1 Plotting all figures

1.1

```
Cluster and Node Placement Times (s)
replications cluster-placement-time node-placement-time
replica-1 0,00 0,60
replicas-5 0,20 3,20
replicas-10 0,00 6,20
replicas-20 0,80 12,70
replicas-30 1,00 20,10
```
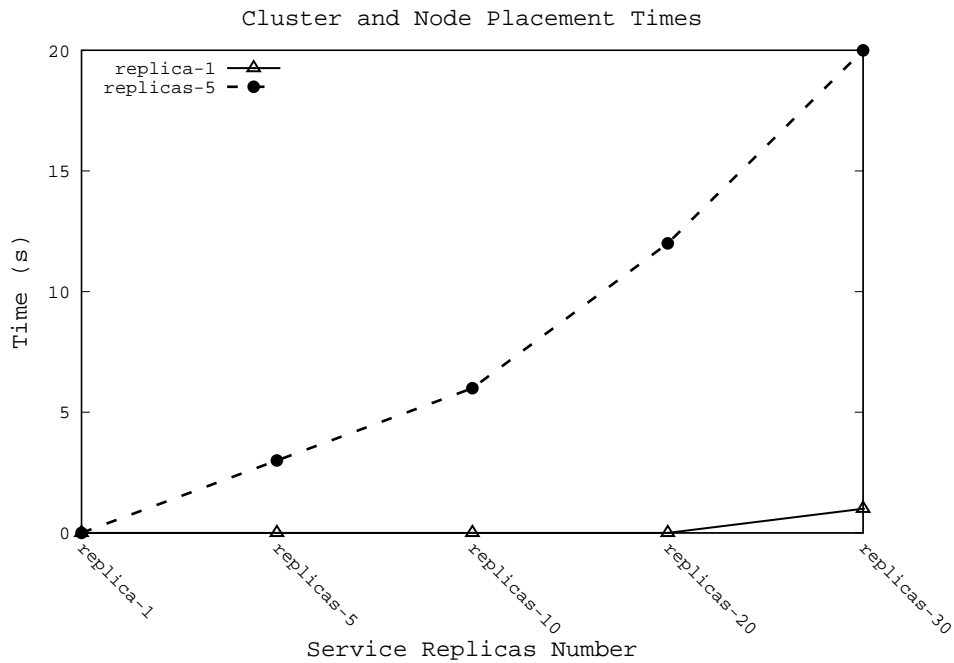

Fig. 1. Cluster and Node Placement Times

1.2

```
Cluster CPU Utilization (%)
replications cluster-1 cluster-2 cluster-3
replica-1 7,00 0,00 0,00
replicas-5 39,00 0,00 0,00
replicas-10 78,00 0,00 0,00
```

```
replicas −20  99,20  0,00  56,40
replicas −30  99,60  34,60  99,30
```
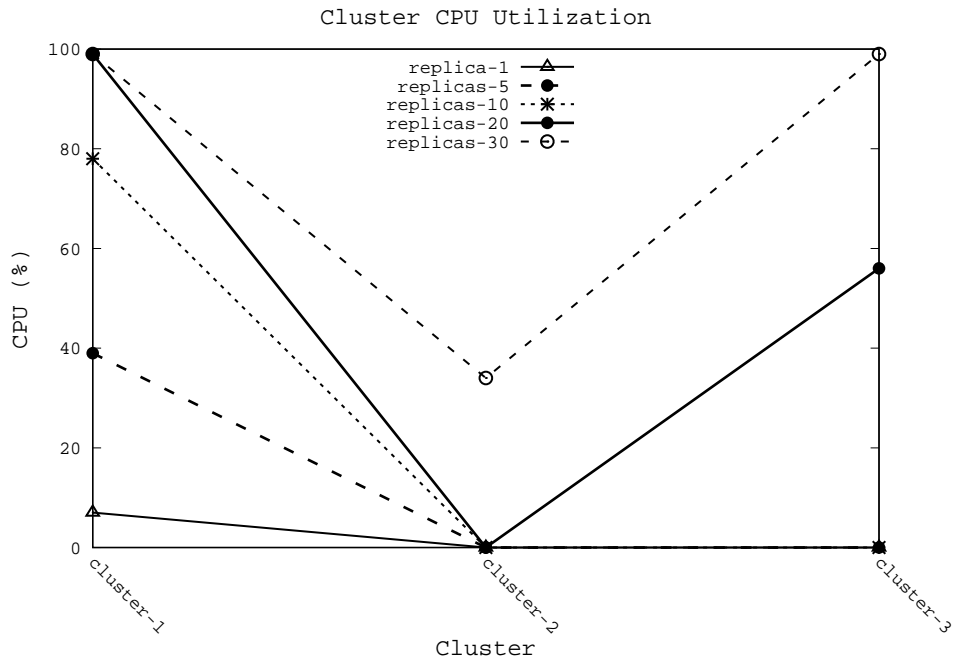

