

Dpserver CODE TRACE

Munerah Alzaidan

Supervisor: Dr. Saad Alahmady

CSC529 | Selected Topics in Computer Systems

King Saud University 2021

Message Perturbation Engine

```
run(){
```

Each 3 Sec:

Check **incomingQ** have msg:

Process...

```
}
```

Servlet

```
doPost(){
```

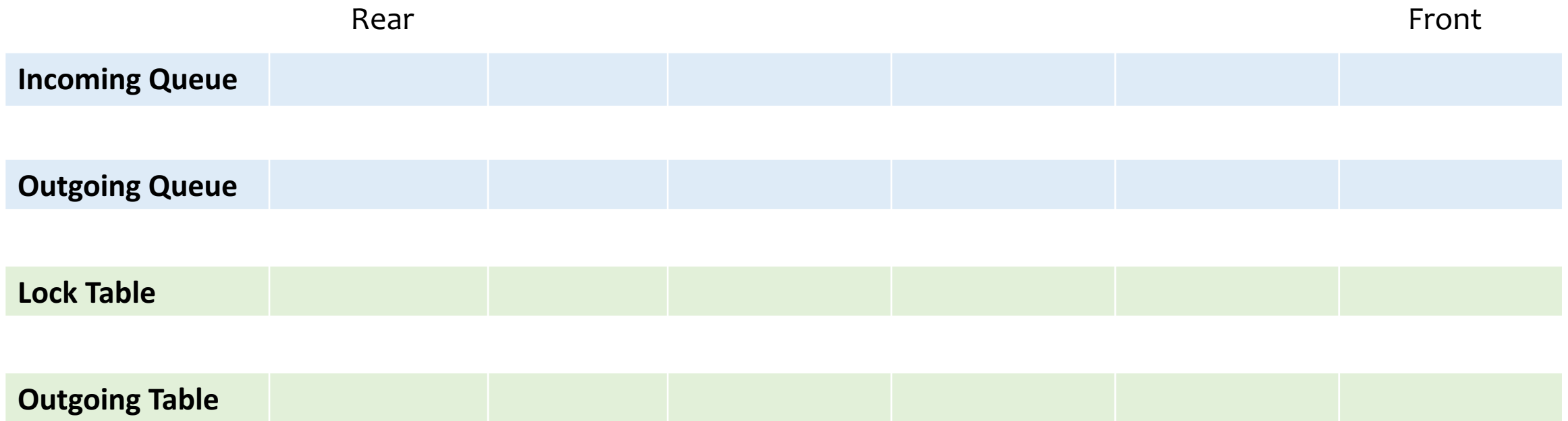
Add msg to **incomingQ**

```
}
```

[http://localhost:8080/dpserver/AnonymityServlet?24.748384, 46.640309](http://localhost:8080/dpserver/AnonymityServlet?24.748384,46.640309)
[http://localhost:8080/dpserver/AnonymityServlet?24.743543, 46.640382](http://localhost:8080/dpserver/AnonymityServlet?24.743543,46.640382)
[http://localhost:8080/dpserver/AnonymityServlet?24.7483567, 46.640334](http://localhost:8080/dpserver/AnonymityServlet?24.7483567,46.640334)



1,	24.748344,	46.640382,	1614456339
2,	24.748038,	46.639142,	1614456664
3,	24.745975,	46.634870,	1614456810
4,	24.743983,	46.640201,	1614457033
5,	24.749778,	46.639651,	1614456443
6,	24.743691,	46.633247,	1614456722
7,	24.751340,	46.638603,	1614456320
8,	24.745562,	46.639952,	1614456922
9,	24.743080,	46.633483,	1614457084
10,	24.745715,	46.641398,	1614456485

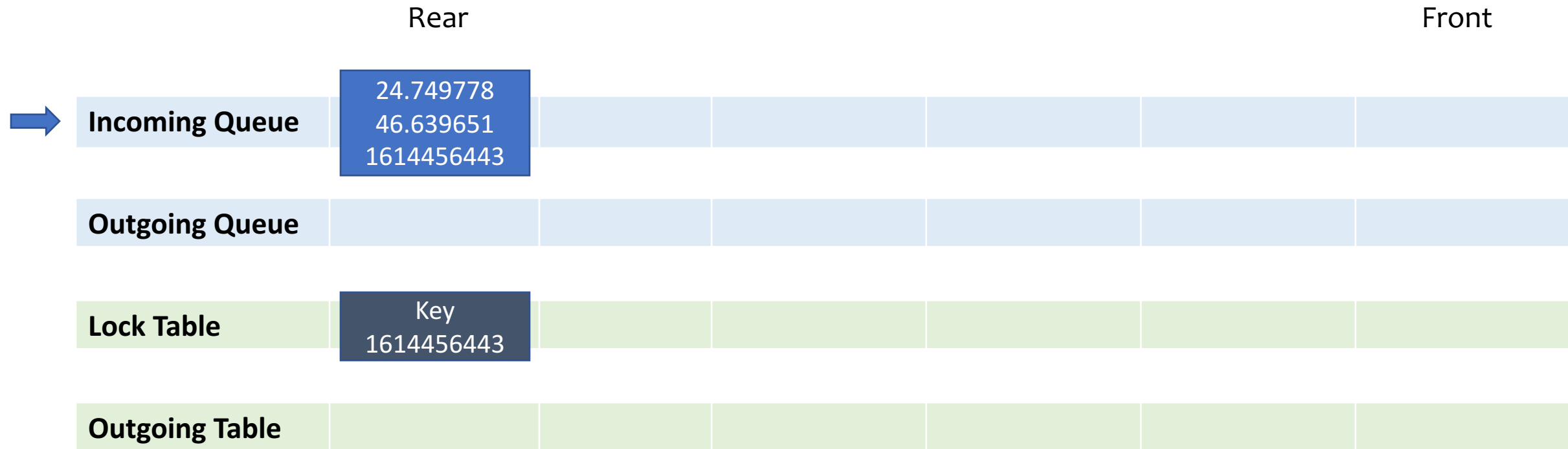


In this test:

- All POST are set to basic anonymity policy
- Random (with a given range): lat, long, timestamps
- Timestamps are used as identifiers to overcome the id interference issue in lockTable

