1 Plotting all figures

1.1

Listing 1. Cluster and Node Placement Times

```
Cluster and Node Placement Times (ms)
replications cluster-placement-time node-placement-time
replica-1 0.00 1.00
replicas-5 0.00 6.00
replicas-10 0.00 12.00
replicas-20 1.00 346.00
replicas-30 0.00 35.00
```
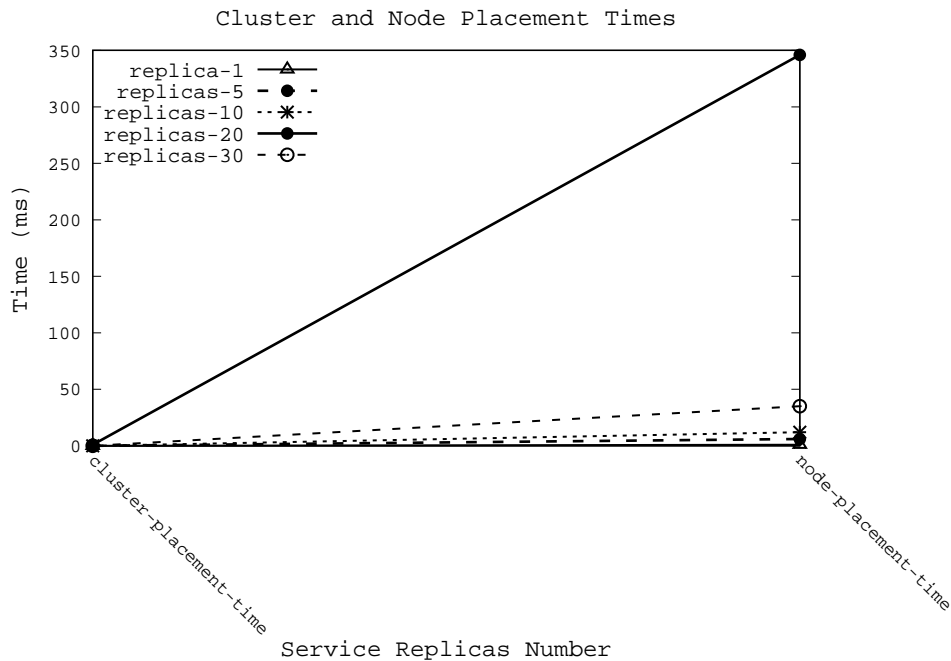

Fig. 1. Cluster and Node Placement Times

1.2

Listing 2. Cluster CPU Utilization

```
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  100.00  0.00  56.00
replicas −30  99.00  34.00  100.00
```
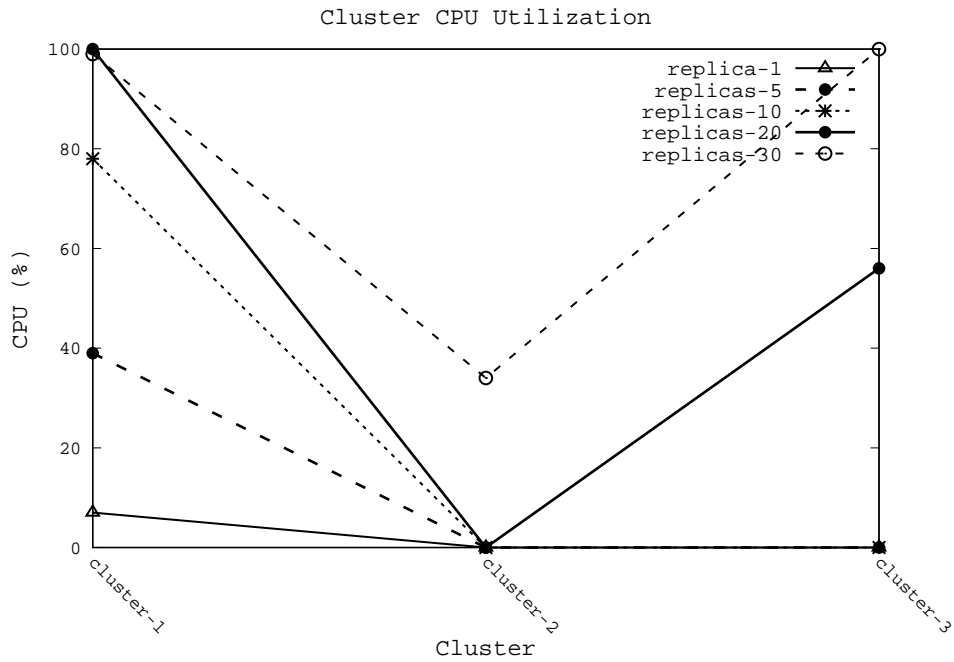

