Operation Pineapple: A Runtime Interposition Project



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Why Pineapple?

A thorny issue with goodness inside.

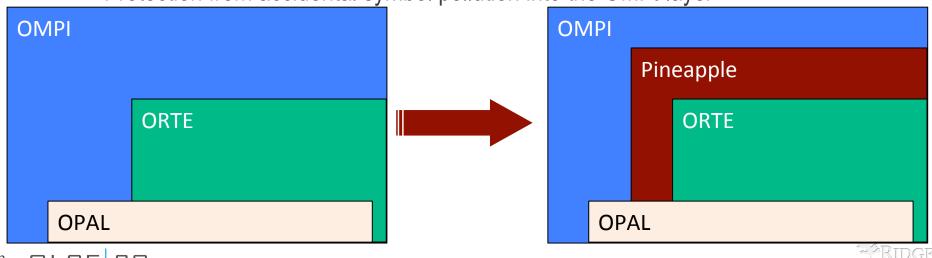




Concept

- Objective: Encapsulate runtime requirements of OMPI behind a single API with well defined semantics.
- Pineapple as a <u>separate</u> project in OMPI tree
 - Neither 'owned' by OMPI nor ORTE
 - Exposes only the interfaces needed for OMPI (~ORTE Interface)
 - The stems MCA framework encapsulates the 'glue' code for RTEs

Protection from accidental symbol pollution into the OMPI layer



Concept: Neither 'owned' by OMPI nor ORTE

Something other than (or in addition to) OMPI above ORTE

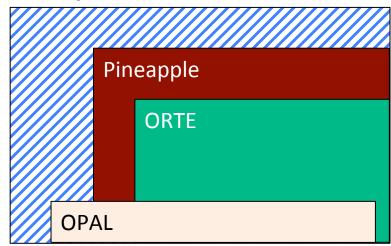
UPC + OMPI (see MVAPICH)

MapReduce

Subset OMPI

Research versions of OMPI

Something other than MPI



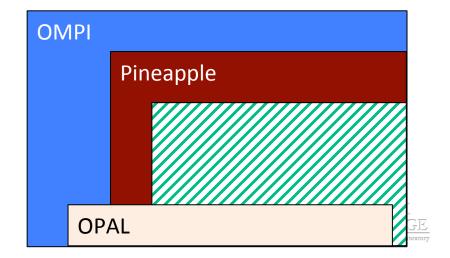
Something other than ORTE under OMPI

'minimal' component (Sandia)

Research versions of ORTE

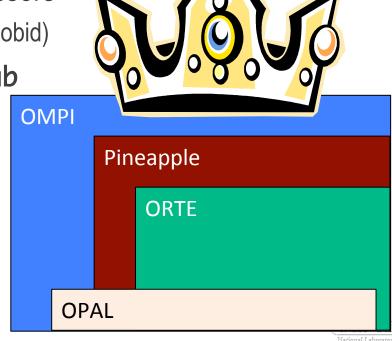
Other experimental research RTEs

System specific RTEs



Interface

- Interfaces match subset of ORTE currently used by OMPI
 - #include "pineapple/include/rte_pineapple.h"
 - Crisp delineation of what OMPI needs from an RTE
 - Clear definition of semantics in the header
 - Framework to abstract RTE specific code (stems)
 - Data structures are hidden behind accessors
 - Process name static inline functions (vpid, jobid)
 - OMPI layer frameworks dpm and pubsub
 - Should be moved to the pineapple layer
- OMPI/ORTE/OPAL Stack is King!
 - Pineapple interface should always err on the side of supporting the default OMPI/ORTE/OPAL stack



Todo Items

- Todo Items:
 - OMPI-level tools that depend on ORTE
 - ompi_info: If !ORTE then do not build
 - Do something better down the road
 - ortetools: If !ORTE then do not build (link)
 - ompi-server: If !ORTE then do not build
 - Finish converting remaining components of OMPI
 - Move dpm and pubsub to pineapple
 - Testing, testing, testing...
 - Name: "O+{3 letters}" (e.g., OMPI, ORTE, OPAL)
 - http://www.wordbyletter.com/words_starting_with.php?q=o&letters=4
 - http://www.morewords.com/wordsbylength/4o/
 - OATH, OBEY, OGLE, OKAY, OKRA, OMEN, OMIT, OOZY, OPAH, ORCA, OUCH, ...



Timeline

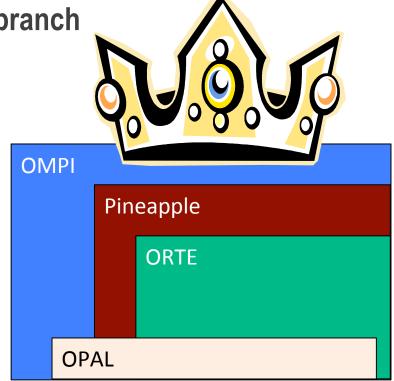
- Targeting 1.7 release series
- Timeline: 2 weeks (Last week of June)

M 6/25: Finish development in the branch

• T 6/26: Discuss on teleconf

• R 6/28: Commit to trunk

• M 7/16: Push to 1.7trunk



https://bitbucket.org/jjhursey/ompi-pineapple