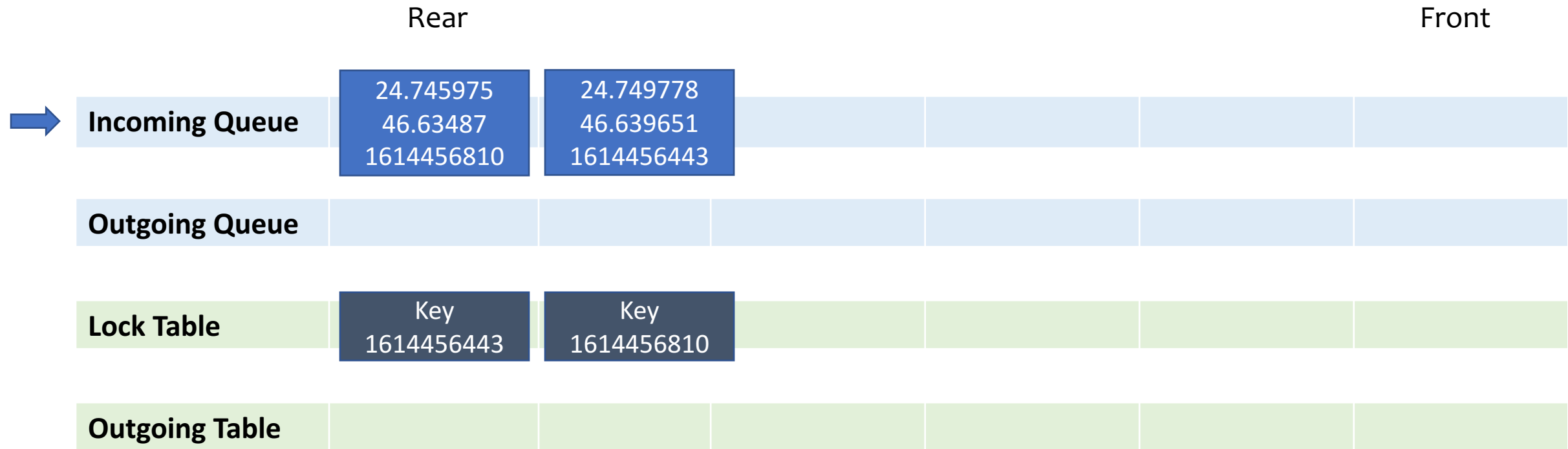
Server Config:

- The *safety Distance* = 1250
- Basic = 2 k, Strong = 4 k



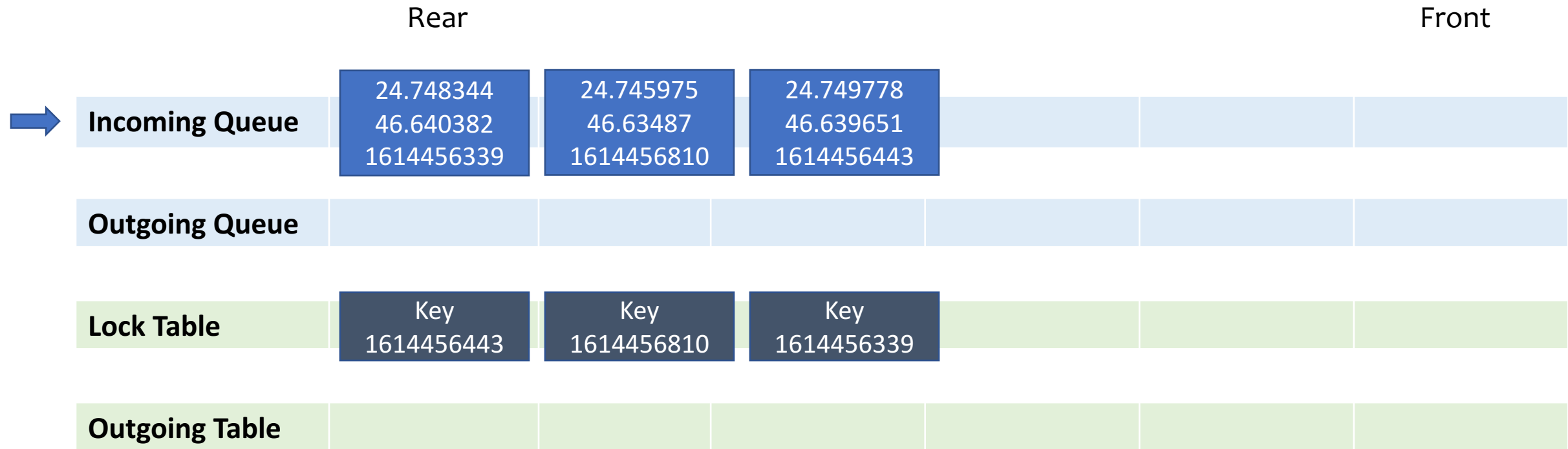
Action log:

- **POST to AnonymityServlet**



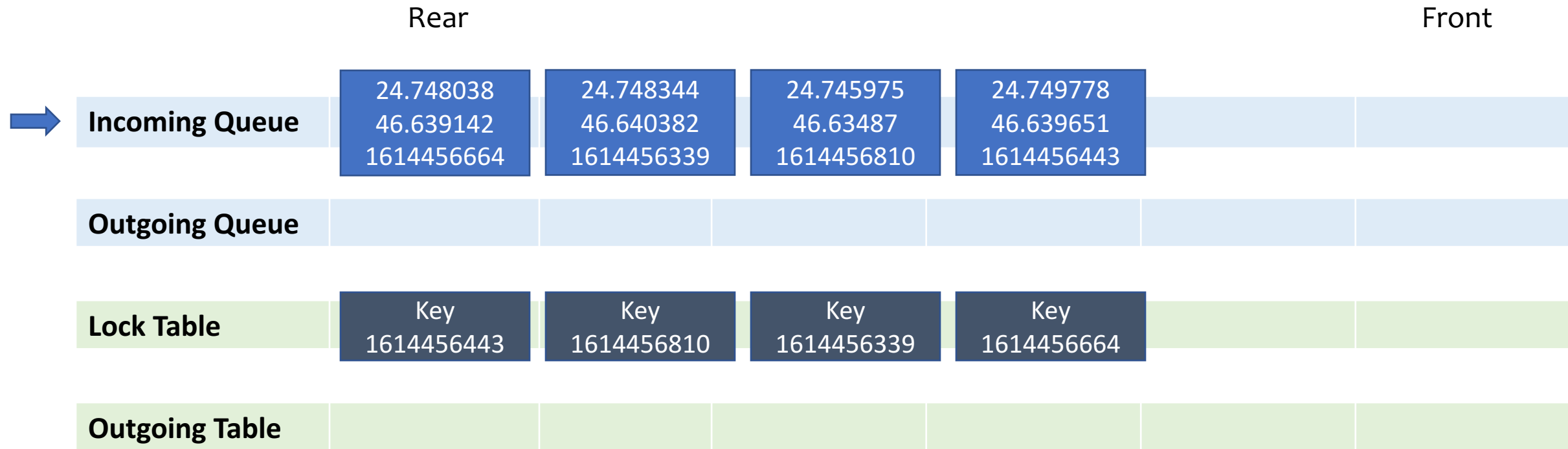
Action log:

- **POST to AnonymityServlet**



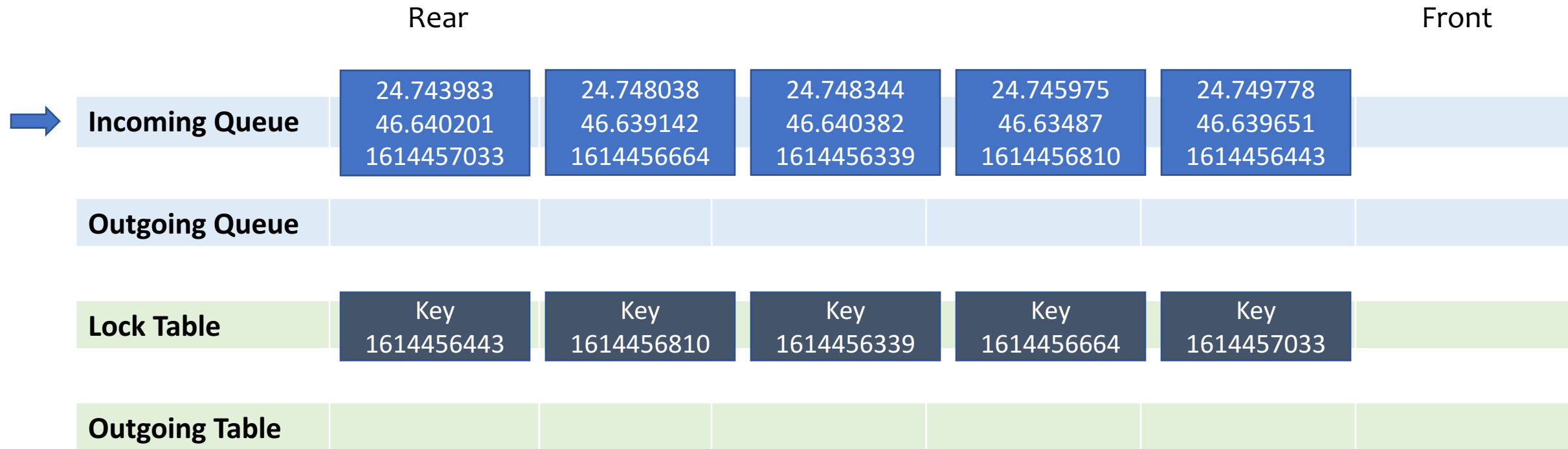
Action log:

- **POST to AnonymityServlet**



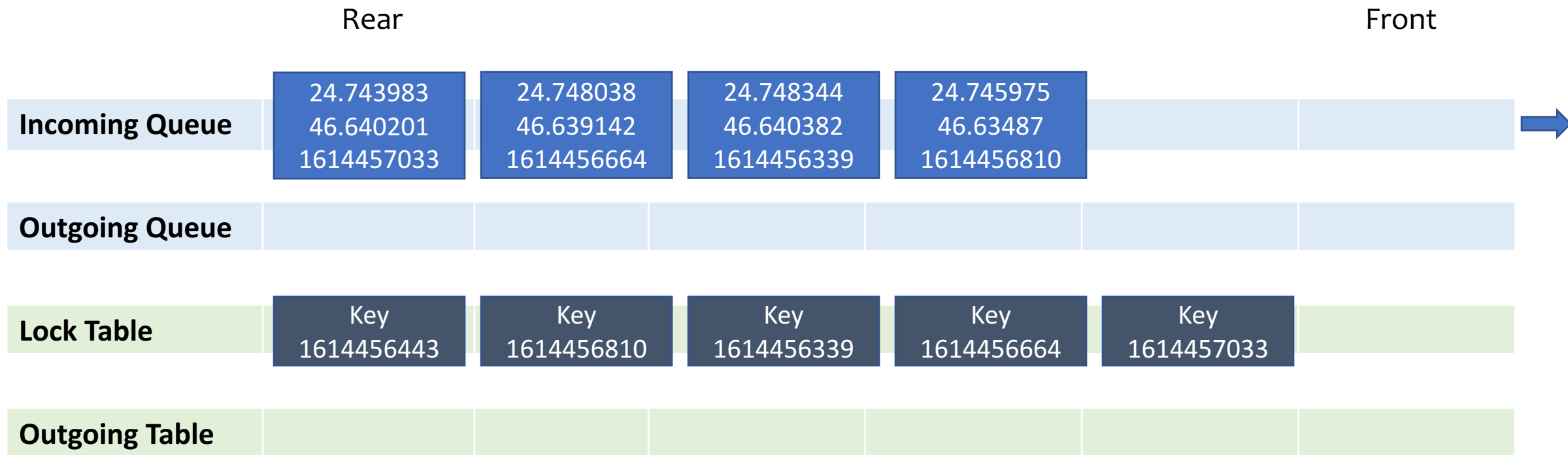
Action log:

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Action log:

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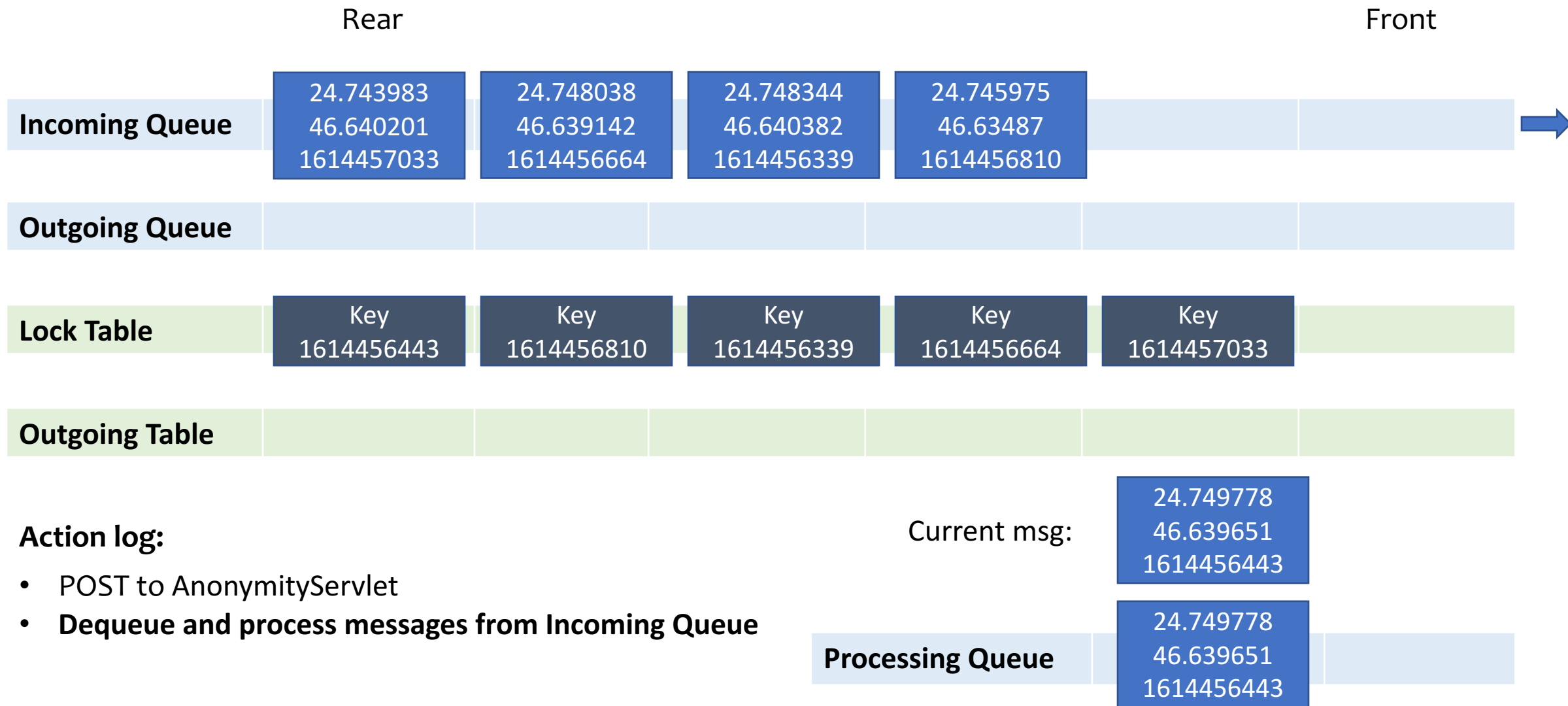