Fig. 2. Cluster CPU Utilization

1.3

Listing 3. Cluster Memory Utilization
```
Cluster  Memory  Utilization  (%)
replications  cluster −1  cluster −2  cluster −3
replica −1  3,00  0,00  0,00
replicas −5  19,00  0,00  0,00
replicas −10  39,00  0,00  0,00
replicas −20  49,40  0,00  28,00
replicas −30  50,00  17,00  49,40
```

1.4

Listing 4. Cluster Node Utilization
```
Cluster  Node  Utilization  (%)
replications  cluster −1  cluster −2  cluster −3
replica −1  100,00  0,00  0,00
replicas −5  100,00  0,00  0,00
```
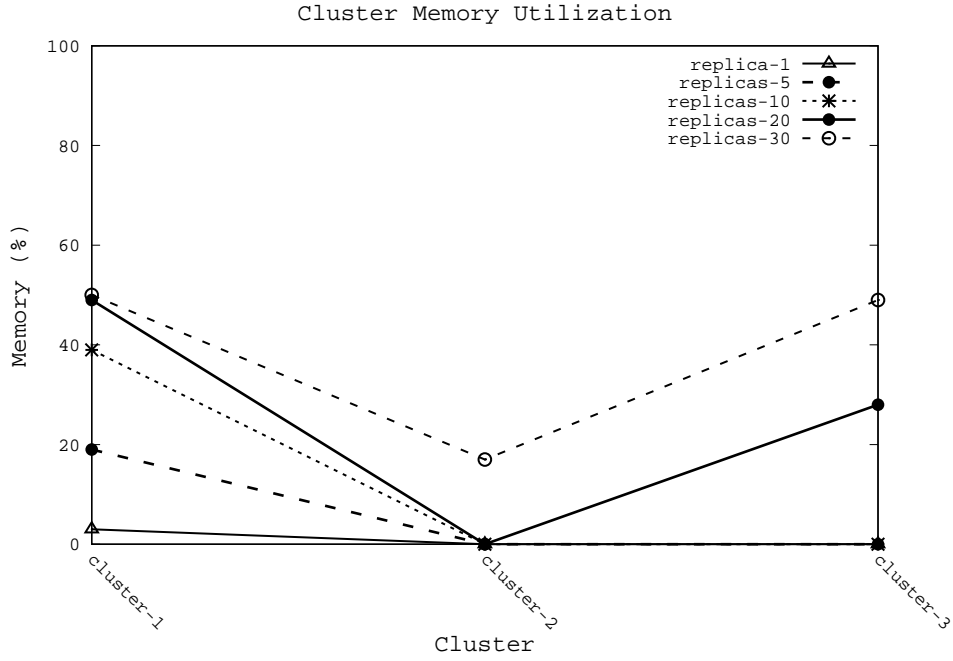
Cluster Memory Utilization