Fig. 2. Cluster CPU Utilization

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  50.00  0.00  28.00
replicas −30  50.00  17.00  50.00
```

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
```
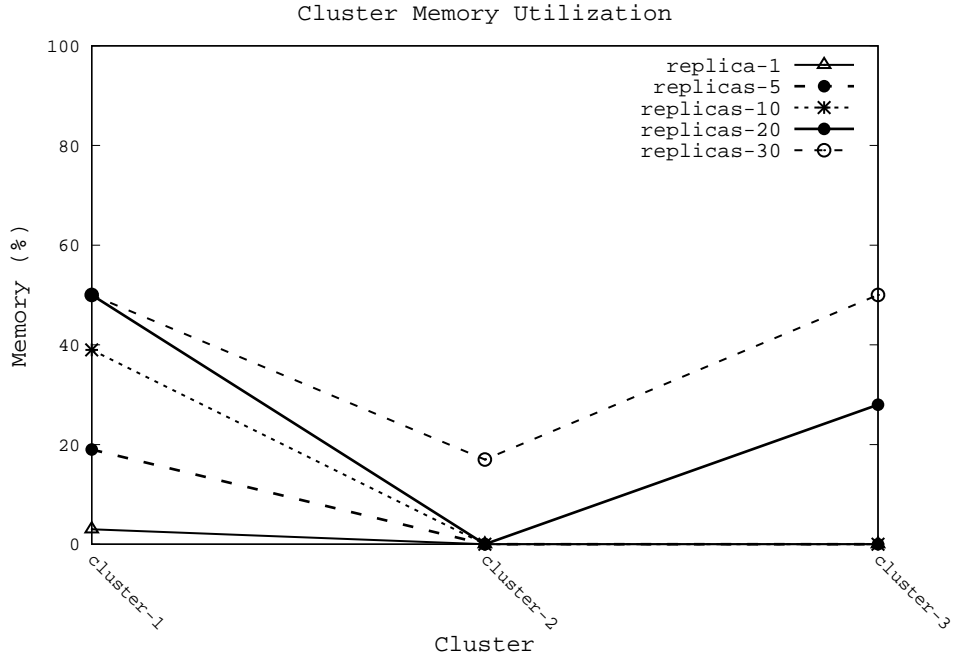
Fig. 3. Cluster Memory Utilization

```
replicas-10  100.00  0.00  0.00
replicas-20  100.00  0.00  100.00
replicas-30  100.00  100.00  100.00
```
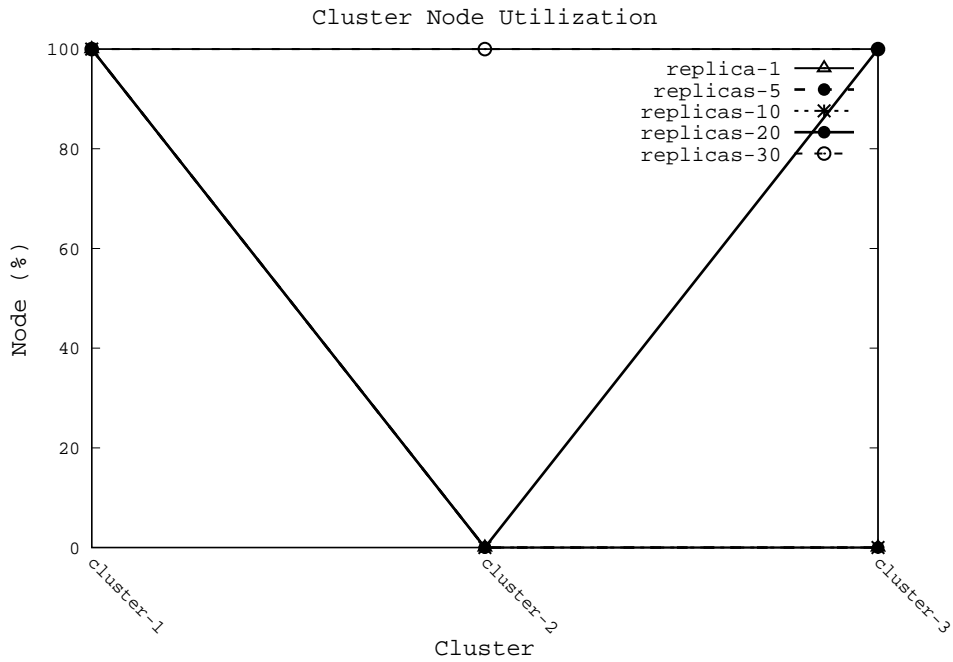

