"+[P1,P2,P3]

CALC+SUM+"age"+[P1,P2,P3]

CALC+SUM+"age"+[P1,P2,P3]

Clients: P1, P2, P3

Types: 3 ages, 3 salaries, 1 height

Process 4: MPC start.

P1

{age:21,salary:45}

MPC Thread

Share[age]:P1-1,P1-2,P1-3

Received:P2-1,P3-1

P2

{age:99,salary:12,height:5}

MPC Thread

Share[age]:P1-1,P1-2,P1-3

Received:P2-1,P3-1

P3

{age:24,salary:114}

MPC Thread

Share[age]:P1-1,P1-2,P1-3

Received:P2-1,P3-1

Clients: P1, P2, P3

Types: 3 ages, 3 salaries, 1 height

CALC ongoing

Sub-Process 4: If we run Beaver Triple and Multiplication of everyone's age.

Use summation of age as example

P1

{age:21,salary:45}

CALC+SUM_MULT+"age"

CALC+SUM+"age"+[P1,P2,P3]

CALC+SUM+"age"+[P1,P2,P3]

P2

{age:99,salary:12,height:5}

CALC+SUM+"age"+[P1,P2,P3]

P3

{age:24,salary:114}

Clients: P1, P2, P3

Types: 3 ages, 3 salaries, 1 height