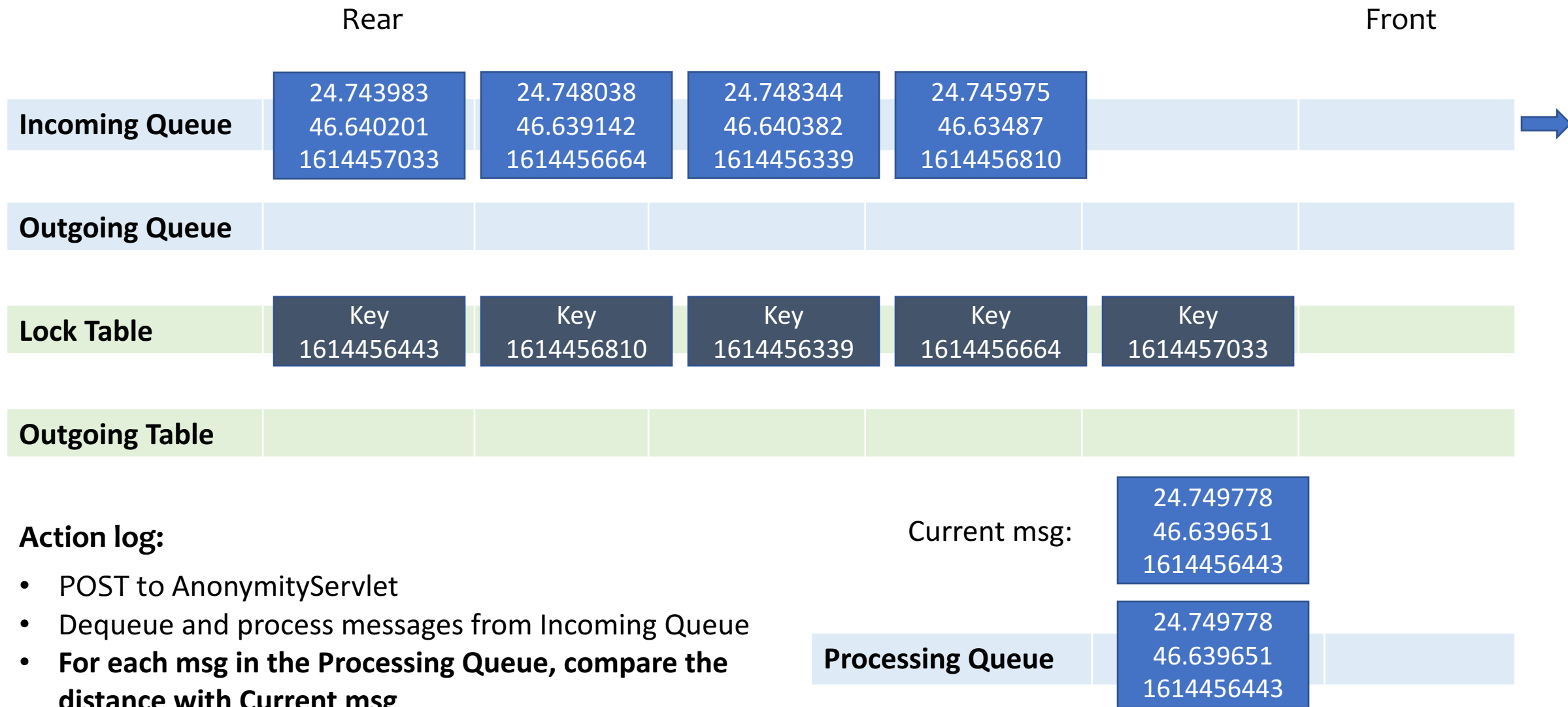
Action log:

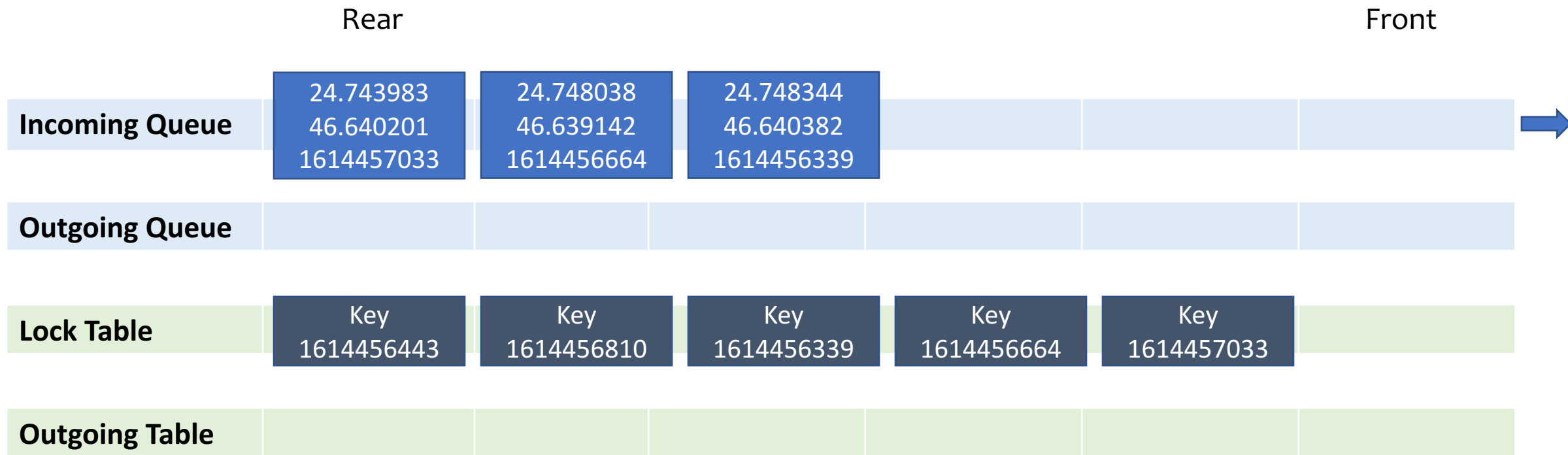
Current msg:

24.749778
46.639651
1614456443

- POST to AnonymityServlet
- **Dequeue and process messages from Incoming Queue**







Action log:

- POST to AnonymityServlet
- Dequeue and process messages from Incoming Queue
- **For each msg in the Processing Queue, compare the distance with Current msg**

Current msg:

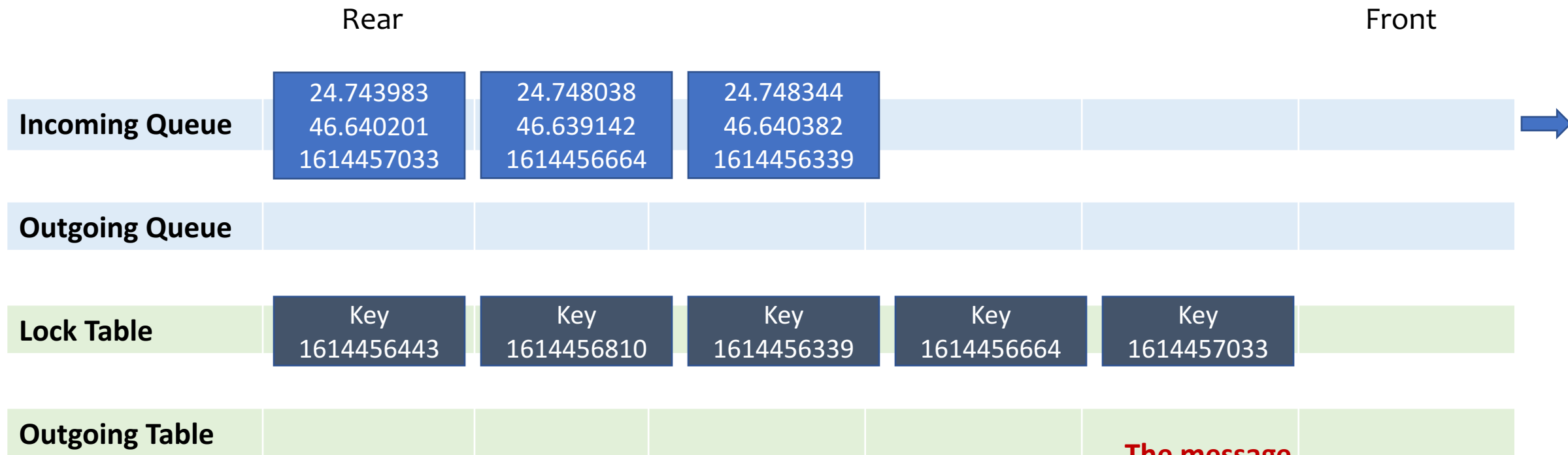
24.745975
46.63487
1614456810

Processing Queue

24.745975
46.63487
1614456810

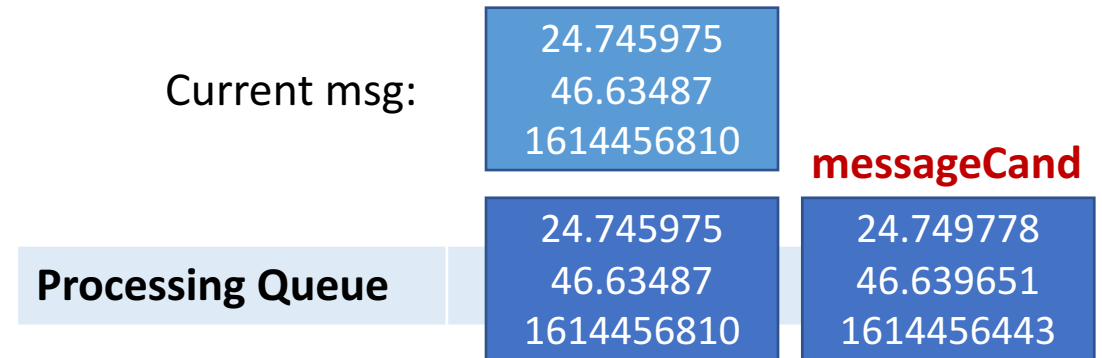
24.749778
46.639651
1614456443

Distance is: 641.363

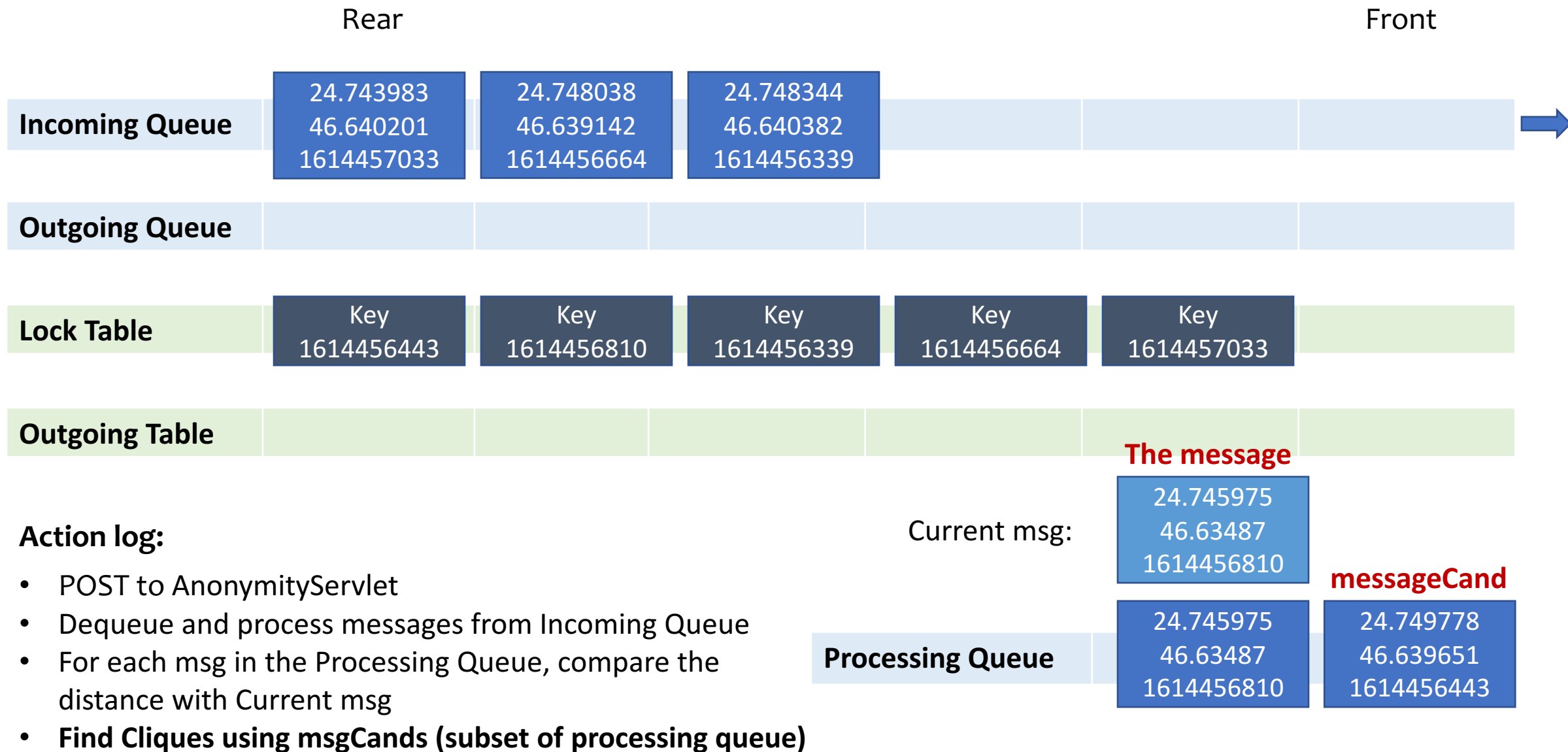


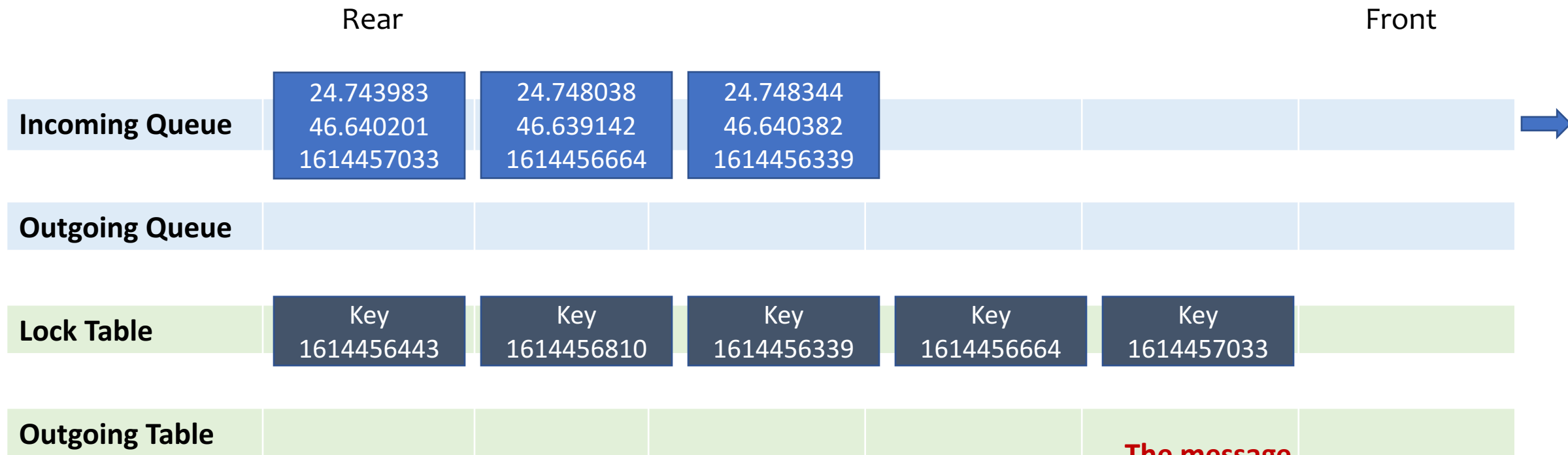
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- POST to AnonymityServlet