Fig. 4. Cluster Node Utilization

3

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 −20 100.00 100.00 0.00 0.00 100.00 12.00
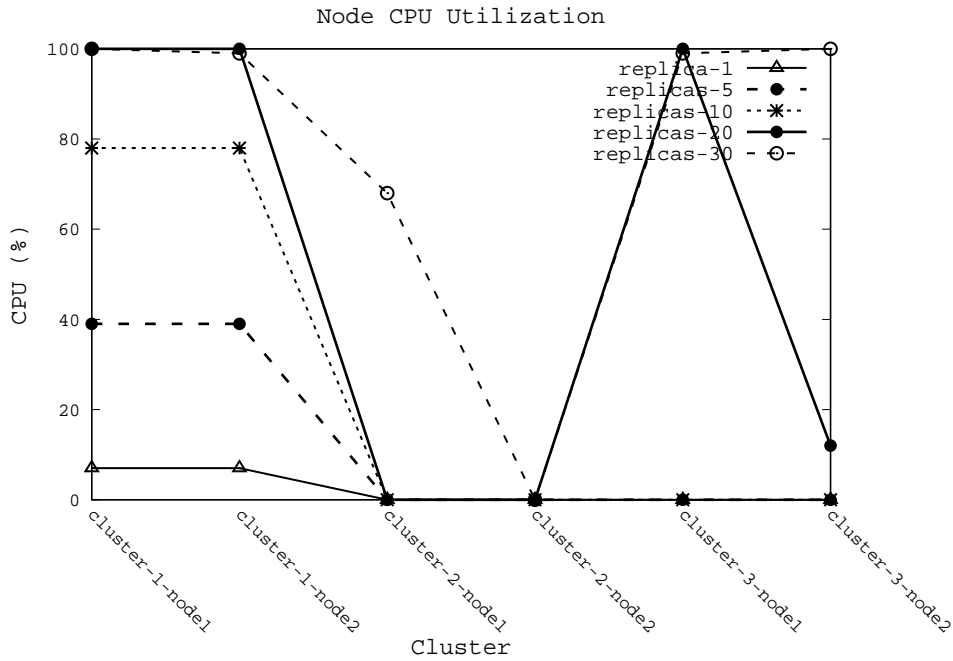replicas −30 100.00 99.00 68.00 0.00 99.00 100.00

Fig. 5. Node CPU Utilization

1.6

Listing 6. Node Memory Utilization

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 50.00 0.00 0.00 50.00 6.00
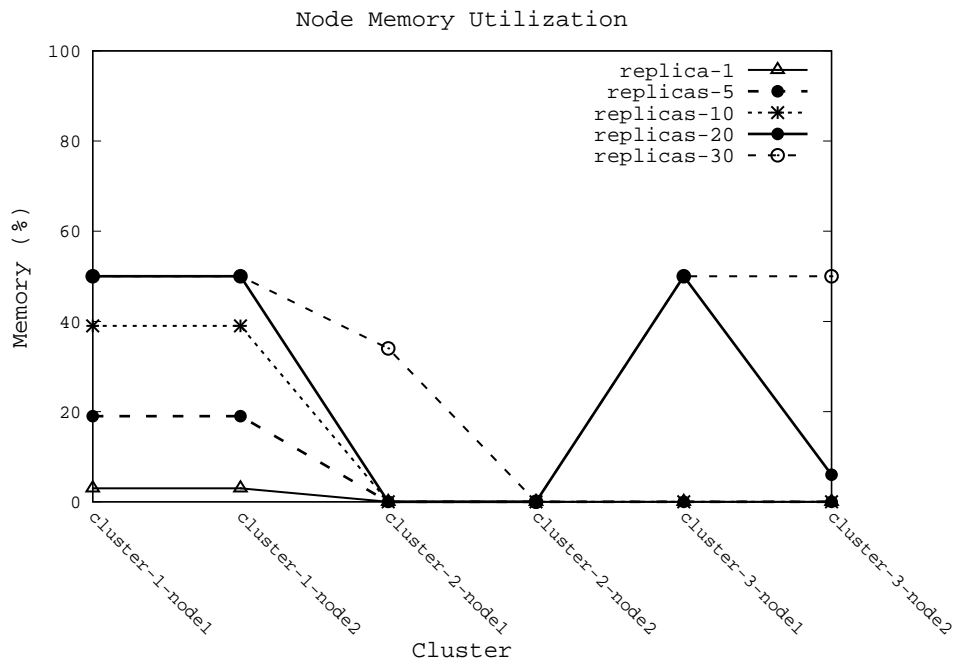
replicas −30 50.00 50.00 34.00 0.00 50.00 50.00

Node Memory Utilization

Fig. 6. Node Memory Utilization