



**Barcelona
Supercomputing
Center**
Centro Nacional de Supercomputación



Clustering Hands-On

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Copy files for the hands-on

- You can download the material for most of the hands on from the web site <https://tools.bsc.es/tools-hands-on>.
- Clustering has to be executed on a Linux machine.

```
> ls -l tools-material
... clustering/
... dimemas/
... extrae/
... traces/
```

Cluster-based analysis

- Run the clustering tool on the provided trace

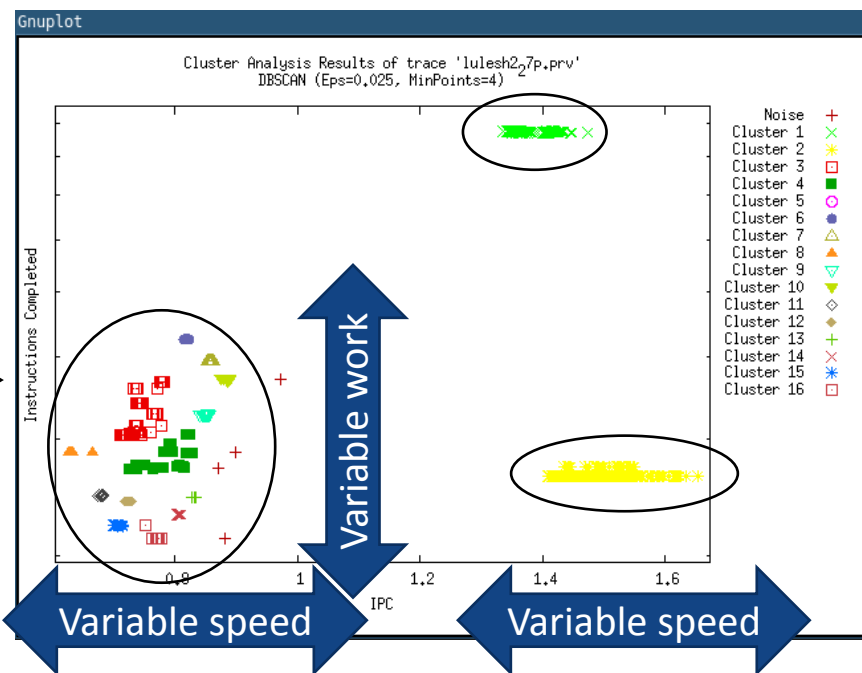
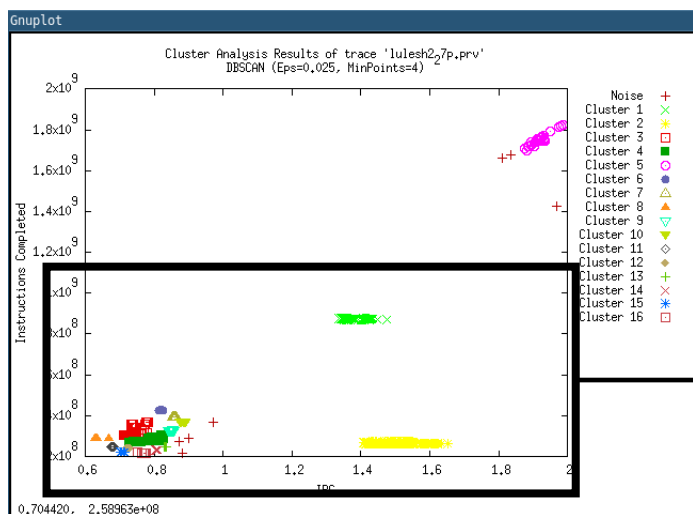
```
> module load clustering_suite
> cd tools-material/clustering
> BurstClustering
    -d clustering.xml
    -i ../traces/lulesh2_27p.prv
    -o lulesh2_27p_clustered.prv
```

Cluster-based analysis (II)

- Check the clustering scatter plot

```
> gnuplot lulesh2_27p_clustered.IPC.PAPI_TOT_INS.gnuplot
```