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Distance is: 641.363
 Since Distance < 1250
 And msg.id != pmsg.id
 Set msg & msgCand





Action log:

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- Dequeue and process messages from Incoming Queue
- For each msg in the Processing Queue, compare the distance with Current msg
- Find Cliques using msgCands (subset of processing queue)
- If Cliques are found, then call obfuscateMessages which: gets the centroid of the given locations and removes the messages locks and put & enqueue the perturbed location in the Outgoing table & in the Outgoing queue

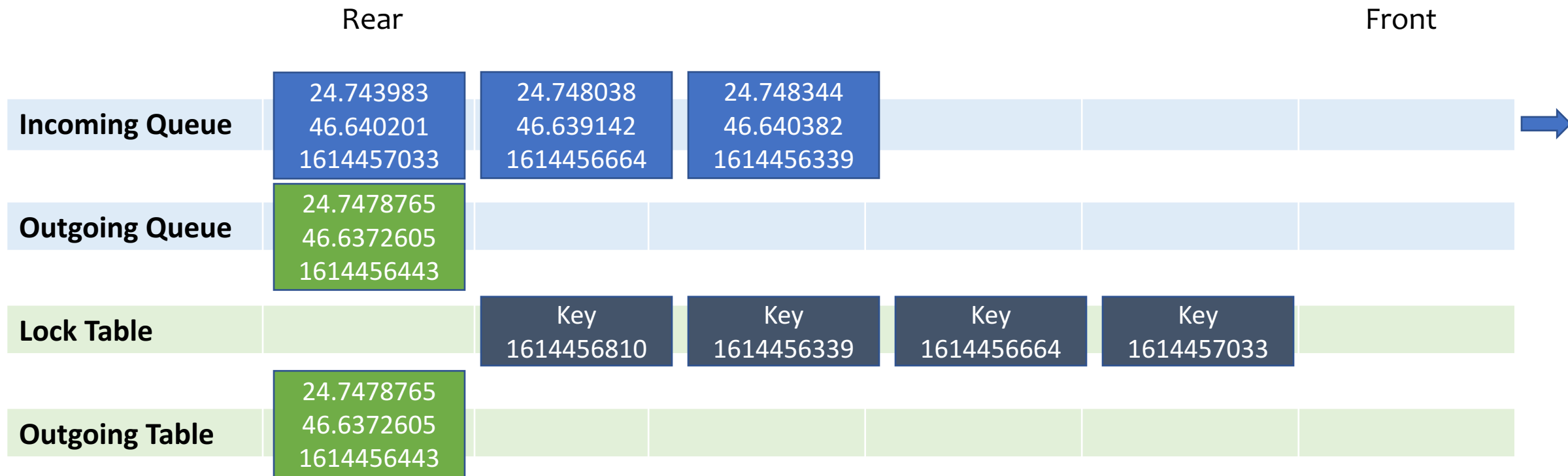
Current msg:

24.745975
46.63487
1614456810

messageCand

Processing Queue

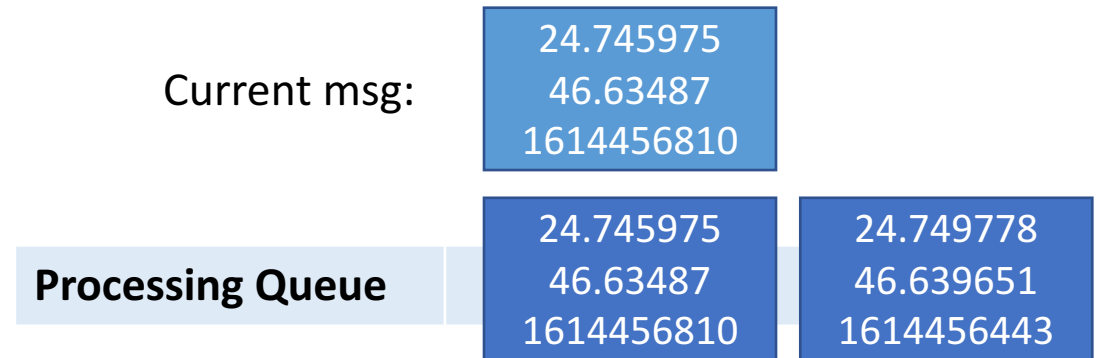
24.745975 46.63487 1614456810	24.749778 46.639651 1614456443
-------------------------------------	--------------------------------------

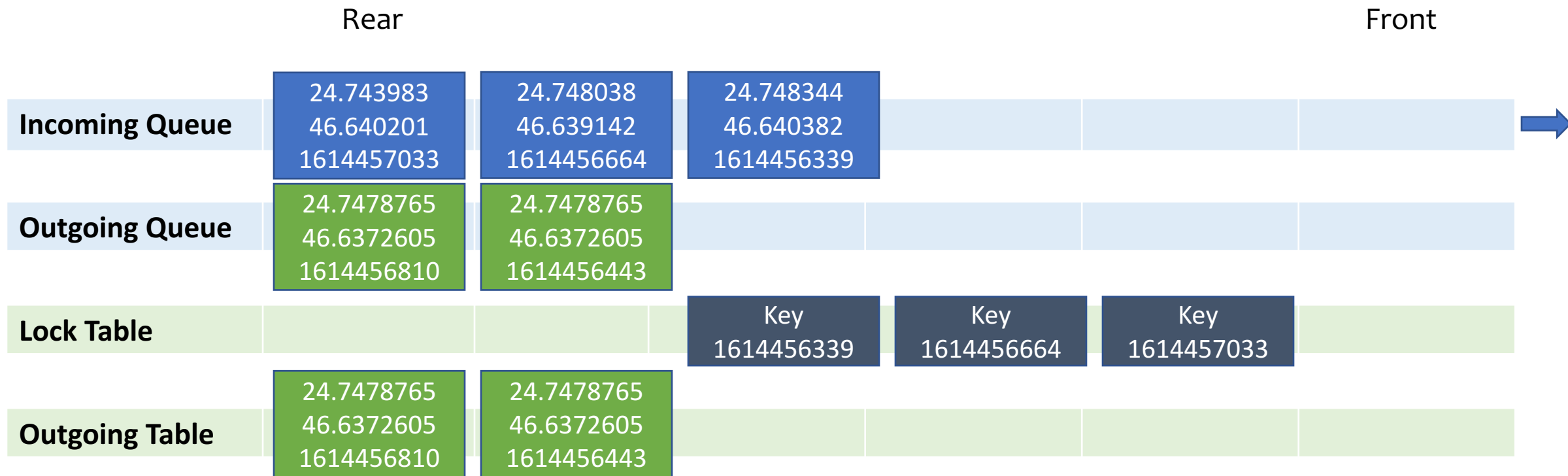


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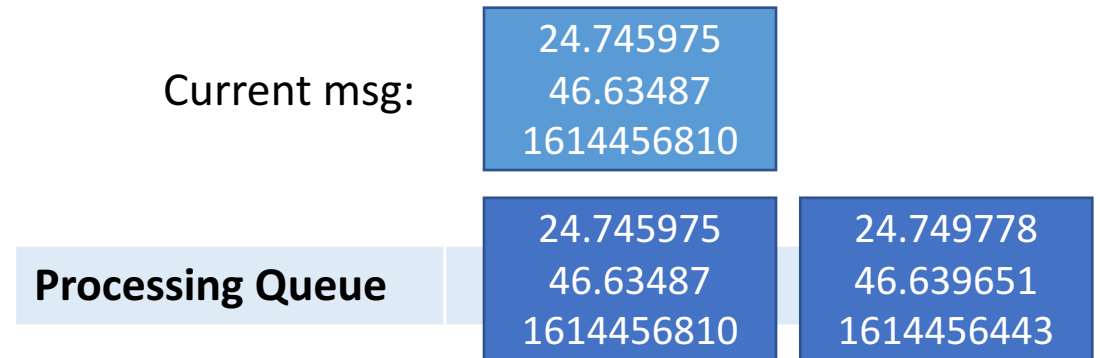


