Hands-On Dimemas

Using Dimemas

Step 1: Go to Dimemas directory

@ mt1.bsc.es

```
> cd $HOME/tools-material/dimemas
```

- In this folder there is a Minotauro configuration file (**mt.cfg**)

Step 2: Execute Dimemas

- We will use the trace generated yesterday!

@ mt1.bsc.es

```
> ./dimemas.sh ../extrae/lulesh2_27p_openmpi mt.cfg
```

Using Dimemas

Step 3: Copy the new trace and open with Paraver (local)

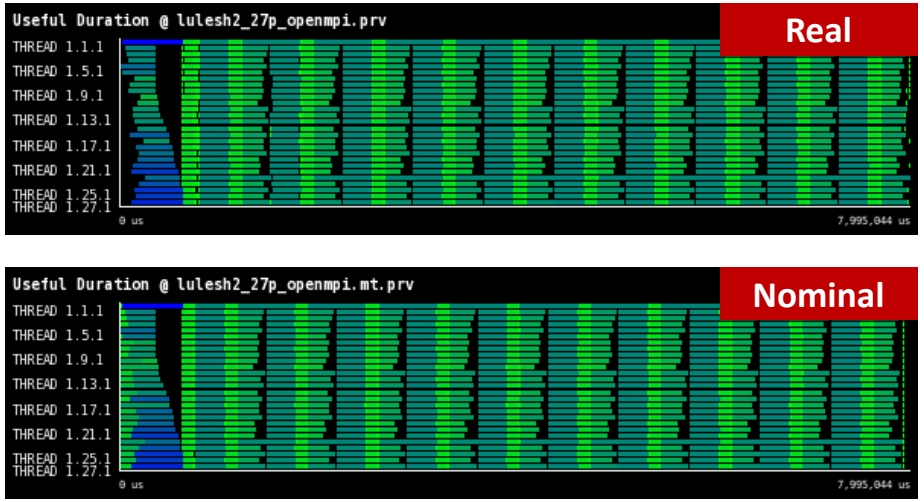
@ your laptop

```
> scp <USER>@mt1.bsc.es:tools-material/dimemas/
  lulesh2_27p_openmpi.mt.* $HOME

> $HOME/paraver/bin/wxparaver
  $HOME/lulesh2_27p_openmpi.mt.prv &
```

Compare the original and the simulated trace

– File → Load configuration → ‘General/views/useful_duration.cfg’

Nominal simulation replicates the real behavior



Tuning the configuration file (I)

Step 1: Run the Dimemas GUI

@ mt1.bsc.es

```
> module load dimemas java
> DimemasGUI
```

Step 2: Load the `mt.cfg` configuration file

- Configuration → Load Configuration → '`mt.cfg`'

Step 3: Set processors 2 times faster

- Configuration → Configure target machine → Node information → Relative Processor Speed → 2.0
- **Do all the same** → Save
- Close window

Tuning the configuration file (II)

- **Step 4:** Save configuration
  - Configuration → Save configuration → '**`mt.cpu2x.cfg`**'
- **Step 5:** Run Dimemas with this configuration