- Work (Y) vs. Performance (X)
- Look at the clusters shape: Variability indicate potential imbalances



Cluster-based analysis (III)

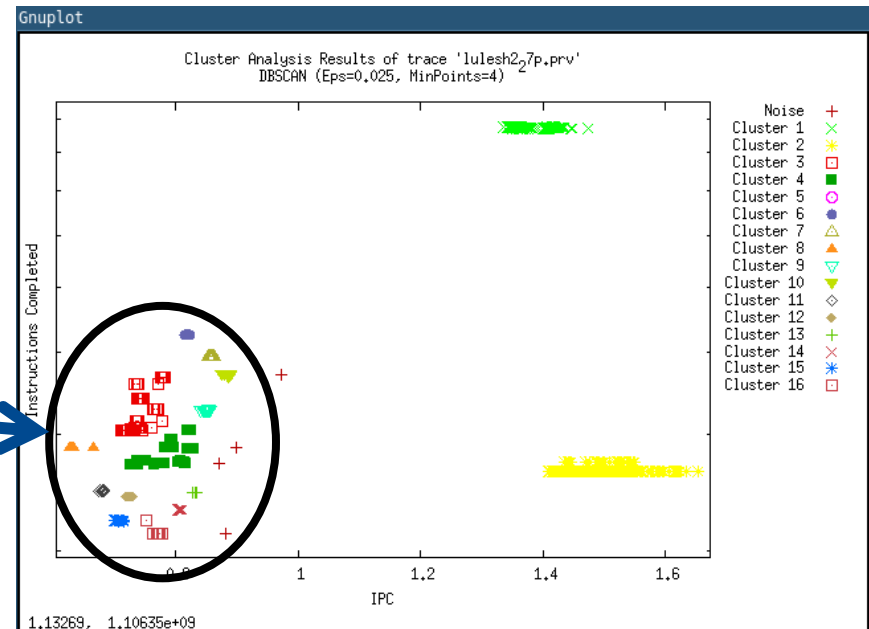
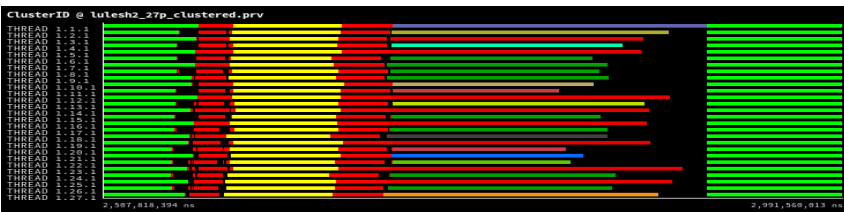
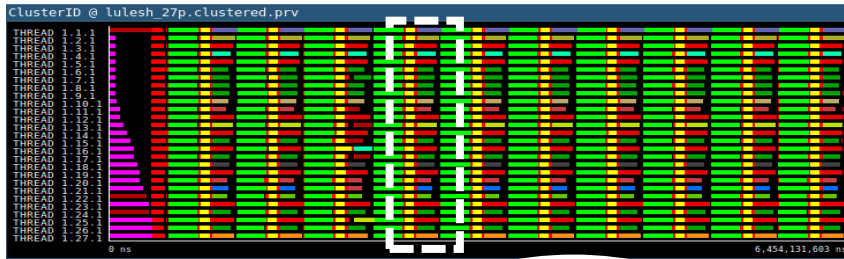
- Check the clustered trace
 - Load with Paraver

```
> paraver/bin/wxparaver $HOME/lu1esh2_27p_clustered.prv
```

- Display the distribution of clusters over time
 - File → Load configuration → paraver/cfgs/clustering/clusterID_window.cfg

Cluster-based analysis (III)

- Correlate scatter plots & timelines to detect imbalances



Variable work
and/or
Variable speed
+
Simultaneously @ different processes
=
Imbalances