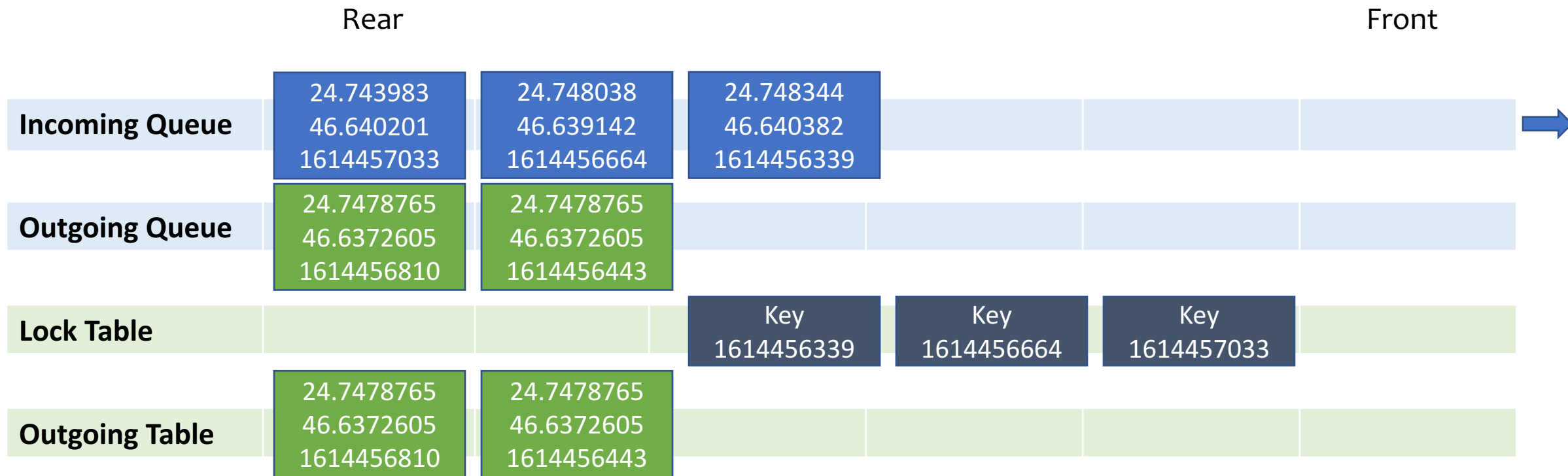


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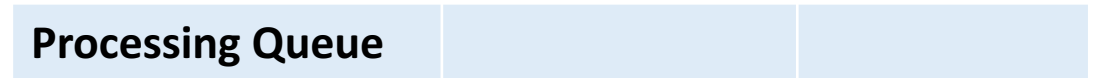


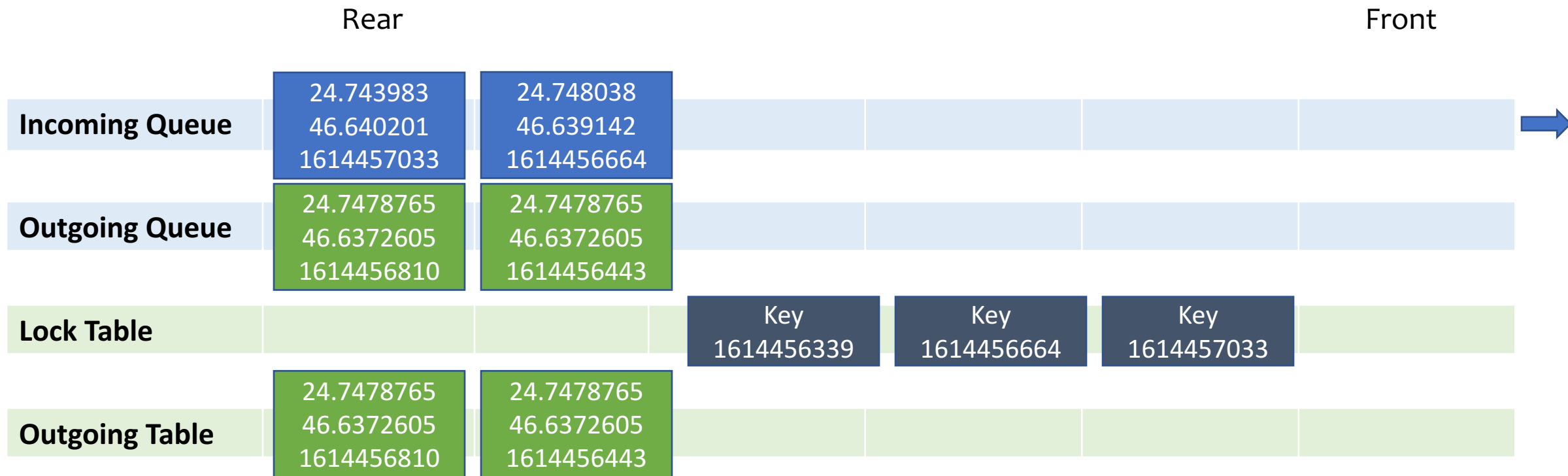


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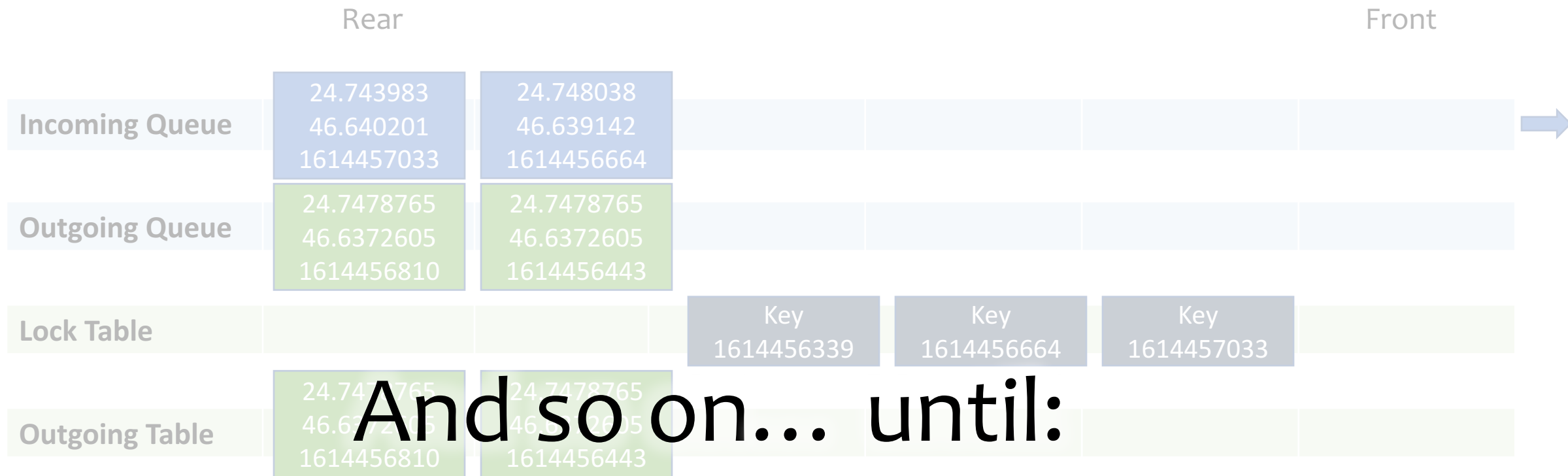
Current msg:

24.748344
46.640382
1614456339

Action log:

- POST to AnonymityServlet
- **Dequeue and process messages from Incoming Queue**
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Processing Queue



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Incoming Queue						
Outgoing Queue	24.7476615 46.6394020 1614457033	24.748191 46.6397620 1614456664	24.748191 46.6397620 1614456339	24.7478765 46.6372605 1614456810	24.7478765 46.6372605 1614456443	
Lock Table						
Outgoing Table	24.7476615 46.6394020 1614457033	24.748191 46.6397620 1614456664	24.748191 46.6397620 1614456339	24.7478765 46.6372605 1614456810	24.7478765 46.6372605 1614456443	