@ mt1.bsc.es

```
> ./dimemas.sh ../extrae/lulesh2_27p_openmpi mt.cpu2x.cfg
```

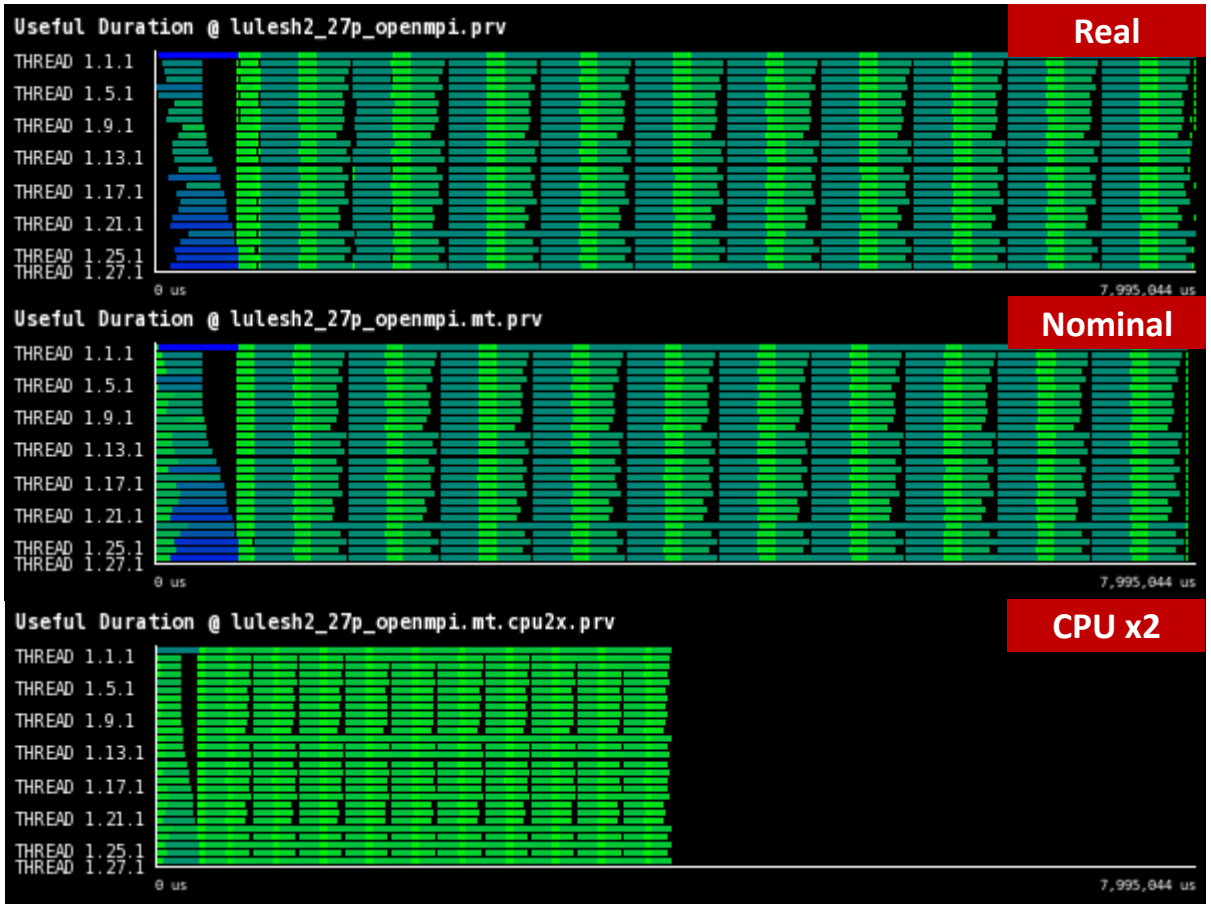
- **Step 6:** Copy the new trace and open with Paraver (local)
  - Compare with previous

@ your laptop

```
> scp <USER>@mt1.bsc.es:tools-material/dimemas/
  lulesh2_27p_openmpi.mt.cpu2x.* $HOME

> $HOME/paraver/bin/wxparaver
  $HOME/lulesh2_27p_openmpi.mt.cpu2x.prv &
```

Compare with previous traces

- File → Load configuration → ‘General/views/useful_duration.cfg’



Tuning the configuration file (III)

Step 7: Run the Dimemas GUI

@ mt1.bsc.es

```
> module load dimemas java
> DimemasGUI
```

Step 8: Load the `mt.cfg` configuration file

- Configuration → Load Configuration → '`mt.cfg`'

Step 9: Set network bandwidth to 10 MB/s

- Configuration → Configure target machine → Environment information → Network bandwidth → 10.0
- Save
- Close window

Tuning the configuration file (IV)

- **Step 10:** Save configuration
  - Configuration → Save configuration → '**mt.bw10MB.cfg**'
- **Step 11:** Run Dimemas with this configuration