Fig. 3. Cluster Memory Utilization

```
replicas −10  100,00   0,00    0,00
replicas −20  100,00   0,00    100,00
replicas −30  100,00   100,00  100,00
```
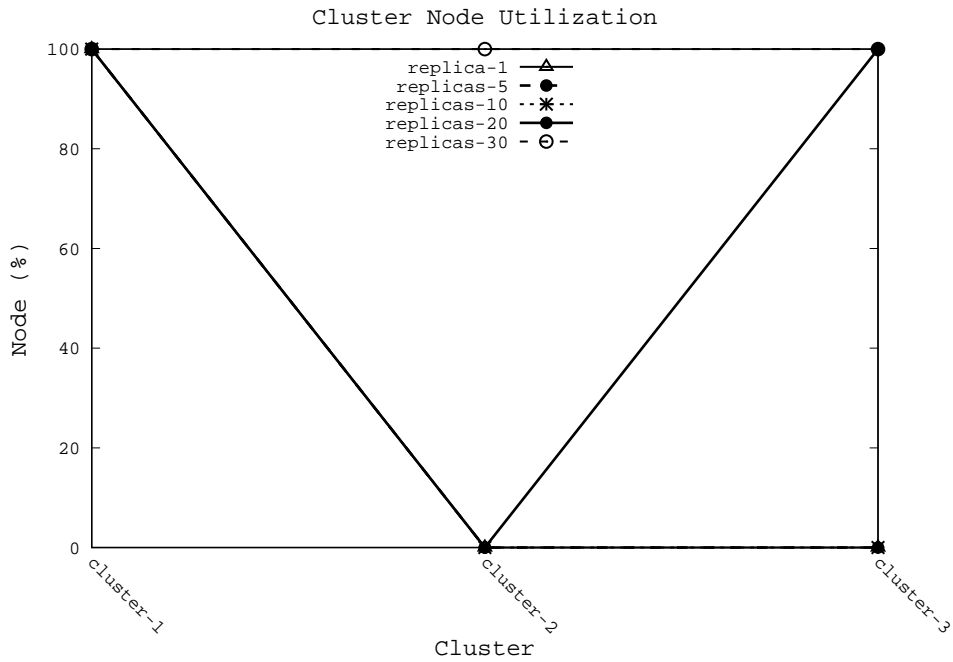
Cluster Node Utilization

Fig. 4. Cluster Node Utilization

1.5

```
Node CPU Utilization (%)
nodes cluster-1-node1 cluster-1-node2 cluster-2-node1
   cluster-2-node2 cluster-3-node1 cluster-3-node2
replica-1 7,00 7,00 0,00 0,00 0,00 0,00
replicas-5 39,00 39,00 0,00 0,00 0,00 0,00
replicas-10 78,00 78,00 0,00 0,00 0,00 0,00
replicas-20 99,30 98,60 0,00 0,00 99,40 12,80
replicas-30 99,40 99,60 69,20 0,00 98,70 99,50
```
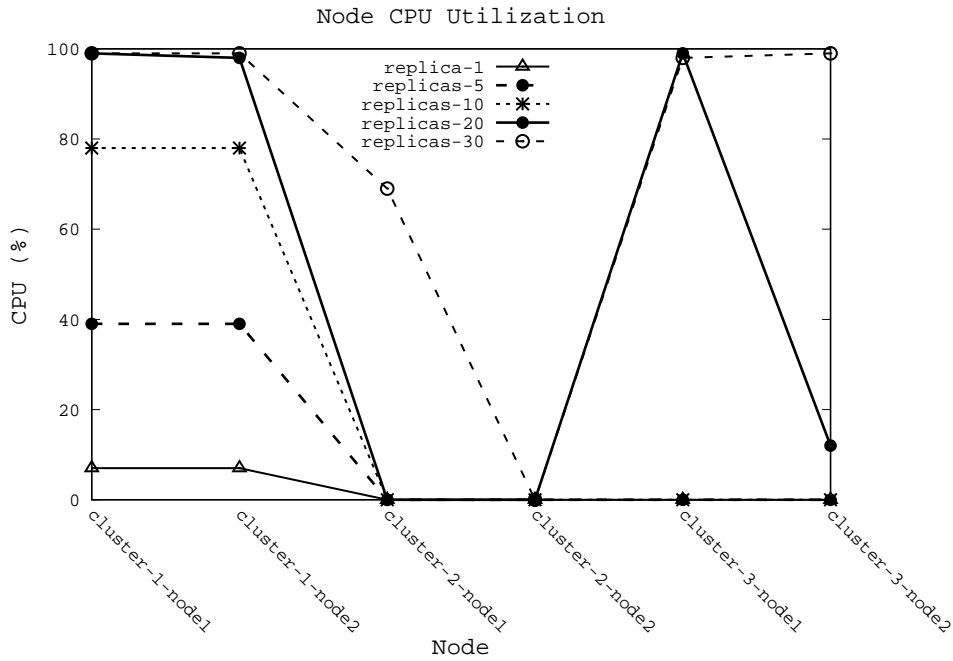

