

Meta Skeleton Profiles

Topology-Titan

To load predefined profiles

Skeleton Parameters

Analytics Workflow

Topology analytics

Data Analytics Type

In-situ

To add new parameters

Architecture Parameters

+

CPU Cores

0

✕

Cores per Node

0

✕

CPU Idle power

0

✕

CPU Active Power

0

✕

Memory Idle Power

0

✕

Click on x to remove a parameter

Click to save the values and process the parameters

Save & Process

Process

Runtime Parameters

+

MPI Ranks Per Node

0

✕

MPI rank mapping Policy

 Consecutive

 Random

Application Parameters

+

Execution Time(s)

0

✕

CPU Activity(1-100)

0

✕

Memory Activity(1-100)

0

✕

MPI Activity File

Choose File

No file cho

(Source_MPI_Rank, Destination_MPI_Rank, d

Click here to upload the MPI communication trace file

Results

Parameter

Value

Results will be displayed here



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- Meta-Skeletons are defined from analytics workflow types and architecture, runtime and application/machine-independent characteristics. They can be stored as profiles.
- The “Simulation” functionality evaluates individual skeleton providing a co-design space.
- Results are provided using models that are implemented on the platform server.

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New Application Parameter

New Parameter Label :

Close Save changes

2. Enter the new parameter name and save.

Click + to add new parameter (to Architecture)

Skeleton Parameters

Analytics Workflow Topology

Runtime Parameters

Application Parameters

CPU Cores 0 x

Cores per Node 0 x

CPU Idle power 0 x

CPU Active Power 0 x

Memory Idle Power 0 x

MPI Ranks Per Node 0 x

MPI rank mapping Policy

Consecutive

Random

Execution Time(s) 0 x

CPU Activity(1-100) 0 x

Memory Activity(1-100) 0 x

MPI Activity File Choose File No file cho

(Source_MPI_Rank, Destination_MPI_Rank, d

Save & Process Process

Results

Parameter	Value
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- A set of parameters are defined by default.
- New parameters can be added removed dynamically. It allows integrating new functionalities within the simulation models.
- Parameters will be queried by “Label Name” in the server backend.

Meta Skeleton Profiles Topology-Titan

Skeleton Parameters

Type In-situ

Application Parameters

Execution Time(s)

CPU Activity(1-100)

Memory Activity(1-100)

MPI Activity File Choose File No file cho
(Source_MF Rank,
Destination_ Rank, d

Save & Process Process

Results

Parameter	Value
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- Communication patterns are defined using MPI traces, which need to be uploaded from a file.
- MPI traces are defined with a set of <source MPI rank, destination MPI rank, data size>

Meta Skeleton Profiles

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Skeleton Parameters

Analytics Workflow

Topology analytics

Data Analytics Type

In-situ

Architecture Parameters

Cores per Node

16

CPU Idle power

14

CPU Active Power

80

Memory Idle Power

4

Runtime Parameters

MPI Ranks Per Node

8

MPI rank mapping
Policy Consecutive Random

Application Parameters

CPU Activity(1-100)

15

Memory Activity(1-
100)

70

Fan-In

16

MPI Activity File

 MPIActivity(Source_MPI_Rank,
Destination_MPI_Rank, d

Clicking on process will take all the above values including the MPI file and pass it to a program that implements appropriate models (e.g., energy, communication, etc.)

Save & Process

Process

Results

Parameter	Value
% Energy for communication	0.9
Total energy	85000 Joules
% Local communication	0.4

Results are shown here



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- The meta-skeleton is evaluated for a given configuration using a program that runs in the backend.
- The meta-skeleton can be saved as a profile for future use/analysis.
- Results are provided as a list of <parameter, value> pairs. The implemented models define the output parameters shown.

Plot Type: Select the type of plot you want

X AXIS

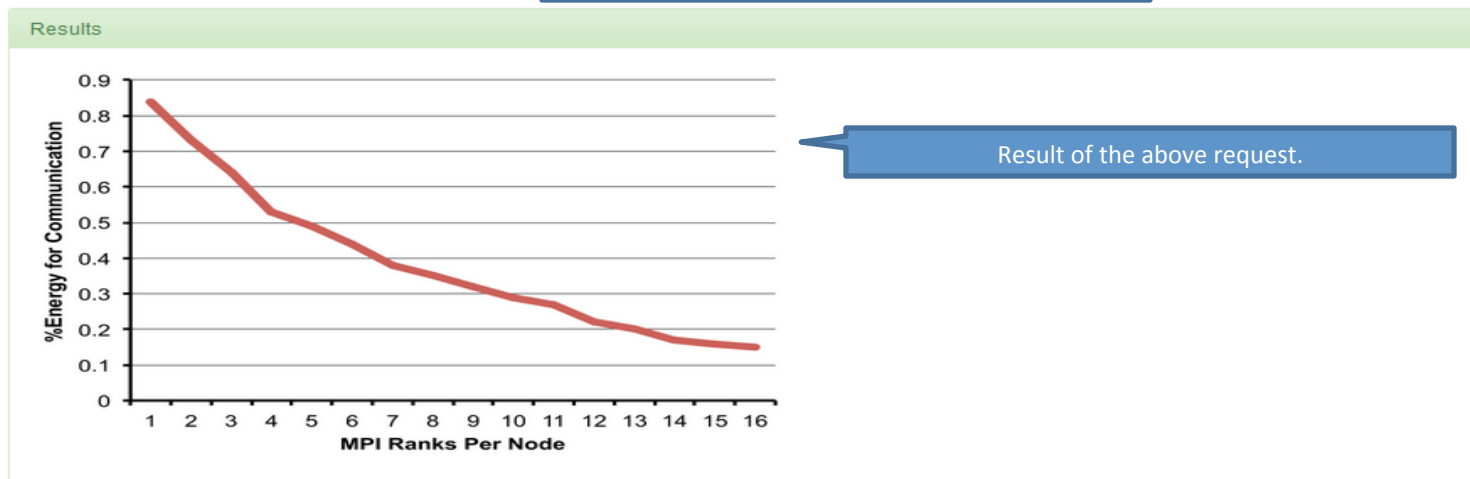
X-axis Parameter: Select the parameter to be plotted on x axis

Range: From To
Step: Enter the range for which the plot has to be made.

Y AXIS

Y-axis Parameter: Select the parameter to be plotted on y axis.

Click to plot the graph.



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- Analytics functionality enables co-design exploration through ranges.
- User-defined plots are generated based on co-design parameters (i.e., X axis in the example shown) and output parameters (i.e., Y axis in the example shown).
- Comparison of different meta-skeletons and systems (e.g., Titan vs. BlueGene)