@ mt1.bsc.es

```
> ./dimemas.sh ../extrae/lulesh2_27p_openmpi mt.bw10MB.cfg
```

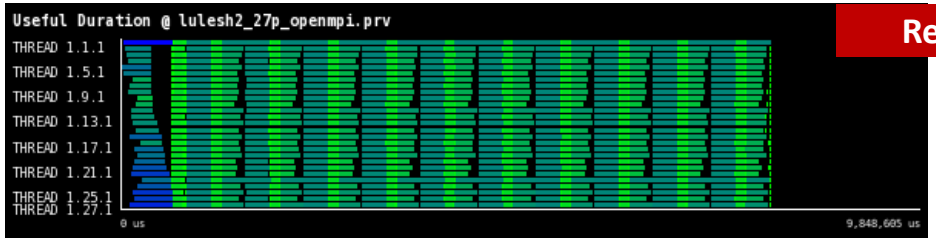
- **Step 12:** Copy the new trace and open with Paraver (local)
  - Compare with previous

@ your laptop

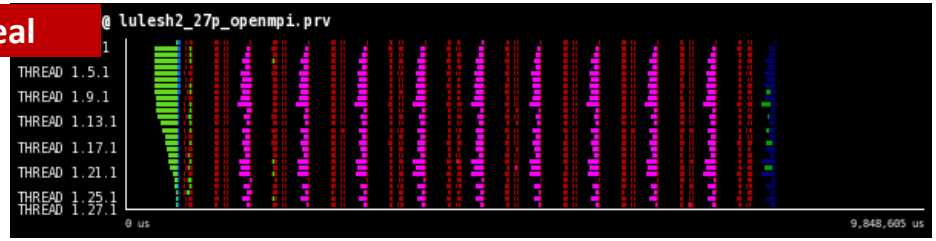
```
> scp <USER>@mt1.bsc.es:tools-material/dimemas/
  lulesh2_27p_openmpi.mt.bw10MB.* $HOME

> $HOME/paraver/bin/wxparaver
  $HOME/lulesh2_27p_openmpi.mt.bw10MB.prv
```

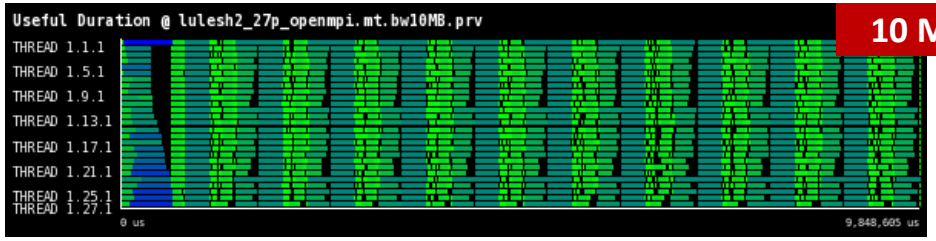
Compare with previous traces

- File → Load configuration → ‘General/views/useful_duration.cfg’
- File → Load configuration → ‘mpi/views/MPI_call.cfg’

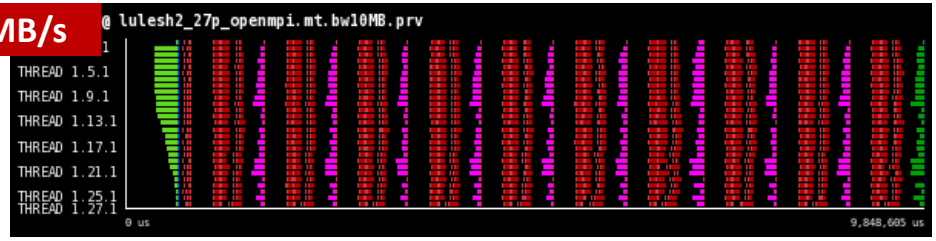


Real





10 MB/s



Affected only by large limitations in bandwidth

Further experimentation

- These Paraver tutorials cover topics about Dimemas
  - Tutorial 2: Introductory tutorial of the usage of Dimemas
  - Tutorial 4: General Paraver & Dimemas analysis applied to WRF
  - Tutorial 5: General Paraver & Dimemas analysis methodology