Fig. 5. Node CPU Utilization

1.6

```
Node Memory Utilization (%)
nodes cluster-1-node1 cluster-1-node2 cluster-2-node1
   cluster-2-node2 cluster-3-node1 cluster-3-node2
replica-1 3,00 3,00 0,00 0,00 0,00 0,00
replicas-5 19,00 19,00 0,00 0,00 0,00 0,00
replicas-10 39,00 39,00 0,00 0,00 0,00 0,00
replicas-20 50,00 49,40 0,00 0,00 50,00 6,40
```
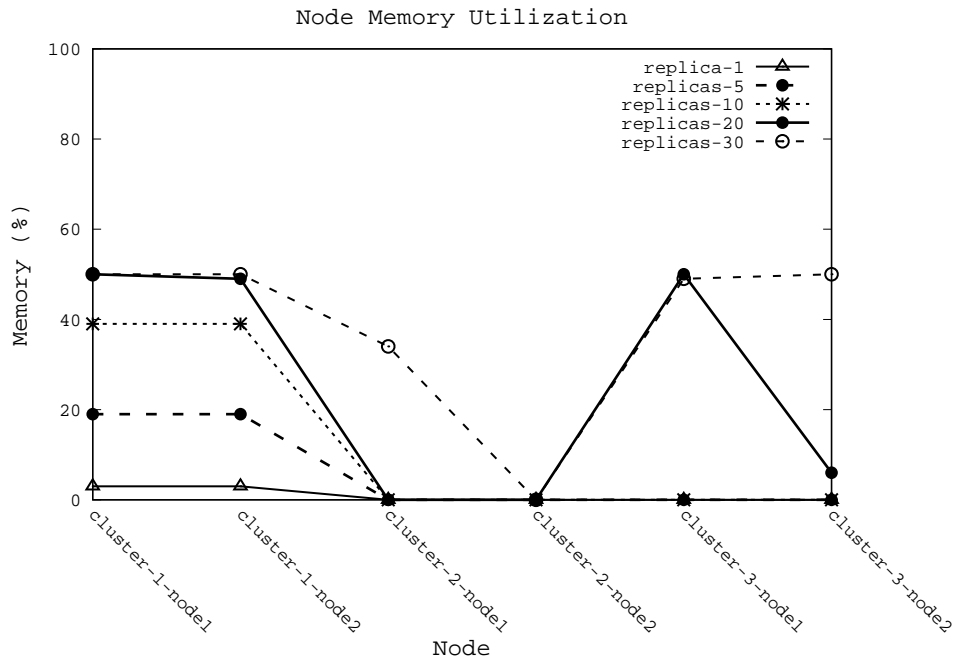
4

replicas −30 50,00 50,00 34,60 0,00 49,40 50,00

Fig. 6. Node Memory Utilization